Beyond Fairness: Trans Unliveability in European Algorithmic Assemblages

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Abstract

The implementation of algorithmic technologies in Europe is intended to streamline identification, verification and security measures. In reality, they automate surveillance, exclusion and violence towards bodies that do not fit the encoded binarity of gender underpinning algorithms, which exposes trans bodies in particular to heightened forms of *algorithmic violence*. This paper argues that (1) trans people and their *liveability* are subjected to disproportionate violence perpetuated by European algorithmic assemblages, (2) that the concept of 'fairness' is inadequate to address the intimate facets of algorithmic violence embedded within these algorithmic assemblages, and (3) that the crucial aspect of liveability has been neglected by most scholarship – altogether placing trans lives at serious risk of aggravated violence and unliveability in Europe.

Keywords: algorithmic assemblages, trans liveability, algorithmic violence, border security, cisnormativity, data

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1. Introduction

In September 2013, I travelled from Copenhagen to Spain with my parents. Years prior, I came out as trans and was wearing a binder to compress my chest. I did not initially think of this as anything special in terms of travelling through the airport, but as I walked through security and the algorithmic body scanner, my body did not correspond to the encoded gender binary, and I was detected as a suspected deviance that required further inspection. My body was not algorithmically 'comprehensible' but instead constructed as a risky threat. Many instances and 12 years later, despite being post transition, I yet again encountered this problem in January 2025 when I flew from Berlin. Arising from this experience amongst those of other trans people [1, 2, 3], the question is—as we discuss the ethical dimensions of algorithmic technologies—which lives are algorithms encouraging and improving the liveability of, while violently trapping others in heightened securitisation, exclusion, and ultimately, unliveability?

We live an exponentially algorithmic existence. Nation states are hurrying to digitalise infrastructures, international borders are encoded by algorithmic checkpoints and big tech companies compete to develop new algorithmic technologies capable of perfectly capturing attributes of bodies as coded information based on the premise that to "be a global power means to be a leader in AI" [4], the desire to "improve border control and security" [5] and "strengthen our welfare society, create better and more efficient public solutions (…) and drive innovation and growth in the private sector" [6]. Europe constitutes a manifold and dynamic algorithmic assemblage between the national and international; state identity documents, biometric verification tools, algorithmic body scanners and risk assessments, emotion detection, and personal data flows, and hence, also implying an embodied crossing between distinct, but interrelated algorithmic assemblages. While the implementation of algorithms is intended to streamline identification and security measures, they automate surveillance, exclusion and violence towards certain bodies not fitting the binary idea of the cisgender human underpinning algorithms while benefitting those that do fit this norm – placing trans bodies under algorithmic surveillance, positioning them as targets for risk detection and as deviant triggers of insecurity

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that push them into becoming impossible lives [7, 8, 9]. Amidst this 'AI' hype and global political keenness to integrate algorithmic technologies, this paper critically argues that (1) trans people and their liveability are subjected to inordinate violence by algorithms, (2) the concept of 'fairness' is inadequate to address the intimate facets of algorithmic violence embedded within and exercised by these technologies, and (3) the crucial aspect of liveability has been sternly neglected by most scholarship – altogether placing trans lives in a coded peril at serious risk of aggravated violence and unliveability as the European algorithmic reliance heightens. In this paper, I bring to attention the algorithmic violence encompassing trans bodies in European algorithmic assemblages, and argue how trans bodies, not matching the notion of the binary cisgender 'human' as the default, are disproportionately implicated by cisnormative legacies of violence inscribed into and continued by algorithms. Along with the sociopolitical ambitions to implement them without attending to the implications for trans lives, this poses grave ramifications for if and how trans liveability can be secured. In this sense, I demonstrate how European algorithmic assemblages (re)produce trans unliveability to draw critical attention to this issue in the context of the increasing diffusion of algorithmic technologies in Europe beyond false neoliberal promises of fairness.

From this short paper, I aim to aid knowledge on the histories, complexities, violences and resistances embedded within algorithms and their classificatory interactions with trans lives in Europe. This constitutes a part of my PhD research that explores the (im)possibility of trans lives in algorithmic assemblage by tracing the co-production of algorithms as human categorisation and trans as a human category. This unveils how the coloniality of the gender binary and logics of classification emerged from colonialism, became a binary sorting mechanism in statistical analysis and nation state administrative systems, and later established the logic of contemporary algorithms and their encoded notion of the 'human' that valorise cis bodies and liveability at the expense trans bodies and impossibility.

