

“That Moment of Curiosity”: Augmented Reality Face Filters for Transgender Identity Exploration, Gender Affirmation, and Radical Possibility

Kat Brewster
kbrews@umich.edu
University of Michigan
Ann Arbor, Michigan, USA

Aloe DeGuia
deguiaa@umich.edu
University of Michigan
Ann Arbor, Michigan, USA

Samuel Mayworm
mayworms@umich.edu
University of Michigan
Ann Arbor, Michigan, USA

F. Ria Khan
farjanak@umich.edu
University of Michigan
Ann Arbor, Michigan, USA

Mel Monier
mmonier@umich.edu
University of Michigan
Ann Arbor, Michigan, USA

Denny L. Starks
starksdl@umich.edu
University of Michigan
Ann Arbor, Michigan, USA

Oliver L. Haimson
haimson@umich.edu
University of Michigan
Ann Arbor, Michigan, USA

Abstract

Transgender people often use face filters to try and see different possible futures: versions of what they might look like during or post transition, or how they might appear in an ideal future or alternate world. However, there are effectively no face filters made for trans people to feel good using. As a result, people often end up feeling bad or dysphoric instead of supported in their pursuit to envision the future. We asked 44 trans people about augmented reality and face filters, and to speculate on future technologies that would support their wellbeing and desires for transition. We found that trans-affirming face filters would be designed to support data privacy, agency, intersectionality, and consideration for expansive identity categories. Meeting these design goals would enable trans people to explore many different *radically possible* futures, facilitating expansive, transformative, self-perceptions that honor the multiplicity inherent in trans identity.

CCS Concepts

• Human-centered computing → Empirical studies in HCI.

Keywords

augmented reality, face filters, trans technology, community-based participatory research, LGBTQ+, transgender

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1 Introduction

Face filters are software that digitally alter the appearance of a user's facial characteristics – an increasingly prevalent example of augmented reality (AR) in everyday life. AR, the technology that makes face filters possible, overlays computer-generated graphics and information onto a screen display and affects one's perception of the physical world. AR devices range from headsets, goggles, and glasses to screens and mirrors, but are currently most common on smartphones. Today, face filters play an important role in self-presentation and sociality online, widely used (almost to the point of ubiquity) on popular photo and video sharing social media platforms like Instagram, Snapchat, and TikTok [4, 54]. In many instances, face filters are treated as a way to augment one's appearance, as in popular beauty filters, or a fun way to share humorous images with friends and family[52]. Beyond these uses, however, face filters have the potential to provide significant support to marginalized communities. For transgender people¹ in particular, face filters present opportunities to alter self-presentation to better align with their gender, to explore their gender in a self-contained environment, to help imagine what they might look like during or after gender affirming surgeries/medical transition (e.g., gender affirming hormone therapies (GAHT) or facial feminization surgery (FFS)), and to imagine many different possible futures for themselves.

On the whole, face filters have not been designed to specifically serve the needs of trans people, and, consequently, can suffer from many pitfalls [26, 62]. As a result, popular AR “gender swap” face

¹By “transgender people” (hereafter ‘trans’) we mean any person whose gender does not align with the gender assigned to them at birth, including nonbinary people.

filters often leave trans users feeling alienated, othered, and dysphoric. Prior works have explored extended reality (XR) technologies (which include AR) as a means to pursue equity and justice, or improve quality of life for marginalized people [9, 23, 40, 56, 86]. Likewise, trans people could benefit from using AR technologies to support them as they explore possible identities and self-presentations. Developing AR technologies for trans communities requires identifying new design approaches that honor the unique experiences of trans people and help to acknowledge their agency, affirm their presentation of self or gender, and foster *radical possibility*. We define radical possibility as the capacity for trans individuals to envision and realize alternative futures, grounded in affirmation, agency, autonomy, and safety. As face filters become more pervasive, it is important to ensure that they tend to the needs of marginalized groups and mitigate potential harms. When designing face filter technologies for trans people, it is even more important to move beyond mere inclusivity or representation in design, and develop from a trans-centered approach.

In this paper, we present and discuss our findings from seven participatory design workshops with members of the trans community² ($n=44$). We opted to focus on AR technologies, as participants in Haimson et al. identified AR as a potential means to support trans needs [38]. Among types of AR, we chose face filters as our focus for this paper because participants routinely cited them as the most common way that they interacted with AR, while also describing their limitations and opportunities for improvement. Although AR was the focus of our study, many participants were also eager to discuss artificial intelligence (AI) in conversation. Participants' interest in discussing AI was likely related to rising attention to generative AI and large language models in media, and AI's increasing presence in a wide range of technologies and apps. Even though AI had not come up in prior participatory design work with trans communities [41], we believe that the concerns participants shared about their understandings of AI reflect broader issues about both the potential for harm and AI's evolving role as a discursive and social construction, a "floating signifier...invested with social, political and economic capital and with performative effects"[93]. The "floating signifier" of AI, an umbrella term to describe a swath of technological systems and its popular imaginaries, has significant implications for both trans people and the technologies that get called "AI." Many people from marginalized groups have critiqued these technologies for their potential to perpetuate systemic biases [5, 17, 70]. Though participants did not seem to view AR as a type of AI exclusively, AR's underlying function relies on computer vision, or the means by which digital images are computationally processed and understood, which could also be considered AI. Despite their technical overlap, participants seemed to view AI (broadly defined) far more negatively than AR. As such, we have opted to include participants' considerations for both AR *and* their concerns about AI, to demonstrate that how AI is viewed and perceived can potentially lead marginalized groups to mistrust and refuse its component parts.

In sum, this work addresses the following research questions:

²When we say "trans community," we recognize that there are many trans communities, not just one, and that these communities' borders are messy and permeable. [72]

- **RQ1:** How might AR face filters contribute to trans people's sense of self and gender?
- **RQ2:** How could AR face filters be designed to support identity exploration for trans and gender nonconforming people?

We found that, on the whole, participants described an ambivalent relationship with face filters: both affirming *and* upsetting to use. As a negative, many found current face filters too restrictive, enforced binary conceptions of gender, imposed white and Western beauty standards, whitewashed³ users, and/or set unrealistic expectations for transition. These attitudes are in line with a small cluster of scholarship and popular press attention that discuss how trans people understand and use face filters [36, 74, 82]; yet we expand on prior work by detailing face filters as mediating technology for *radical possibility* in identity exploration. Despite current face filters' limitations, participants also expressed an understandable allure for more expansive face filters, as they offered the potential to see oneself otherwise, potentially mitigating feelings of dysphoria or opening them up to hope for the future. Participants described how, in this way, face filters could consistently affirm their multiplicity of identity and perceptions of self; their gender, their race, their body, and their reality. This affirmation provides a solid foundation for trans users to realistically envision many different futures, making radical change seem possible—almost commonplace.

