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Digital Technologies and the Violent Surveillance of Nonbinary Gender

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ABSTRACT

The enforcement of the gender binary is a root cause of gender-based violence for trans people. Disrupting gender-based violence requires we ensure "gender" is not presumed synonymous with white cisgender womanhood. Transfeminists suggest that attaining gender equity requires confronting *all* forms of oppression that police people and their bodies, including white supremacy, colonialism, and capitalism (Silva & Ornat, 2016; Simpkins, 2016). Part of this project, we argue, includes confronting the structures of gender-based violence embedded within digital technologies that are increasingly part of our everyday lives. Informed by transfeminist theory (Koyama, 2003; Simpkins, 2016; Stryker & Bettcher, 2016; Weerawardhana, 2018), we interrogate the ways in which digital technologies naturalize and reinforce gender-based violence against bodies marked as divergent. We examine the subtler ways that digital technology can fortify binary gender as a mechanism of power and control. We highlight how gendered forms of data violence cannot be disentangled from digital technologies that surveil, police, or punish on the basis of race, nationhood, and citizenship, particularly in relation to predictive policing practices. We conclude with recommendations to guide technological development to reduce the violence enacted upon trans people and those whose gender presentations transgress society's normative criteria for what constitutes a compliant (read: appropriately gendered) citizen.

Key words: gender binary, surveillance, predictive policing, transgender

Word count: 5,845

Key Messages:

- Violence against trans people is inherently gender-based.
- A root cause of gender-based violence against trans people is the strict reinforcement of the gender binary.
- Digital technology and predictive policing can fortify binary gender as a mechanism of power and control.
- Designers of digital technologies and the policymakers regulating surveillance capitalism to interrogate the ways in which their work upholds the gender binary and gender-based violence against trans people.

INTRODUCTION

Trans[1] people are often targets of violence perpetrated on the basis of gender identity, expression, and/or nonconformity, with more than one in four trans people in the U.S. reporting a bias-driven assault (NCTE, 2016). As such, violence against trans people is inherently gender-based (Wirtz et al., 2020). While gender-based violence (GBV) is often understood to reference violence that is individualized in nature - such as physical, sexual, or emotional violence targeted at one individual based upon that person's gender and often in the context of one's family life or intimate relationships (European Commission, n.d.) - GBV can also be understood as a structural issue. Structural GBV focuses on how the "social arrangements...embedded in the social, political and economic organization of our social world" marginalize, exploit, and increase risk for violence for certain groups of people based upon gender[2] (Montesanti, 2015). Further, structural GBV means that trans people can face harassment, outing of their identity, intrusion of privacy, and outright violence even when trying to do "normal" activities that are not experienced as threatening for most white cisgender people, such as go through airport security (including through full body scanners), using public transportation, applying for a job, or accessing a domestic violence shelter (Currah & Mulqueen, 2011; James et al., 2016).

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[1] A clarifying note on the language used in this paper: We are acutely aware that language is fraught and that one word for gender may generate as much contention for one reader as it does connectivity for another or isolation for a third. Simultaneously, we must select verbiage in order to communicate. To that end, throughout this paper we use "trans" to refer to those lives, bodies, and/or identities that conflict with a cisnormative, binaristic understanding of gender. We wish to note that we use these terms not as an identity, but as adjectives describing a host of identities (with a host of meanings) that may include trans, nonbinary, Two-Spirit, genderqueer, agender, gender nonconforming, bigender, and countless others.

[2] While we understand the term gender to refer to a concept of selfhood in relationship to society, gender and physiology nonetheless remain intimately entangled. This is particularly true within the realm of cissexism, as cissexism suggests that the truth of one's gender resides in one's body. In our discussions of cissexist surveillance practices in this paper, we occasionally reference sex characteristics (including genitals and reproductive systems). Likewise, we utilize "male" and "female" in reference to the cissexist sorting of individuals into societal roles based on their assigned sex. We wish to make clear that when we do use the language of sex, we do so with intention and to unequivocally affirm that while physiological sex is conceptually related to gender, it is not constitutive of gender.