2. Sketching Contours of Algorithmic Violence

When attending to how algorithms implicate trans liveability, I urge us to speak of *algorithmic violence* as the term for the disproportionate discrimination, erasure and exclusion experienced by trans people to holistically capture the algorithmic implications that affect trans liveability. Defined by Mimi Onuoha, it refers to "the violence that an algorithm or automated decision-making system inflicts by preventing people from meeting their basic needs" [10], and I add, implicates the fundamental *liveability* of people. Interdisciplinary scholarship has gone beyond the notion of 'fairness' to investigate the ways in which algorithms encode sociopolitical structures of violence, entrench classificatory hierarchies of humans, perpetuate colonial legacies of binary control [11, 12, 13, 14, 15, 16, 17, 18], and how algorithmic technologies are not novel tools for advancing justice, but rather, "reflect and reproduce existing inequities (…) promoted and perceived as more objective or progressive than the discriminatory systems of a previous era" [19], effectively concealing their own coded operations under the guise of objective technical progressiveness. Algorithmic technologies are cisgendered and racialised in their programming, detection and comprehension. An inarguably worrying discriminatory system from the past concerns how algorithmic technologies, such as facial recognition, intersect with colonial histories of racialised gender and reinforce the classification of binary gender as a tool of colonial power [20]. Body scanners aim at 'detecting deception' located at the body, which flags trans people for not fitting their binary template, rendering them as deceptive security threats [9]. These algorithmic encounters are not accidental or isolated, but systematic and violent. For trans lives, these encounters entail being rejected by facial recognition software, misgendered by automated gender recognition, detected as a deviance by the body scanner,

denied access to digital welfare services and put under hefty surveillance. Together, these experiences with algorithmic technologies show the violence that infringe on trans liveability within and between nation states, curating an algorithmically infused world one that operates on the binary assumption that trans lives are fundamentally unliveable.

3. Fairness Failure: Limitations of Fairness Towards Liveability

At first glance, fairness as a concept seems promising for both the development and auditing of better algorithmic technologies, but what is fairness, and how do we obtain fairness in a world that is fundamentally *not* fair? How does the focus on fairness fail to capture and eradicate algorithmic violence that produce trans unliveability? In relation to scholarship addressing algorithmic issues broadly and specifically for trans lives, centering fairness as a concept has crucial limitations as to how it can address and eradiate the consequences of algorithms to improve trans liveability and encounters with algorithmic technologies. Anna Hoffmann [21] presents four attributes of 'fairness' for algorithms. Firstly, fairness is fundamentally not fair. Rather, it presumes a normative world that can be fair. In a world systematically designed to be unfair, fairness addresses the marginalisation and disadvantages of minorities while leaving out critical analyses that aim at dismantling the systems of power that benefit and include some based on this exclusionary oppression of others. Secondly, fairness as a metric in algorithmic technologies relies on human attributes being neatly defined to operationalise them. In reality, most humans are not simplistic, static or well-defined. For trans people, existing as trans is inherently messy, dynamic, indefinite and non-confineable – something fairness as a fixed metric cannot adequately capture. Thirdly, fairness—often analysing along a singular axis of identity—lacks a multifaceted understanding of intersectional oppression. Most people are multidimensionally marginalised with intersecting identities that produce different kinds of oppression based on varying and different infrastructures of violence. Further, this notion of intersectionality should not appear as an additive approach for improving algorithmic technologies, but inform the core inquiries along multiple axes simultaneously. Fourthly, fairness conceptualises discrimination in relation to a narrow set of material goods; rights, opportunities, and resources that fail to consider how societal classifications, disciplinary institutions and sociopolitical norms enforce both access and oppression.

In summary, fairness does not question the overarching structures underlying the violence of algorithmic technologies that position trans people as disadvantaged in the first place [22]. I propose a fifth dimension to the fairness critique: *liveability*, that focuses on the locality of the implicated lives, which is essential for both unveiling the violence and promoting justice-oriented algorithmic technologies by addressing the structures of oppression. Liveability goes beyond simply being alive or existing, but is attuned to the holistic quality of life located at the trans body as situated in an algorithmic world, and in which ways algorithms complicate the degrees of (un)liveability under which trans lives are subjugated. Instead, liveability asserts an analytical lens on the quality of life and ability to live, that here concerns how trans liveability is affected and through which different systematic, sociopolitical and structural hierarchies of power encoded into algorithmic detection and decision-making. By attending to trans experiences of algorithms, liveability poses that fairness is far from enough for systematic change, but risks reproducing the violence it hopes to eradicate. Liveability scrutinises the degrees of liveability and the inflicted states of unliveability for trans people in their differentiated encounters with algorithmic technologies and wider sociopolitical structures of power.