In this work, we make the following contributions: 1) An empirical overview of trans people's attitudes toward AR face filters, which offers insights about the relationship between trans identity and technology more broadly; 2) The concept of *radical possibility*, which we define as a way for people to envision and realize alternative futures as real and attainable, despite how out-of-reach they may seem, while also supporting more ambitious, unfeasible, or playful exploration and identity work; and 3) Preliminary design implications for AR and other technologies that center radical possibility in the trans experience and promote emotional wellbeing. We discuss this complex relationship between trans users and AR face filters, and highlight how these technologies can support radical possibility.

2 Background and Related Work

2.1 Trans Technologies

Historically, whether intentionally or not, design work tends to create technological solutions for an 'average' or 'typical' user [20, 96]. Yet, this 'average' user does not really exist, and design in pursuit of this user can skew towards the needs of individuals who are cisgender, white, able-bodied, neurotypical and of high socioeconomic status (SES). This flawed approach excludes and marginalizes people whose needs, experiences, and values are not represented in such a list. Within recent years, however, researchers and designers have turned more attention toward how technology might better serve users who are not afforded similar privileges or are otherwise marginalized [20, 21, 70]. Here, we focus on the unique experiences of trans users and account for the ways that

³'Whitewashing' is the discriminatory practice of privileging white characteristics or features over those from people of color. In AR systems this can mean lightening a user's skin color, or altering facial characteristics to align with white, western, Euro-centric beauty standards. [68]

other intersecting identities (race, class, disability, etc.) can affect user experience when interfacing with technology.

In this work, we view AR and face filters through the lens of *trans technology*. We build from Haimson et al.’s definition that trans technologies “allow trans users the changeability, network separation, and identity realness, along with the queer aspects of multiplicity, fluidity, and ambiguity, needed for gender transition” [39]. Prior research in HCI and related disciplines has noted the complexities that trans people encounter when using technology [31, 53, 90]. Research on trans technologies refers to technologies that address, purposefully or not, the challenges, needs, and experiences that trans people face [38, 39, 42]. Crucial among a trans technology’s design characteristics is an attention to flexibility, multiplicity, and ambiguity [39]. In other words, a trans technology must support a user through a meaningful exploration of all aspects of their identity, and allow them to do so safely.

Trans technologies can take many forms. Prior examples range from driver’s licenses [6], names [87], and modes of healthcare access [31]. Practical applications include Ahmed et al.’s voice training app for trans people [7], Sun et al.’s sexual health app to prevent the spread of HIV amongst trans women [94], and Bier et al.’s app to help trans people find safe and accessible public restrooms [13]. Some researchers opt to focus on the theoretical implications of transness, identity, and how they relate to technology. Pow [73] reconfigures computational glitches, as seen in the experimental video work of trans artist Jamie Faye Fenton, as a trans media history object that, like trans life, resists documentation. Haimson et al. [40] use Sara Ahmed’s [8] concept of *queer use* in tandem with Paul Dourish’s [27] philosophy of embodied interaction in computation to discuss how trans computer artists explore identity, authenticity, and embodiment as fluid, intermingling digital and physical worlds.

While mainstream technologies are not typically designed for trans people, we argue that AR face filters can serve as a trans technology because they provide an opportunity to explore identity multiplicity, fluidity, and realness in personally meaningful ways. Further, because AR face filters are self-contained, private, and relatively low-stakes, they can facilitate identity exploration without significant risks of real-world harm.

2.2 Augmented Reality (AR), Artificial Intelligence (AI), face filters, and gender

AR face filters have become increasingly pervasive on photo and video-sharing social apps. Snapchat introduced AR face filters (then called ‘lenses’) in 2015, and the app’s popularity with young people quickly led to more widespread use [50, 63]. The design firm Quepelin, behind Meta’s augmented reality filter Spark AR, reports that 600 million people use AR filters on Facebook and Instagram in 2024 [4]. Today, face filters on apps like Snapchat, Instagram, and TikTok can do anything from adjust someone’s facial features to make the user appear more “beautiful” (according to Eurocentric beauty standards), to giving the appearance of different ages, and, purportedly, to “swap genders”. The popularity of AR face filters for general users, as Javornik et al. note, can be attributed to multiple reasons: creative content curation, affiliation, silliness, enjoyment, social interaction, and ideal self-presentation [54]. Extant research on AR face filters explores topics ranging from self esteem and wellbeing,

misinformation, considering plastic surgery in the pursuit of aesthetic change, and the mechanics of self-perception [32, 51, 52, 71]. While trans people use and enjoy many of these same filters to similar ends, there is limited research on the relationship between gender and AR face filters.

Goetz [36, 37] has contributed important scholarship to contextualize the relationship between face filters and the trans experience. They describe how AR face filters interrelate with gender and trans identity, focusing on how people both perceive gender and how people might use AR face filters to pursue “self-recognition,” avoiding dysphoria. While not explicitly centering trans folks, Kytö and McGookin [60] explored how face filters can encourage users to reflect on their identities, and to digitally augment themselves to align with parts of their identities that felt the most important to them. Although Kytö and McGookin do not focus on the needs of trans people explicitly, the realm of identity formation and alignment is very relevant for this work. Although their work primarily focused on consumer settings, Javornik et al. [55] too, have contributed important scholarship on face filters, identity, and the use of face filters to affect self-perception. Here, we develop on this prior research to focus on how trans people are particularly attuned to the uses of AR face filters for identity exploration and how they envision what might be possible in gender transition.

As noted in the Introduction, on a technical level, AR and AI cannot be easily disambiguated; yet, participants fostered negative attitudes toward AI but far more positive attitudes toward AR. Though we did not intend to focus on AI, its prevalence in discussions with participants warrant an exploration of AI. Our workshops took place during a period of significant market and popular interest in AI [30, 80, 91]. As Sarah Roberts writes, however, the exact definition of AI is “slippery and difficult to pin down,” encompassing something comparable to human intelligence, automation, algorithms, prediction, and generation all at once [79]. Lucy Suchman asserts that, in these indistinct definitions, AI “escape[s] definition in order to maximize its suggestive power... a strategic vagueness that serves the interests of its promoters” [93]. In the meantime, these knowledge gaps have developed a broader “sociotechnical imaginary” of AI [83]. This sociotechnical imaginary casts AI as a particularly powerful force, especially for trans people [58, 59]. Algorithmic, automated, and AI harms are both cautioned against and well-documented, especially in Noble’s description of algorithmic technologies that reinforce “oppressive social relationships” [70]. Buolamwini and Gebru’s [17] analysis of race and gender classification technologies that misclassified Black women at a rate that far surpassed misclassification of white men, and Acemoglu’s warnings that unregulated AI may even serve to “[justify] discriminatory choices” [5]. Hamidi et al. [43] and Keyes [57] extend consideration for algorithmic harms in automatic gender recognition (AGR), which routinely misgenders trans people. These concerns about algorithmic harms feed into broader, social concerns about AI, as Gillespie [35] recently described in an analysis of how generative AI technologies can reinforce normative social paradigms, further marginalizing those at risk of extant algorithmic and emerging AI-driven harms. Here, we expand on this work to look at how trans people’s understanding of what AI is influences their readiness or hesitation to use its component technologies.