Media attention to violence against trans people, which frequently focuses on the pathology of the perpetrator, ignores the structural nature of GBV against trans people. The violence trans people experience is informed by the broader social context, which permits, normalizes, and even encourages anti-transgender violence (Wirtz et al., 2020). The lack of federal nondiscrimination protections for trans people within U.S. housing, healthcare, and education sectors is itself a form of state sanctioned gender-based violence. The exclusion of trans people from basic protections under federal law both produces and maintains oppressive ideologies and social hierarchies regarding *who* deserves access to *what* in contemporary U.S. society. The production and maintenance of trans marginalization through federal policy exclusions, combined with policies that both implicitly and explicitly police individual gender presentation, further systemic and interpersonal violence towards trans people (Authors, 2019).

Disrupting GBV requires we not assume "gender" to mean white cisgender womanhood, but rather work to disrupt patterns of normative thinking embedded in our societal structures. Transfeminists (particularly transfeminists of color) suggest that attaining gender equity requires confronting all forms of oppression that literally and figuratively police people and their bodies, including white supremacy, colonialism, and capitalism (Silva & Ornat, 2016; Simpkins, 2016). While oppressive violence is typically understood as an exchange enacted by and upon humans, the growing presence of digital technology in our everyday lives calls us to expand our thinking around the sites in which GBV can occur. Because designers of technological innovations rarely consider the experiences of trans technology users, and because technology design and "big data" build from existing, unexamined biases of white cisgender male tech designers (O'Neil, 2016; Scheuerman & Brubaker, n.d.), design decisions may disproportionately cause trans people harm (Starks, Dillahunt & Haimson, 2019), enacting what Hoffmann (2017) terms data violence

against trans people. This is especially clear when considering the advancement of surveillance capitalism and predictive policing practices, neither of which can be disentangled from notions of profitability, nationalism, and security. We include profitability and the maintenance of capitalism in our conception of national security, as capitalism is inextricably connected to cis/heteronormativity and gender roles, reinforces neoliberal ideals, perpetuates class stratification, and is dependent upon productive bodies and bodies of production.

In this paper, we interrogate the ways in which digital technologies naturalize, reproduce, and reinforce GBV against those bodies and identities marked as divergent. We understand the rapid pace of digital technology development to be connected to the capitalist marketplace (Linder, 2019), in which companies entice consumers into a process of "digital dispossession" whereby consumers provide information that is then sold for profit to a range of entities for various reasons (Zuboff, 2019, pg. 99). In this context of surveillance capitalism, the translation of human life into data points provides a behavioral surplus from which vast predictive value emerges.

Surveilling and Securing Gender Deviance

The utilization of the binary gender system as a mechanism of surveillance, control, and GBV are not new phenomena. However, the emergence of digital technologies and surveillance capitalism as facilitators of GBV targeting trans people are relatively new and unexplored. Trans people directly challenge the gendered assumptions of digital technologies and data systems in at least two ways: "(1) categorically (through the rejection of binary gender) and (2) conceptually (through resistance to singular, fixed meanings)" (Hoffman, 2017, p. 9). Consequently, trans people challenge big data-driven truths, which are reliant upon the fixed / reductive

categorizations of individuals and their bodies amidst the reality of evolving identities (Hoffman, 2017).

Trans people threaten the bounded and exclusionary functions of capitalist, white, cisheterosexual dominance. Targeted violence towards trans people is at least partly rooted in the fear of a shifting social order that would challenge existing social stratification (Authors, 2020). Even when not designed with explicit intentions of harming trans people, surveillance technologies act as a mechanism for identifying the "unknowable" body such that current power structures are upheld. As Beauchamp (2009) notes, "State surveillance policies that may first appear unrelated to transgender people are in fact deeply rooted in the maintenance and enforcement of normatively gendered bodies, behaviors and identities" (p. 1).

For example, gender recognition technologies comprise a growing presence in seemingly banal arenas ranging from social media advertising to healthcare. Described by Monahan (2009) as the "logics of disembodied control at a distance," the abstraction of person, positionality, and context is part and parcel of the digital coding of Automatic Gender Recognition, including voice recognition, facial recognition, body recognition, analysis of breast shape, and gait-based gender recognition. This abstraction of a human body into a series of data points can readily invisibilize the biases underlying the measurements themselves and the consequent data violence that is enacted. Embedded within this schematic is a definitive norm (collapsing sex and gender) from which divergence can be identified. O'Neil (2016) points out that there is a common belief that technology, algorithms, and "big data" are getting us to a world where we are approaching "truth" because computers and data are objective, and yet this is based upon a myth that the data we are collecting and the technology we are designing are objective and unbiased to begin with. Likewise, the disparate accuracy of facial recognition technology when utilized on white men