4. Trans Lives in European Algorithmic Assemblages

European algorithmic assemblages refer to the conglomerate of interlinked algorithmic systems within and between European nation states: networks of big data collection and databases, data-driven decision-making, datafied administrative state infrastructures, facial recognition software, algorithmic security scanners, biometric identification and verification tools, and automated surveillance practices. Individually, they constitute distinct algorithmic practices on their own, but together, they also construct overarching and interconnected European algorithmic assemblages, which subject trans bodies, their movements and data lives to practices of algorithmic violence in different ways. Assemblage refers to processes of becoming that bring elements together as systems made up of the entanglement, connections, and interconnected relations of human and non-human objects and organisms that appear as one functioning whole [23], which represent a "sticky constellation of a multiplicity of forces producing an event, situation, or composite grouping or body. It is a process that functions in relation and connection with other assemblages" that does not treat "bodies as separate and unique phenomena but rather directly connected to all matter beyond it" [24]. Hence, when I mention algorithms, I do not refer to the mathematical input-output function of algorithms, but to the larger sociotechnical assemblages of algorithms, data, bodies, discourses, information, and infrastructures that together constitute European algorithmic assemblages and the embodied gendered architectures of algorithmic technologies.

Europe is upheld by complex assemblages of data, codes, bodies, information and politics that stand on cisnormative expectations of bodies and technopolitical scripts of governance. European nation states utilise a variety of algorithmic technologies to locate bodies that might pose a perceived deceptive, deviant or terrorist threat and to collect data about and manage populations for migration purposes. Within these algorithmic assemblages, bodies are not treated according to fairness metrics, but differentially valued, hierarchised and sustained as (un)liveable lives. The contemporary algorithmic drive is not deployed in the interest of searching for objects or illegal weapons, but instead from the intricate urge to 'uncover' potential acts of deception based on the assumption that algorithms detect the truth of bodies, automatically locate deviance from established infrastructures and imminently eradicate the visual dangers to (inter)national security. Contours of algorithmic violence are visible before the border when trans bodies meet nation states and their data practices for collecting information about gender. For example, in Denmark, the social security number (CPR-number) is assigned to you at birth and is a binary coded number consisting of your birthday followed by four digits, where the last digit is either odd if you are male or even if you are female. From its inception in 1968 and later integration into algorithmic technologies, it forces the position of being identifiable and enables the Danish state to trace trans people, their bodies and identities across state infrastructures. This data is embedded into and circulated within larger assemblages of education, healthcare, tax agencies, salary systems, bank accounts and is linked to the personal digital verification that grants access to all digital state welfare services. This number encodes gender binarity as the foundation of identity and issues passports with fixed M/F gender identification markers, which constitutes the nation state gaze of how trans bodies are computed in algorithmic technologies – as either binary male or female [25]. Coded facets of violence in the algorithmic assemblages at nation state level and between states become particularly visible as binary data interacts with algorithms that conceptualise life as binary: These structures are only built to host and predict binary lives and not programmed to accommodate lives or changes outside of this idea, hence not functioning through fairness metrics. When I changed my legal gender, all access to state welfare services was algorithmically suspended across the assemblages; suddenly, I had no bank account and all my health data was deleted, including data about my brain surgery at 9 months old and life-long disability because I, within the code, temporarily

did not exist. As I set up the digital verification, the facial recognition software used to authenticate my identity 'failed' on my face due to biometric discrepancies between my face and passport as the algorithm could not recognise my face as mine nor comprehend the facial changes post years of testosterone treatment. Rather, I was informed that 'the person trying to use the application was not me' and I became constructed as a potential deceptive threat to the security of the nation state detected and flagged by the algorithm. This exacerbates algorithmic violence towards trans liveability, while staying hidden under the assumption of technical objectivity [26] in producing 'truth' about bodies.