2.3 Critical fabulations, speculative design, and radical possibility

Critical fabulations and speculative design are interconnected concepts that seek to push the boundaries of traditional design to challenge dominant paradigms and imagine how things might be different—no matter how impossible it may seem [29, 48, 81]. Within HCI, these approaches have become established modes for participatory design studies that seek to foreground the experiences of people in marginalized communities, such as people of color, disabled people, and LGBTQ+ people, through speculative futuring [25, 34, 46, 47, 89]. Through these methodologies, individuals imagine alternative pasts, presents, and futures. Dunne and Raby propose that, in this creative speculation, alternative futures are made possible [29]. Gerber [34] writes that through provocation, “we can generate the radically different systemic possibilities that challenge what we think is possible.” Such approaches are especially resonant with digital technologies, where the difference between the real, the possible, and the actual become indistinct [65]. Rather than providing immediate solutions (or even suggesting that there is a singular solution), these approaches draw from historical narratives of marginalization and center the lived experiences of marginalized groups to provoke insights, imagine otherwise, and agitate for alternative futures through design.

We especially draw from the work of critical design theorist Daniela K. Rosner and literary and cultural historian Saidiya Hartman to question dominant narratives in design and ask who has historically been left out of its narrative. Rosner describes such an approach to design as a *critical fabulation*: “ways of storytelling that rework how things that we design come into being and what they do in the world,” considering ways to “deconstruct design methods to open different understandings of the past that reconfigure the present, creating new opportunities for a just future” [81]. Rosner draws from Hartman, who uses the same term, critical fabulation, to mean “rearranging the basic elements... to imagine what might have happened or might have been said or might have been done” in the past to work towards more just futures [48]. We contend that a critical fabulation takes into account the trans qualities of imagining the world otherwise, existing in ambiguity, and honoring fluid identity. This approach also draws from the painful histories of trans life when intertwined with science and technology to instead foreground how technology can play a vital role in trans wellbeing [66].

Both critical fabulations and speculative design have overlaps in feminist utopianism, which troubles an over-reliance on technosolutionism in design and HCI. As Bardzell [10] summarizes, historically, “both design and utopia [have failed] to deliver results that meet real human needs.” Feminist utopianism, however, critiques traditional utopian lines of thinking to agitate for radical improvements and a new orientation to the tools by which those improvements are brought about. Lindtner et al. [64] identify *critiques of the present* and *anticipatory design* as a pair of such tools to “imagine and explore alternative futures worth pursuing.” Utopian thinking is especially relevant for work with queer communities and that draws on queer scholarship, which has been animated by distinctly (and critically) utopian thought. Muñoz offers that queerness “allows us to see and feel beyond the quagmire of the

present,” that “we must dream and enact new and better pleasures, other ways of being in the world,” while also cautioning that “abstract utopias are akin to banal optimism” [67]. In this way, Muñoz is careful to emphasize the importance of “the fringe of cultural production...tastes, ideologies, and aesthetics that can only seem odd, strange, or indeed queer” when held against the normative or the desirable. For some trans scholars, the tension of Muñoz’s queer utopianism (always a not-yet) underscores the inherent characteristics of transness, reconciling the not-yet with the here and now [69]. Here, we hold radical possibility in line with critiques of technosolutionism – instead of one answer, there might be multiple. We also extend Muñoz’s line of thought that uniquely queer (and in this case, uniquely trans) imagining otherwise must honor negative affects, distasteful aesthetics, and other fringe cultural productions.

While speculative design methodologies are a vital means to imagine future technologies and provide guidelines for practitioners, it is also important to apply these methodologies into everyday practice. In our work, we use critical fabulations and speculative design twofold: first, because it provides a research methodology that foregrounds marginalized experiences through time. Second, our work expands on prior speculative design and critical fabulations design scholarship by demonstrating that these methodologies and modes of thought can be used by trans people to improve their wellbeing, acting as agents in one of their own many possible futures alongside AR. We show how radical possibility, envisioned through the unique qualities of a digital technology like AR, can serve as a mediating tool to make radical change more approachable.

3 Methods

3.1 Study Design and Workshop Format

In our study, we sought to center the voices of trans people to understand their relationship to AR technologies writ large. Our focus on AR stemmed from prior work with trans communities, which determined that AR is a common medium for participants to envision potential trans technologies [41]. We asked participants where they most commonly encountered AR in their day-to-day lives and whether their experiences of AR were positive, negative, or neutral. We asked participants to explore their relationship with these technologies through a speculative design process that involved group discussion and creating zines.

We conducted seven design workshops in 2023 with a total of 44 participants. Four workshops were in-person (two in a large city on the US west coast, one in a large city in the US midwest, and one in a college town in the US midwest) and three were held online using Zoom. We began each in-person workshop with snacks, and at all workshops we held a round of introductions, gave an overview of what AR technologies are, a brief history of zines, and an introduction to speculative design/futuring. We then held a 30–45 minute discussion, asking participants to answer the following questions:

- (1) What personal experience do you have with augmented reality? Was the experience positive, negative, or neutral in relation to your trans identity?
- (2) What do you believe is crucial to validating, uplifting, supporting, or helping meet the needs and desires of trans people

and communities? What are those needs or desires specifically?

After discussion, we asked participants to spend 45-60 minutes sketching or otherwise creatively expressing their ideas for a speculative future AR technology using analog or digital tools. We provided supplies such as construction paper, stickers, decorative tape, newspapers, markers and colored pencils for in-person workshops. Online participants were either mailed supplies in advance, or encouraged to use their preferred creative software of choice (including Canva, Procreate, PicMonkey, Google Docs, and Electric Zine Maker). Participants were encouraged to focus on identity, health, or another topic of their choice (“open futuring / miscellaneous”) in their zines. Participants were encouraged to think outside the box, and were reminded that “the only rule in zine-making is that there are no rules.” With our remaining time, usually 15-25 minutes, participants shared their zines with the group. We opted to use zinemaking as a participatory and visual ethnographic method for its history as an expressive tool within queer and marginalized communities to communicate resistance to normative structures in a playful and participatory way [28, 76, 77]. Further, zinemaking highlights the particular strengths of queer speculative design and ethnographic visual analysis, producing vibrant and rich data [18, 49]. In this way, the zinemaking process implicitly fostered discussion about speculative futures, queer resistance, and community solidarity. In this paper we center participants’ discussion about AR and AI that framed the zinemaking process rather than the zines themselves, which we plan to discuss in full in future work.

We regularly reflected on our research process. Following each workshop, the study team took 15-20 minutes to debrief and discuss the session. The team met weekly to discuss how the workshops were going and areas to improve. We each wrote field notes for each workshop we had attended, recalling our observations and thoughts. These notes enabled us to document our mindsets going into, during, and following each workshop. We accounted for and wrote about our moods, positionality, and anything that seemed particularly notable that might not otherwise be apparent in our audio and visual data. In our field notes, we also documented challenging moments, points to improve upon, and our perspectives on any notable interactions.