compared to women and Black and Brown people confirms the discriminatory coding at work behind the rampant misrecognition and criminalization of the latter groups.). The landmark Gender Shades study illustrates that such algorithmic disparities are intersectional, finding that each of three studied gender classification algorithms (two of which were developed by IBM and Microsoft) were most inaccurate on "darker-skinned females", with a misrecognition rate of up to 34% higher than for "lighter-skinned males" (Buolamwini & Gebru, 2018). The devastating effects of these practices can be far-reaching, as in the case of Detroit's Project Greenlight. In a 2019 study, the Detroit Community Technology Project identified a connection between the installation of nearly 600 police cameras primarily located in Black neighborhoods with the "diversion of public benefits, insecure housing, loss of employment opportunities, and the policing and subsequent criminalization of the community members that come into contact with these surveillance systems" (Urban et al., 2019).Technological advances in the policing of individual lives are rooted in the idea that individual privacy is a fair trade for public safety, and that the unknown poses threats whereas the known can be managed and controlled. Yet, as is repeatedly the case in the creation and enactment of policies wherein policing is equated with governing, those deemed worthy of protection are those who mirror the image of the powerful minority: white, wealthy, cisgender (men). The concept of surveillance as security is a product of the racist, classist, and cis/heterosexist structures of our society whereby systems of social control are enacted through the observation, scrutiny, and criminalization of bodies and communities deemed different and therefore deviant from those in power (Stop LAPD Lying Coalition, 2018). The rapidly growing possibilities of technology-facilitated knowability are trailed by policies that often fail to anticipate and mitigate the racist, classist, and cis/heterosexist repercussions, and at times reinforce, condone, or even create said repercussions. The realms of

policing are expanding and the violent output of the intersections of data, tech, and policy are rampant in all arenas where people are policed, including at the community level, airport security checkpoints, and in their everyday lives through national identity tracking and record-keeping.

Surveillance as Security: Predictive Policing and the TSA

Trans people, and specifically trans women of color, face frequent, humiliating, and life-threatening experiences of police profiling and violence (Amnesty International, 2005; James et al., 2016). As technology changes the nature of policing practices - specifically through the growing use of predictive policing - unjust encounters with police are poised to increase for trans individuals. The term *predictive policing* most commonly refers to digital record-keeping of police data, including calls for service and arrests, used by law-enforcement to forecast the location, perpetrators, and victims of future crimes (Richardson et al., 2019). We posit that the term also describes a broader-level use of surveillance technology whereby digital data reveal and track those suspected of crime and violence.

Under this broader definition, we include policies and practices designed to locate and predict threats to U.S. national security including the use of full-body imaging at airport security checkpoints, the Transportation Security Administration's (n.d.) Secure Flight Program, and the Department of Homeland Security's (2014) Real ID Act. These national security efforts all utilize digital technologies that assume gender to be an externally legible, binary, and unchanging identity factor (Beauchamp, 2009; Currah & Mulqueen, 2011). A common denominator in each of these forms of predictive policing is the inherent bias of digital technologies designed with the assumed identity norms of our country's power-structure based in whiteness, cis-normativity, and wealth. While predictive policing practices are not unique to the United States (McCarthy, 2019; Stratistics Market Research Consulting, 2020), the historical and

present-day U.S. context ensures that these systems have been built on a legacy of slavery, racial prejudice and violence, glorified capitalism, xenophobia, and anti-terrorism frenzy. A lack of transparency looms large in predictive policing, creating datasets that are partly informed by discriminatory police policies and practices, including racially biased arrests, planting of evidence, and inaccurate reporting (Joh, 2016; Richardson et al., 2019).

A confirmation bias feedback loop impacted by inherently biased data causes an increase in police officers deployed to already overpoliced communities, reinforcing both police and community member biases and increasing arrests of marginalized groups (Richardson et al., 2019). This confirmation feedback loop is especially dangerous within the context of racialized and gendered oversexualization of trans women of color who are routinely targeted by police for suspected sex work (Amnesty International, 2005; INCITE!, 2018; Richardson et al., 2019). Legal scholar Elizabeth Joh (2016) coined the term surveillance discretion to describe the "decisional freedom to focus police attention on a particular person or persons rather than others" (p. 15). Surveillance discretion is not new; it has traditionally taken the form of determining suspects on which to focus police attention by pursuing leads generated by information gathering, observation, and questioning. Emerging surveillance technologies enable police to utilize big data in order to identify the potential for criminal activity more broadly and at a lower cost. Joh (2016) explains: "The selection of investigative targets that emerge from big data rather than from traditional human investigation represents an important expansion in the powers of the police. That expansion, in turn, calls out for new tools of police accountability" (p. 16).