The algorithmic assemblages become messier, and the violence reaches beyond nation states as the scope shifts to Europe. When trans bodies cross state boundaries and encounter algorithmic body scanners at border security, they become interpolated as bodies of code within larger algorithmic assemblages of (in)security, population control, risk assessment, deviance detection, and international politics [27, 28, 29]. Despite often situated from a North American perspective, the rapid algorithmicising of European nation states and borders necessitates critical analyses of implementation of body scanners, their encoded colonial ideas of gender as fixed and how they render trans bodies as incomprehensible code. Trans bodies—not fitting this encoded binary template—are not only (re)produced as illegible, potential deviant threats to international security and subjected to heightened surveillance, but act as the infrastructure that secures the legible cisgender body as 'safe' and 'trustable' in European algorithmic assemblages. Not corresponding to a template "is equivalent to having no legal ontology, to being a non-being; you are equivalent to subjects who cannot be represented and whose presence can only be inferred by their very failure to be represented" [30]. Similarly, when trans bodies encounter facial recognition software as the newly promoted verification tool of 'efficiency' and 'security', the result is failure to represent trans existence as a possibility. The algorithmic logic only renders the recognition of faces along axes of binary gender, cements the colonial idea of gender and its classification as fixed and thus actively fails on trans faces [20, 31, 32]. This inability to comprehend faces beyond encoded notions of binary gender positions trans people in precarious conditions of being outed as a deviance algorithmically detected from not being readable or corresponding with other nodes in the assemblages such as administrative or biometric data and passport information. Effectively, this leads to trans people possibly being denied access to border crossings or state welfare services. Likewise, the coded visibility from appearing as 'deviance' subjects trans people to further surveillance and establish them precariously as targets for violence.

Alongside these algorithmic assemblages, biometric data is set to become compulsory with the launching of the European Entry/Exit System (EES) in October 2025. The EES promises to "accurately identify people" to reduce cases of "mistaken identity, discrimination or racial profiling" [33], but this promise is false as algorithmic identity mistakes are already present in the coded discrimination towards trans people. This is made further inescapable by the fact that the EES states that you will be denied entry if you refuse to provide biometric data [34]. Worryingly, the incorporation of EES into the European algorithmic assemblages happens at a time of heightened anti-trans sentiments and surveillance globally, where the crosschecking of data between algorithmic technologies and nation state databases breeds a toxic foundation for increased surveillance of trans people. Despite the EU AI Act defining AI technologies that enact "Biometric identification and categorisation of people" [35] as banned and associated with unacceptable risk, this is, for trans people, already happening through the technologies outlined in this article, but this reality is significantly neglected in legislation and policy. The question is, where does this leave trans liveability within European assemblages of algorithmic violence?

5. Conclusion

This article first highlights the ways in which trans people and their liveability are subjected to disproportionate modes of violence and surveillance asserted by European algorithmic assemblages that, through the implementation of facial recognition software, body scanners and biometric data between nation states, discriminate against trans people based on an encoded binary template of life that significantly contributes to an overarching trans unliveability. Second, it poses that 'fairness' is inadequate to comprehensively address the facets of violence embedded within these algorithmic assemblages by failing to attend to multidimensional intersections and sociopolitical structures of oppression surrounding algorithms, risking reproducing the violence it claims to eradicate. Instead, this article suggests that the concept of liveability offers a focus on the locality of the implicated lives themselves, which is essential for unveiling the violence and promoting justice-oriented algorithmic technologies by addressing wider structural and sociopolitical systems of oppression. Third, it argues that this insistence on 'fairness'—along with other technical assertions of 'bias', 'transparency' and 'ethics'—neglects the lived experiences, implications of algorithms and limits how algorithmic technologies can be reengineered towards justice for those they harm. Put differently, focusing on fairness in a world that is fundamentally unfair essentially attempts at fixing the symptoms of violence, but not changing the roots of the violence itself that infringe on trans liveability. For future research, I hope that these insights encourage interdisciplinary scholarship to move beyond mere technical analyses of fairness, but improve trans liveability through consideration and reconfiguration of the both the outcomes of algorithmic violence, accompanying sociopolitical legacies, different forms of structural oppression, and the incomprehensibility of trans lives embodied by algorithmic technologies. By critical considering these dimensions, future research at the intersection of gender and technology can examine wider structures of power at play with algorithms and more comprehensively establish frameworks for making algorithmic technologies liveable for trans people across Europe and beyond.

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