3.2 Participants and recruitment

We recruited participants by disseminating study information and a screening survey link on social media, in trans-focused online communities, among local trans and LGBTQ+ focused organizations, and on a popular trans podcast. To be eligible for the study participants needed to identify as transgender, nonbinary, and/or gender nonconforming, speak English, and be at least 18 years of age. We carefully vetted screening survey responses to ensure participants met the eligibility requirements and were not fraudulent participants by examining each respondents’ IP address, location, answers to open-ended free-text responses, and links they provided to their social media accounts. In an attempt to decenter the perspectives of white trans individuals and capture the breadth of perspectives of the trans community, we prioritized individuals who identified themselves as Black, Indigenous, or a person of color in final participant selection. We compensated each participant between \$75-\$100

Table 1: Participant Demographics

	# of participants (percentage) (total $n = 44$)
Gender	
Trans Man and/or Trans masculine	17 (38.6%)
Trans Woman and/or Trans feminine	8 (8.0%)
Nonbinary	20 (45.5%)
Agender	4 (9.1%)
Genderqueer	2 (4.5%)
Genderfluid	2 (4.5%)
Expansive gender identities (incl. demigirl, unlabelled, gender nonconforming, bigender, mixed, butch)	6 (13.6%)
Transgender (self-identified only as “transgender”)	1 (2.3%)
Race/Ethnicity	
White	22 (50.0%)
Black or African American	5 (11.4%)
Hispanic or Latino	7 (15.9%)
Asian	10 (22.7%)
American Indian or Alaska Native	2 (4.6%)
Multiracial (self identified as “Multiracial,” “Biracial,” or “Mixed”)	5 (11.4%)
Additional self-reported races/ethnicities (self identified as Ashkenazi, Italian, Moroccan, Indo-Caribbean, and French Canadian.)	6 (13.6%)
ages: Mean = 28.75 ($SD = 10.02$, range: 18-63)	
Many participants described their gender and race with multiple identifiers, so percentages add up to greater than 100%.	

depending on how much travel reimbursement they needed to attend workshops. Participants could choose to receive payment in the form of a check or electronic gift cards.

Our study included 44 total participants across the seven workshops. Participants lived in 22 cities/towns across seven US states and one Canadian province. See Table 1 for a further breakdown of demographics.

3.3 Data Analysis

Study data consisted of 14 hours of audio, workshop transcripts, researcher field notes, and 42 zines. Two participants from virtual workshops did not submit their zines, and did not respond to follow-up emails soliciting their submission. In late 2023, two authors separately inductively open-coded [15, 19] two workshop transcripts to establish recurring codes and initial patterns in the data. In late 2023 and early 2024, four authors used Miro (an online visual workspace) to group codes together into broad categories, discussing and reflecting on what the code groups might have in common. The first author then translated those code-groups into a codebook, moved that code data into our qualitative coding software (Atlas.ti Cloud), and then reviewed the transcripts again to further refine codes. In early 2024 all authors then coded the remaining transcripts and further refined the codes and themes. Finally, all authors collaboratively coded photos of all zines (each accompanied by that participant’s demographic info and a transcription of their own descriptions of their work) on a collaborative visual workspace (Miro). Visual ethnographic data from zines were kept separate from

the initial coding to focus our analysis on participants' attitudes about existing AR technologies and how they viewed their speculative design ideas. In the interest of scope, this paper presents the discussion that framed the zinemaking process rather than the zines themselves. We aim to discuss the visual content of the zines in future work.

Our approach to data analysis drew from reflexive thematic analysis, and was inductive, meaning that we derived codes and themes from the content of the data [15]. We prioritized understanding participants' experiences, and tried not to impose preconceived notions on the content or limit the analysis to literal descriptions [16]. The thematic analysis drew from an interpretivist (constructionist) perspective [84], where we conceptualized themes based on participant descriptions and elements from our collaborative analysis. This approach emphasizes capturing the layered meanings and possible interpretations of what participants said.

We knew that our future work would move toward designing prototypes from the speculative AR technologies that participants described and depicted in their zines, which informed some of the themes that we later identified in our data. Some themes stemmed from a more deductive approach, including what participants identified as the positive and negative aspects of AR and face filters, challenges that trans people face (whether directly related to technology or not), participants' ideas for new AR technologies, and participants' desired technological and interface features.

In this paper, we organised themes from our analysis into two categories: *identity* (exploration, expansion, and affirmation) and *data* (privacy concerns, data agency, and AI hesitancy).

3.4 Positionality

The majority of scholars in our study team identify as trans, encompassing a spectrum of genders. Five research team members are people of color and two are white. At least two and as many as four members of the research team attended each workshop and sat amongst participants. During workshop discussions, some researchers shared experiences regarding their own identities—including race, ethnicity, transness, sexuality, dis/ability, and class—to help encourage open conversation and a safe atmosphere for disclosure. We viewed this as important, as it helped to establish trust with participants and lent insight into our varied, subjective positions as researchers. In this way, we also worked to establish trust and rapport with participants. Speaking with participants in this way was part of our understanding that as researchers, we co-construct data with participants and are situated in this data production process with them rather than observing our participants in a neutral and objective setting [44]. We believe this is vital when working with a marginalized group (that many of us are members of) and enriches our reflexive process.

4 Results

Throughout the workshops, it quickly became clear that the predominant AR technologies that participants had familiarity with were face filters, which participants primarily used for identity exploration and affirmation. Despite a number of promising encounters with face filters, participants also reported consistent mistrust or unease when using them. In whole, we view participants concerns

as falling into one of two overarching categories: those relating to *identity* (addressing identity exploration, intersectionality, and identity affirmation) and those relating to *data* (addressing data agency, privacy, and AI hesitancy). Here, we break down how and why participants used face filters, their misgivings about them, and how they envisioned more affirming technologies in a speculative design process. These more affirming technologies would not only allow them to explore their gender and presentation, but keep their data private and allow for more intersectional and expansive⁴ presentations. Put together, our results indicate that when a technology can account for these data and identity concerns, trans individuals will feel that they can safely explore and envision radically possible futures through AR.

4.1 Identity

4.1.1 Identity exploration. All of our participants described using face filters at some point to explore their gender presentation and personal feelings about how their appearance influenced their sense of gender in a personal, private, and low-stakes environment. There were varying motivations for using face filters, from temporarily alleviating feelings of dysphoria to exploring different possibilities of presentation and gender expression.

Some participants described feeling positive emotions and affirmation while using face filters, oftentimes in pursuit of gender euphoria⁵. Filters that added facial hair were common touch points for trans masculine and nonbinary participants. P10 experienced “a whoa moment” while using a filter that gave him a beard on Snapchat before he started GAHT. While he was uncertain about whether he liked the end result, he described the experience as “neutral and positive in relation to [his] gender identity.” P19 described beard filters and those that made their “jaw more square... did really good things for [their] brain.”