A similar type of discretion exists in the Transportation Security Administration's (TSA) reliance on full body scanning technologies, which endanger trans people and contribute to racist profiling. When a person passes through an airport security checkpoint and is directed to a

full-body imaging machine, the airport security agent must make a snap judgement of that person's gender and use the binary categories male/female to program the machine for what to expect when scanning that individual's body (Currah & Mulqueen, 2011). The scanners can detect the presence of objects (where it is presumed the objects should not be), but are unable to determine what those objects are - thick hair, wig, penis, breasts flattened by a binder (Currah & Mulqueen, 2011; Stratistics Market Research Consulting, 2020). Thus, when passing through airport security, passengers are literally stepping directly into a mechanized gaze rooted in white cisnormativity. While previous scanning technologies (e.g., metal detectors) focused on identifying specific problem objects that should not enter a space, whole body imaging has moved toward judging bodily shapes and determining which are deviant, often singling out trans people, those with certain religious affiliations, and people with disabilities (Magnet & Rodgers, 2012). Passengers whose bodies are flagged as divergent or unknowable are targeted for further screening; for trans individuals, this often includes being publicly outed, verbally harassed, subject to physically assaultive pat-downs, and even being asked to expose one's genitals, despite this being a violation of TSA policy (Browning, 2020; Hope, n.d.; James et al., 2016; Waldron & Medina, 2019). These passengers are reliant upon the subjective determinations of TSA agents, who may be (either unintentionally or explicitly) conducting their assessments based on myths and stereotypes that cast Black and Brown people and trans people as threats. TSA agents may also be responding to information directly provided by the Department of Homeland Security, such as a warning issued in 2003 that male terrorists would dress as women and use false identification to pass through airport security. This "warning" both reinforced an age-old rhetoric of the weaponization of gender whereby gender presentations read as deviant (specifically when encountered on bodies read as dangerous through the lens of xenophobia and

Islamophobia) are taught to be viewed as threatening (Beauchamp, 2009), and also reified the false archetype of trans people as deceptors (Mogul et al., 2010).

The Real ID Act of 2005 and the "secure flight" program implemented in 2009 were touted as solutions to fears of terrorism (Beauchamp, 2009; Currah & Mulqueen, 2011). The former created a national set of standards for identification used for activities such as air travel (Beauchamp, 2009) and the latter created the system described above where passengers provide identity information including name and gender at the time of booking their flight that must match their federally compliant identification documents (Currah & Mulqueen, 2011). However, given vast inconsistency in state policies surrounding one's rights and ability to make legal changes to gender markers on identity documents and the forced choice binary of gender markers on most legal documentation, consistency in documentation is a privilege not afforded to many trans individuals, leading to—among other problems—excessive and often violent policing of trans passengers at airports.

Beyond further complicating the notion of airport safety for trans passengers, the Real ID Act results in far more wide-spread policing of identity and systemic forms of GBV. Prior to 2011, the Social Security Administration (SSA) routinely sent "no match" letters to employers concerning employees whose gender marker on employment applications was incongruent with the gender marker in the SSA database, outing people at work and creating risks for employment discrimination (NCTE, 2014). Over 700,000 of these letters were sent by the SSA in 2010 alone (NCTE, 2014), and while the practice ended for private companies in 2011, government agencies continue to use it for employee verification (NCTE et al., 2012). This systemized outing is a form of GBV that threatens people's livelihood, even further devastating for those individuals who are flagged by SSA and then subject to further scrutiny regarding nationality and

immigration status. The Real ID Act also impacts voting rights by causing discrimination and harassment at polling sites and by essentially policing people out of their right to vote, further preventing critical change to governmental policy and practices (Haynes, 2013).