One participant expressed that they found solace in using face filters to specifically counteract feelings of dysphoria, saying:

I mainly used [face filters] as a way to assuage dysphoria about my gender. I would try to just kind of exist in the phone for a lot of my adolescence, and existing in the phone included being able to use stuff like Snapchat and being able to look at myself in a different way.

These positive experiences demonstrate that participants used face filters to navigate feelings related to dysphoria and gender presentation. Not every participant had affirming experiences with face filters, however. P36 recounted her discomfort and hesitancy regarding face filters, saying:

I also downloaded FaceApp at one point...and I used it on a couple images, and then thought, “Oh, I look remarkably like my sister.” And then I was like, “Okay, never again. I’m not going to keep using [that].” And I didn’t end up looking... anything like what it imagined. But it was that moment of curiosity, what is one possible future? But I had to delete that off my phone. Dangerous.

⁴By “expansive” or “gender expansive” we mean a “wider, more flexible range of genders and expression than typically associated with the binary gender system” [2]. Such expansive notions of gender can encompass a wide range of characteristics that might not be typically associated with gender or, indeed, human physiology at all.

⁵By gender euphoria, we mean “a joyful feeling of rightness” in one’s gender [14].

While P36 expressed her interest in a face filter showing one possibility of what she might look like, she ultimately deleted the app, alluding to its harmful potential for her mental wellbeing. This quote is particularly interesting for a number of reasons. First, P36 is describing her relationship with FaceApp, an AI photo manipulation app, rather than an AR face filter. This conflation is common, but nevertheless demonstrates a consistent concern for and confusion about the role of various AI systems in gender affirming technologies (as we will later discuss). Second, P36 noted that what the app showed her did not really resemble her appearance during her transition, and her implicit disappointment at this disconnect between what the technology promised and what ultimately came to be. She contrasts this, however, by pinpointing a “moment of curiosity,” for “one possible future,” noting her awareness that what the app showed her was just one possibility for one potential future, opening up to radical possibility. Finally, P36 uses the word “dangerous” to describe her overall feelings about the app, which could be related to a number of concerns: her unease with AI-powered technologies, the potential dysphoria from seeing a future she felt she could not have, and the disconnect between the technology and her reality.

Put together, participants’ experiences demonstrate that trans people use face filters to navigate dysphoria, explore gender presentation, and experience gender affirmation in self-contained, time-bounded, private contexts. However, participants’ experiences also demonstrate how non-affirming face filter experiences can unexpectedly expose them and other trans users to discomfort and negative mental health impacts, potentially alienating them from face filter technologies overall. It is important to note where and why participants found these technologies dangerous or risky, and to locate (as P36 did) how some risk can lead to generative moments of curiosity that enable people to imagine different possible futures. Highlighting these moments of *productive risk*, and reducing their potential for harm, is critical for radical possibility.

4.1.2 Desire for intersectional identity affirmation. Participants wanted gender affirming face filters to acknowledge or affirm multiple, intersecting characteristics of their identity. This was especially true for identity characteristics that they described as inextricable from their sense of gender or trans identity, including (but not limited to) race, sexuality, body size, and neurodivergence. This intersectional approach extended to participants’ critiques of current face filters available on Snapchat, Instagram, TikTok, and elsewhere for not sufficiently attending to, and meaningfully affirming, different integral components of their identity. As a result, participants expressed frustration that face filters often imposed restrictions on their appearance, applying unwanted changes such as facial features stereotypically associated with an “opposite gender” or adjustments that they felt upheld Eurocentric beauty standards. These included making features slimmer or smaller, or lightening their skin, when participants preferred these features remained unchanged. Participants described feeling especially frustrated and disheartened when they felt that these changes denied their race or ethnicity when trying to alter their gendered appearance.

Participants of color and Black participants were especially critical of face filters that changed their skin color or adjusted their features in ways they could not control. Participants felt disappointed

or discouraged when aspects of their identities were assumed, amplified, exaggerated, or minimized without their permission. P31 noted:

Something I don’t like about filters is how they always made your face slimmer and your eyes bigger and your nose smaller, which look super weird on me because I already have big eyes and a big nose. . . . I have a square face, so when they try to make it thinner, it looks very unnatural. . . . That makes me uncomfortable. . . . There’s so many filters that whitewash people. . . . it’s kind of messed up.

P23 similarly remarked:

Something I’ve noticed, as a Black person, is that some of these filters, when trying to make people supposedly more attractive . . . they create smaller features or lighter skin. . . . So I feel like that’s certainly offensive and problematic.

These quotes demonstrate that participants viewed their race, ethnicity, and gender as intertwined with many different and complex perceptions of self, including facial characteristics and overall appearance. Here, participants noted that in their attempts to explore different gender expressions, their racial identities were either wholly disregarded or demonstrably altered to be lighter, whiter, slimmer, or smaller under the guise of making users “more attractive”. In some instances, these changes came as a result of face filter apps acting as “beauty enhancements,” which often apply White, western, and/or Eurocentric beauty standards that inadvertently whitewash users and uphold racist inequities in technology. Whitewashing was a chief concern for participants of color, and significantly affected their attitudes about a technology’s utility and trustworthiness.

Although all participants identified as trans, they also emphasized the need for face filters and gender affirming technologies to acknowledge the diverse, intersectional identities that exist within the trans community. P16 stated, “even though there is a trans umbrella, every person with[in] that umbrella will have different needs that need to be understood.” P23 echoed this sentiment, saying that it was “impossible” to separate their transness from their Blackness and their “feminineness.”⁶ Beyond race, facial characteristics, and body size, P30 described that their neurodivergence was intertwined with their gender, saying, “being anti-gender⁷ and being autistic is inextricably connected” to their experience of gender. Overall, participants called for more intersectional trans representation in technology development and design, urging for more trans and BIPOC creators/developers, as well as more inclusive face filter options throughout.

Some participants identified the relationship between race and transness as a form of resistance against white, colonial, cisnormative hegemony in the United States. P17 described being trans as “not adhering to White supremacist, colonialist ideas of gender and

⁶Here, it is striking that P23 strays from using the word *femininity* to describe themselves, and instead opts to use their term *feminineness*. Beyond lexical drift, the usage of the suffix *-ness* “tends to denote an embodied attribute or trait” where *-ity* denotes a “concrete entity” [78]. With this language choice, P23 reaffirms that both their Blackness and sense of gender are embodied and inextricably linked.

⁷Anti-gender is the sense that one’s gender is mutually influenced by one’s autism (and vice versa) such that neither can be understood without the other. [1, 61]

sexuality.” Others described their gender as a space for exploration, the freedom to exist outside of the gender binary or often limiting societal expectations, as well as the ability to continuously refashion oneself. Thus, we understand that face filters have the potential to provide this space for creative exploration and to “play” with gender presentation and physical appearance. These attitudes towards non-conformity and resistance were evident in the ways that they discussed using AR for more expansive identity expression, as we discuss in the following section.

4.1.3 Expanding limited concepts of gender. Participants discussed how they wanted AR face filters for trans people that decentered binary gender and, instead, honored the ambiguity and fluidity of transition outside of binary gender options. Here, we use the term “expansive” to account for a “wider, more flexible range of genders and expression[s] than typically associated with the binary gender system” [2]. An expansive approach to gender and expression can incorporate many different characteristics – including those that might not be considered traditionally gendered or even human. For some participants, this meant the option to see themselves with cat ears or angel wings as playful adornment. For others, such as P22, this meant going beyond “female or male,” to become “some mystical other thing.” The limitation of current face filters adhering to binary systems of gender underscored many participants’ desires for more expansive ways to explore identity.

Many AR face filters use algorithmically-powered facial maps, or “meshes”, to determine the gender of the user, relying on the placement of individual nodes to map and apply a filter. These assumptions that face filter technologies make are another form of misgendering that trans users must navigate. Yet, participants imagined possibilities for face-filter technologies that did not rely binary systems of gender, or on gender at all. This speculation about what face filter technology could accomplish aligns with the ideas of trans technology as a reimagining of what technology might be capable of.

Participants were broadly frustrated with face filters that automatically assigned a gender to particular facial characteristics. To illustrate this, P40 considered whether or not video game character creation could serve as a model, using a “spectrum” to explore different layers of androgyny, femininity, and masculinity:

How do I overlay my face as feminine or masculine or something like that? Maybe there’s some sort of... a spectrum that we can say, how do we androgynize, or how do we feminize, how do we masculinize? And I’m thinking of that in terms of, not a full-fledged Elder Scrolls character creator where it’s like, these are my eyebrows, this is my chin, but maybe we have some clustering of features and you have various sliders or something like that.

For P40, trans identity exploration with a face filter depended on being able to manipulate particular features of one’s face, but not assigning those manipulations to particular genders. P40 compares using filters to character creation in the fantasy role-playing video game (RPG) *The Elder Scrolls* which offers hundreds of combinations for character customization. The character creation interface uses sliders, enabling players to customize their character’s voice, facial features and markings, height, body type, skin color, and

even the size and shape of specific body parts. That is, a chin can be shaped in whatever way aligns with one’s vision of themselves and their gender, rather than assuming that, for instance, a broad chin automatically denotes masculinity.

Other participants expressed their desire to explore identity presentations that extended beyond the limitations of reality. For example, P23 spoke about going beyond the concept of gendered presentation as a whole, asking,

What if we imagined AR technology where you could make yourself look any way without having to adhere to masculinity or femininity? Just what could it look like to really entertain the possibility of shaping the future to be different from now?

Imagining speculative face filter technologies that transcended limitations of gender binaries and physical constraints came up repeatedly among participants. In some instances, these speculations were rooted in a desire to explore gender and appearance as visual and emotional metaphors. P39, for example, expressed that they wanted, “the face altering app that gives me fangs and teeth and other monstrous modifications, or as much customization as I can get to, and gruesome, creepy blood and horns.” Affirming these “creepy” or “monstrous” options are vital for upholding commitments to an individual’s autonomy, even (and especially) if the end result might not appear mainstream, desirable, or appealing for a normative audience. Whether or not they wanted to actually alter their physical appearance to match, they at least wanted the opportunity to explore the possibility. P22 echoed a similar desire to imagine themselves and appear otherwise, remarking that they wanted to see themselves in ways that didn’t “relate to the way [they look] or present in real life,” instead desiring:

...freedom to be able to choose things that are potentially not even possible in the real world and... be a part of this almost mystical nature of being able to choose... the way we change our bodies... Just being able to be whatever you want. If you feel like an amorphous blob, you can just be an amorphous blob.

Beyond altering one’s presentation to appear more monstrous or fantastical, as P23 imagined, P22 expressed their desire to exist as something entirely outside of concepts of gender and traditional human form, like “an amorphous blob.” Much like P22 sought to explore different aspects of their identity through the metaphor of monstrosity, P23 describes their desire to locate aspects of their identity in the amorphous, the ambiguous, and free from embodiment. The ability to explore such visual metaphors is one of the advantages of AR, which allows for an intermingling of the appearance of the physical world through digital manipulation.

Throughout, participants cited a desire for face filters and gender affirming technologies to grant them options that went beyond traditional concepts of gender and gender binaries. This included limiting “assumptions” of gender from algorithmically powered and AI-driven technologies, as well as options to explore fantastical visual metaphors for identity and gender.

4.2 Data

4.2.1 Privacy concerns and transparency. We found that data privacy was a top concern for our participants, especially as it related

to their trans identity and their interest in AR technologies. During discussion, many described a desire to know more about the face filter apps that they used, who made them, how they worked, and, to a greater degree, how they handled user data. P19 remarked, for instance, that they had become "more paranoid about data tracking," and had stopped using gender affirming face filters altogether as a result. P6 and P5 respectively outlined their ideal circumstances for data management as a "world where information is safe, big brother's not stealing your data, it's not being stored to a cloud," and "a system where this [technology] wasn't controlled by one private corporation who has an interest in selling our data."

Participants were especially attuned to how exploitative data handling policies could be unsafe and harmful for trans people specifically. Participants regularly referenced the hostile political climate in the United States as a catalyst for their concerns about data privacy[3, 75], directly linking data privacy to their safety. Some participants were concerned that gender affirming technologies, such as an AR face filter, might inadvertently out them to friends or family on social media, potentially putting them at risk for transphobic violence or social harm. As a result, data privacy was almost inextricably linked to participants' sense of trans safety.

Participants' concerns about data privacy extended to the platforms, companies, and websites that might host gender affirming technologies. As a result, many participants voiced that their concerns about data privacy would extend to services that might initially be designed to help them. P21 remarked that they were concerned that trans users might be unfairly targeted by a platform because of the unique demands of their identity, saying:

I recall Facebook having policies around being required to have your 'real name,' which could mean that trans people who went by a different name than their legal name were more likely to have their accounts reported or frozen, or required to change their name/provide identity verification documents on Facebook. I heard that Instagram was also more likely to ban or deprioritize in the algorithm content, especially from people who are black, dark skinned, fat, disabled, queer, trans, et cetera.

Concerns about unclear or exploitative data practices made it difficult for participants to feel like they could fully trust any app to protect their identity or biometric data, and illustrate the broader risks that trans people face when engaging with technologies that are not designed with their unique needs in mind.

Many participants expressed a desire to know whether or not trans people were involved with the development of a face filter app or other gender affirming technology, connecting this to their sense of safety and data privacy. Participants described how this knowledge would help them to determine how comfortable they might feel using an app or other system to explore their gender. P31 noted that having trans people involved in the development process could potentially counteract inherent "biases" in design, saying, "If trans people don't make [technologies for trans people], they're not going to be useful usually." Similarly, P14 remarked that they wanted apps that were not only "safe and secure" but were also "community based and driven by trans people." In this way, data privacy concerns were often interlinked with a desire to

know more about who made an app and whether or not they were community oriented.