Under the veil of public interest and the greater good comes a set of rules and expectations designed by a powerful minority as a form of "protection" from the unknown. Each of these instances of technology-powered violence is enshrined in policies that forefront the idea that policing identity with the goal of knowability equates security. The idea here is an age-old and faulty rhetoric of nothing to hide, nothing to fear, creating an idea that trans people are "hiding" something, therefore "dishonest," therefore suspect, therefore violent (Mogul et al., 2010; Beauchamp, 2009), framings that are often used as part of the "panic defense" in court cases to justify anti-trans violence. In reality, it is these very policies and practices of policing that institutionalize violence.

The Function of the Gender Binary in GBV

The strict enforcement of the gender binary is a root cause of GBV for trans people. Exacerbating its impact on marginalized communities is the binary gender system's reliance on constructs of whiteness, nationhood, and citizenship. Trans people have long been misidentified as threats to individual and national security in the U.S., dating as far back as the formation of the nation state on the land known to many Indigenous communities as Turtle Island (Mogul, Ritchie, & Whitlock, 2011). The enforcement of the gender binary was an essential component of colonization, necessary to impose and naturalize new hierarchical structures placing whiteness and masculinity at the pinnacle. The imposition of the gender binary and the institutionalization of patriarchy resulted in violent suppression of gender expansiveness, consequently establishing hierarchical relationships between two rigidly bounded genders (Mogul, Ritchie, & Whitlock,

2011). The entanglement of binary gender with whiteness, nationhood, citizenship, and ability is reflected in today's egregious rates of violence - ranging from intimate partner violence to hyperpolicing - faced by trans people of color, undocumented trans people, and trans people with disabilities (James et al., 2015; NCAVP, 2018).

Empirical Gender: Establishing the Knowable Body

To understand the binary gender system as a surveillance mechanism, it is helpful to understand the origins of gender as a classificatory schema. Now naturalized as a core aspect of one's existential self-understanding, the concept of gender finds its roots in a practical interplay of economics, morality, and science toward the end of the nineteenth century. This period of capitalism's maturation saw the emergence of a nuclear family with clearly delineated male and female roles as both an economic unit (in which the costs of reproduction could be privatized) and a standard of social purity against which divergence could be disciplined (Drucker, 2015). In this same era, a new medical consensus emerged anchoring gender in two distinct, innate, and immutable sexes (Dreger, 1998) based on biological, hormonal, genital, and reproductive characteristics, which do generally fall into two broad classifications. This definitive and narrow nature of the binary sex classification has been shown to be false (Fausto-Sterling, 2018) yet still powerfully influences current thinking, science, and social arrangements. So, while contemporary science has disproved this binary sex system, the anatomical enumeration of womanhood and manhood remain key principles organizing social and scientific thought today (Ainsworth, 2015; Fausto-Sterling, 2018).

The determination of binary male and female phenotypes through distinct and definitive elements, including chromosomes, hormones, organs, and appearance, provided an essential framework for the contemporary surveillance, monitoring, and disciplining of trans, intersex, or otherwise "divergent" bodies. Further, the entanglement of gender with this science of sex solidified gender as fundamentally *knowable*. Currah & Mulqueen (2011) explain:

> Of the possible epistemological sources of human identity—what one is (a body), what one says about oneself (a narrative), what one does (a performance), and what one has in hand (a token)—it is the is-ness of the body that reigns supreme in the quest for perfect information (Ajana, 2010). Documents may be fraudulent, individuals cannot be trusted to vouch for themselves or to maintain a consistent presentation of self, but the body, it is assumed, cannot be forged and does not lie. Most significantly, while the body might age, succumb to disease and injury, its core elements are thought to be stable over time. (p.568).

The notion that the body holds the truth of one's gender underlies extensive state and interpersonal violence enacted against trans communities. A growing body of research seeks to confront the dangers of this physiological truth by arguing a science of trans *identity* (e.g. Kozee, Tilka, & Bauerband, 2012). In a political context seeking to legislate and expunge trans people out of existence (Janssen & Voss, 2020; Simmons-Duffin, 2020), a sense of urgency to empirically validate trans identity is timely. Yet the science of trans identity is ultimately still a derivative of the science of trans as deviance or disorder, with the difference lying primarily in their explanatory theories. While not without benefits, the growing emphasis on a true trans identity merits a critical examination of the implications of a shift from "What's wrong with you?" to "Are you really who you say you are?"