Overall, participants identified their desire for apps to be more transparent about how their data would be used within and outside of the app, and that they could exercise more control over how their own data might be used. Many participants directly linked data privacy to their safety as a trans person, especially aware of how being trans put them at particular intersections of risk and harm should their data be leaked or misused. As a result, participants reported that they were more likely to trust and use a community-oriented technology that made clear that trans people were directly involved in its development and less likely to trust or use a technology that did not.

4.2.2 AI hesitancy. While our study's intent was to focus on attitudes towards AR, many participants discussed their concerns about AI as a related issue. Because we did not anticipate an AI focus, we did not include the several sociotechnical definitions of AI, or how they might differ from AR, as a formal part of the workshop structure. However, workshops were conducted during a period of heightened popular press about AI, especially large language models (LLMs) like ChatGPT and generative AI image services like Midjourney. Many participants referred to AI as a broad, but unspecific, technology powered by "databases", "training models", and "algorithms". These broad associations, and lack of specificity, contributed to participants' wide ranging mistrust of AI as an umbrella of vague technologies that were "biased" or "tracking" them. While we have so far addressed some points of overlap between this social construction of AI, the unique challenges marginalized communities face due to automated technologies, and AR, here we directly address participants' mistrust of and hesitation to use AI technologies and its consequences for AR face filters.

Participants were concerned about the role of AI, broadly defined, in their technology use. P15 summarized these concerns by saying, "AI is pretty controversial, and I personally have seen stuff about [how] people are taking your data, your face data, or the ethics of the environmental and ethical, intellectual property concerns of AI." P15's concerns about AI point to a broad range of topics, such as uncertain data and biometric data autonomy, unclear repurposing of user data, environmental effects, and model training/intellectual property concerns. The vast majority of participants described at least some discomfort with similar concepts, specifically naming "data tracking", "data harvesting" and "training datasets", directly connecting these issues with AI technologies.

Another participant referred to their concerns with AI technologies *both* by saying, "It all has to do with how they train the databases. And I think there are a lot of studies that have shown that they are not training them in any non-biased things." This participant's quote reveals a number of their concerns: 1) a lack of clarity around how AI works or is "train[ed]", and 2) that AI technologies will perpetuate systemic bias. She related these concerns about AI to her trans identity specifically, asking, "Like, what is this technology being trained for? And what information are they getting from it? And will that be used against me if the political climate changes?"

In keeping with broader concerns about data privacy, many participants were worried that their data would be leaked, shared, or

sold to “train” different AI tools or services without their consent. P7 described feeling “nervous” about using face filters apps for this reason, asking what AI technologies were “being trained for, and what information [is] getting used from it, and will that be used against me if the political climate changes?” P22 similarly worried that “scary...entities,” might observe them exploring “different perceived genders” and that it might reflect on them poorly “from a corporate perspective.”

Not all participants’ attitudes toward AI were wholly negative. Some reflected on how trans people have relied on AI-powered technologies to produce gender affirming images, such as P27, who noted, “AI can create, I guess, those AR images... or the other way around, I forget... that literally elicit the most gender euphoria from my peers.” P27’s confusion between generative AI and AR reveals how these technologies can become conflated, while also suggesting that if the results were sufficiently affirming, they might not be concerned by the potential risks or harms. Other participants, like P43, remarked that they viewed AI as a seemingly objective “other” to help them determine whether or not they might pass as another gender:

I’ve been transitioning for what I would say is quite a while at this point, and once the AI would start to pick up on like, “Oh, this is a female person,” or “I can’t really tell,” that was so gender affirming for me.

In this case, P43 relied on a computational technology’s supposed neutrality and objectivity to determine whether or not others will correctly identify their gender.

While AI was a contentious subject for many participants overall, some were more hopeful about the possibility of using AI technologies, broadly defined, if they were assured that their data was secure, would not be connected to social apps, or worked without a connection to the internet. For the majority of our participants, trans safety was impossible without the assurance of data security. Ultimately, however, concerns about data autonomy, unclear repurposing of user data, environmental effects, model training and intellectual property concerns of AI, as they understood it, determined many participants’ technology-use, even if it was designed to serve their needs.

5 Discussion and design implications

In this paper, we provided an overview of trans people’s attitudes toward AR face filters, drawn from seven speculative design workshops we conducted with 44 members of the trans community. We addressed RQ1 (“How might AR face filters contribute to trans people’s sense of self and gender?”) by analyzing participants’ discussion and creative expression, describing the relationship between their trans identities, AR technologies, and technology more broadly. We found that: 1) participants were excited about the potential for using AR face filters to support their transition and identity exploration as a mediating technology to explore radical possible futures and identities; 2) that such face filters must support intersectionality, be affirming, and demonstrably value users’ self-determination; and 3) participants view control over their data as a paramount concern, extending to their mistrust of opaque technologies. These takeaways led us to define *radical possibility*, or the capacity for trans individuals to envision many different alternative futures,

grounded in affirmation, agency, autonomy, and safety. Drawing from participants’ insights, we identified important and interrelated ways to address RQ2 (“How could AR face filters be designed to support identity exploration for trans and gender nonconforming people?”), recommending that gender affirming AR face filters must be designed to support more expansive conceptions of gender rather than enforce a gender binary, acknowledge and affirm an individual’s intersecting identities, and clearly state how their data is or is not being used in an application’s function. In the following sections, we discuss these results, their relationship to radical possibility, their implications for designing technologies that support radical possibility, and how this work expands on prior literature.

5.1 Face filters can support *radical possibility* for trans people

Our findings demonstrate that trans people can use face filters to alleviate dysphoria, explore gender presentations, and experience gender affirmation in self-contained, time-bounded, private contexts. When implemented effectively, AR face filters can, thus, serve as a mediating technology for radical possibility. However, participants’ experiences also demonstrate that face filters can unintentionally negatively affect their mental health, alienating them from the potentially positive effects of face filters, AR, and other similar technologies overall. We further argue that the potential for radical possibility is foreclosed when its mediating technologies deny a trans individual’s intersecting identities, their agency, their autonomy, and their safety – including the safety of their data. This work is both informed by and departs from prior work that explores how design and AR technologies can advance equity and justice for marginalized groups [9, 23, 40, 56, 86]. Where Silva et al. explored site-specific opportunities for activists to “leverage AR for social justice” in real world contexts, our work carries this line of thought forward to show how trans individuals might reimagine their own self presentation, facilitating identity exploration. For trans individuals in particular, whose identity is often in flux, a means to explore many different possible identities can be vital to their wellbeing [33, 56], and demonstrated how AR face filters can present opportunities for identity exploration.