It is imperative to note that the dyadic sex and binary gender norms against which trans bodies and identities are measured are not race neutral. Medicine's entrenchment in a science of white supremacy dictates that a normatively gendered or sexed body is definitively racialized

white (Somerville, 2000). The empirical enmeshment of race, gender, and sexuality reinforces the economic and moralistic functions of gender, rendering white, cisheterosexual people not only the most "natural" form but also the benchmark against which the inherent deviance of people of color can be measured, surveilled, and/or corrected (Beauchamp, 2009). Describing racializing surveillance, Browne (2015) details moments in which boundaries, borders, and bodies are reified along racial lines, typically leading to "discriminatory treatment of those who are negatively racialized by such surveillance (p. 16)." Sexual and gender deviance are thus read through a process of racialization, with whiteness enhancing the odds a body is deemed recognizable as human or citizen (Beauchamp, 2009; Quinan, 2017).

Conclusion and Recommendations

The violence trans people experience at interpersonal and structural levels are well documented (James et al., 2015). Digital technologies that surveil individual bodies not only contribute to the violence against trans people, but also target any individual perceived as "deceptive" based on their gender presentation. Gender norms are racialized, classed, and sexualized and viewed through the lens of economic privilege, cisheterosexuality, and whiteness (Beauchamp, 2009; Mogul et al., 2010). Designers of digital technologies mostly operate from within these structures of dominance, such that technological innovations either explicitly or unintentionally cause harm to trans people and those whose gender presentations fall outside of dominant society's normative criteria for what constitutes a compliant (read: appropriately gendered) citizen.

It is imperative that digital technologies are not created in a dehistoricized vacuum, meaning that they do not simply act as innovative mechanisms for the maintenance of certain individuals and bodies as divergent and therefore dangerous. When considered in the historical

context of the surveillance of trans people, queer people, people of color, women, and people living in poverty, it is clear how digital technologies may reinforce societal structures of power and dominance. As surveillance capitalism popularizes an understanding of data-as-profit, the deployment of such technologies toward unjust ends only stands to grow in presence and impact.

The digital commons is inarguably a space that offers trans individuals great opportunity for self-actualization, connection, and community-building (Authors, 2020). Yet digital technologies also hold the potential to further facilitate GBV against trans people by inscripting and thus reinforcing the gender binary. The following recommendations are intended to help eliminate the harm enacted upon trans people and communities, and other groups who are disproportionately policed. First and foremost, the confirmation bias feedback loop must be disrupted. It is imperative that data are subject to critical analysis, including the markers and mechanisms used to identify gender and sex. To reduce the potential for harm, designers (as well as financiers and other stakeholders) should interrogate the ways in which their creations produce and categorize gender within the digital sphere, as well as examine the potentially violent consequences of such. The Algorithmic Ecology framework offered by the Stop LAPD Spying Coalition represents a promising tool for such an intervention, as it "...maps, visualizes, and communicates the relationships of power that surround any algorithmic technology — from facial recognition to automated risk assessment, from social media use to hiring software" (2020). More specifically, the field of surveillance technology should be critically challenged for its pursuit to physically "read" gender, given the breadth of research both disproving objective gender and highlighting its use as a proxy for social compliance (Authors, 2020).

The recent attention to police brutality in the U.S. provides an opportunity for policy makers to reconsider and reprioritize the resources currently deployed for the design of

predictive policing systems, reallocating funds to tracking police interactions in the community, including incidents of violence and misreporting. Beyond policies regarding local police districts, policy makers seeking to address gender based violence via predictive policing would do well to revisit state and federal policies that either directly or inadvertently construct normatively gendered citizens - most notably, the Real ID Act. It is incumbent upon those policy makers tasked with regulating surveillance capitalism as well as designers of digital technologies to interrogate the ways in which their work upholds the gender binary and gender-based violence against trans people.

Trans individuals and communities must be directly involved in technology development, testing, implementation, and evaluation, such as through participatory and inclusive design processes (for example, see Haimson et al., 2020; Scheuerman & Brubaker, n.d.). Yet to truly disrupt the ideologies of dominance that lead to bias - metric development, data collection, interpretation of data, and surveillance strategies - we must intervene upstream and address it at its root. To this end, we recommend education policies that require anti-bias education as a core component of primary education, ethics training for technical design and engineering students, and mandatory community engagement with communities most impacted by surveillance capitalism.

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