In order to do so, however, face filter technologies must provide meaningful, actionable tools that allow trans people to explore expansive, varying possibilities for self-presentation, rather than presenting just one linear, binary possibility. Face filters that only present a single linear output (e.g., the “opposite sex”) can present trans users with an unsatisfying result or, taken even further, can diminish their capacity to envision radical change. Consider P36, who was alienated when FaceApp presented her with a single, unchangeable output that she found unsettling (even “dangerous”), leading her to delete the app entirely. Limiting self-presentation options to normative, or even simply human, characteristics can also feel alienating in the way that P39 and P22 desired “monstrous modifications” and impossible, “mystical” bodies. As it follows, we hold radical possibility in line with Muñoz’s call for cultural productions that honor “tastes, ideologies, and aesthetics that...seem odd, strange, or indeed queer” [67]. In this way, we suggest that face filters designed for radical possibility should allow individuals to explore and iterate with many different options, allowing them

to, determine for themselves which ones feel right. At the same time, participants wanted assurance that important and intersecting characteristics of their identity would go unchanged without their consent. In some instances, participants viewed characteristics such as body size, neurodivergence, and race or ethnicity, as inextricable from their trans identity. This reflects past work demonstrating that people of color (especially non-men) are often further marginalized when technologies whitewash them or cannot recognize their skin tone [17, 68], and extends literature on the intersections of transness, gender, and other embodied characteristics [1, 11, 88].

We extend Hartman’s [48] and Rosner’s [81] work on critical fabulations to radical possibility’s mediating technologies, as an expansive and affirming means by which users can envision many different (but each potentially resonant) possible futures for one’s gender and self-presentation. Radical possibility draws from and builds on both speculative design approaches that center futuring as a means to explore what might be possible and the history of “possibility” as a queer mode of engagement with the world, helping to mediate what might be considered “dangerous” or risky as something that is instead generative, fulfilling, and daring [29, 67, 85]. Such considerations include those that are attainable in the physical world, but must also include risky, fantastical, and hypothetical possibilities that might be infeasible but nonetheless important for identity exploration.

We argue that AR is an exemplary technology to explore radical possibility, because it enables digital manipulation of one’s perception of the physical world. This extends foundational concepts of digital realism, such as Lévy’s description that the “digital” hinges on partial or “virtual” being, and that the difference between the virtual, the possible, and the real offers a rich site for innovation. Lévy contends that the “possible is exactly like the real, the only thing missing being existence” [65]. In this way, radical possibility offers a way for trans people to consider what might not yet exist, but what could. In this same way, however, technologies that mediate radical possibility are vulnerable to critiques of speculative design methodologies, especially for marginalized groups, where the difference between “the possible” and “the real” might not just be existence, but financial feasibility to pursue what can be radically envisioned, but not realized [95]. We suggest viewing the technologies that mediate radical possibility not as an immediate solution, but as a platform for agitation.

Participants expressed the desire to use AR face filters to explore their identity through visual metaphor, allowing them to link literal and figurative concepts, using multilayered and symbolic associations to express potentially complex experiences [24]. People want to explore nonhuman presentation of self – not because they want to look nonhuman in the future, necessarily, but because these explorations can serve as important visual and emotional metaphors (e.g., amorphous blobs, angels, monsters, catgirls), for both trans experiences and those related to other aspects of their identities. It is common for queer and trans people to explore nonhuman metaphors to navigate how identity, embodiment, and community interrelate [45, 92]. Susan Stryker famously describes a kinship between her trans identity and Frankenstein’s monster, both “often perceived as less than fully human,” [92]. In this way, reclaiming what might be seen as monstrous or nonhuman by others can serve as a critical part of trans identity formation.

5.2 Radical possibility requires data agency and transparency

Our findings indicate that trans people place significant importance on autonomy and transparency, particularly regarding the handling and use of their data. These concerns included how user data is integrated into a technology’s functionality, how clearly that use is communicated to them, and what happened to their data after they ceased use. Participants’ concerns about data were especially evident in discussion around, and mistrust of, AI. Even when participants could not name their specific concerns about AI, its evolving role as a discursive and rhetorical object [93] often superseded its technical uses, leading to wholesale mistrust of its component technical systems. In order to facilitate radical possibility, its mediating technologies must be grounded in agency and safety. For many of our participants, data security was effectively equivalent to their safety as a trans person. As such, we argue that it is of paramount importance to consider how gender affirming face filters handle data as a component part of gender affirmation.

Participants voiced frustration and distrust towards technologies that did not clearly disclose what happens to their data, yearning for agency over their data as a means to protect their privacy and to prevent themselves from inadvertently contributing to training sets for models that might perpetuate algorithmic harms. These concerns address critical issues about marginalization in technology, where marginalized users mistrust “corporate” or “private” platforms that might exploit their data and continue to perpetuate systemic algorithmic inequities. Research has shown that trans people are very attuned to the potential harms of surveillance [12, 22, 58]. In Beauchamp’s [12] accounts of U.S. surveillance politics, he summarizes that those who transgress “clear gender norms” are often subject to “heightened scrutiny from both security personnel and the general public.” As a result, he suggests that trans and gender nonconforming people are “inextricable” from surveillance technologies, while they also desire to be free from such practices.

Participants found it difficult to determine boundaries between AR’s technical functionality and the potential for AI’s involvement, as they understood it, which led to mistrust. This underscores the need for specificity and transparency about how a technology designed for trans people works. This is especially important given that almost all participants cited their mistrust as a direct result of a hostile political climate, their concerns about transphobic violence, and their familiarity with automated discriminatory systems [3, 5, 70, 75]. For example, facial recognition technologies and airport security scanners have been known to misgender trans people, leading to invasive scrutiny, embarrassment, and physical danger [20, 22, 43, 57]. We determined that trans people would not wholly trust a technology that might rely on or contribute to large-scale AI projects, especially generative AI, such as an LLM or image generating service. Participants were especially mistrustful when it was not made clear to them how these systems might use their data – a level of transparency that may not be possible, given the blackbox nature of many AI systems. The cumulative effect of these concerns underscores a profound hesitation among the trans community to engage with AI technologies, emphasizing the need for more transparent design practices that prioritize user consent and safety.

In our work, we demonstrated that a history of surveillance and harm have contributed to a pervasive mistrust of *any* technology that a trans person might use, no matter how gender affirming or useful it might be. Further, we built on prior work by demonstrating how trans individuals are especially concerned about harmful data privacy practices that could be leveraged against them or the broader trans community. This is particularly salient, given today's hostile anti-trans political climate, and where data misuse can have serious consequences.

5.3 Implications for design

Designing AR face filters for the trans community requires an approach that prioritizes autonomy, transparency, and intersectionality. In doing so, face filters can facilitate radical possibility by allowing individuals to explore a wide range of possible futures, presentations, and identities. This can be achieved by offering **customizable and flexible options** for aspects of one's appearance that tend to many different intersecting identities (including race, ethnicity, body size, and facial differences) and gender expressions, even those that might transcend traditional understandings of gender. Providing tools that enable users to iterate and experiment with their appearance without imposing a single, binary outcome can help support trans individuals when pursuing future self-presentation.

Secondly, designers must prioritize **data agency and transparency** to build trust and ensure the safety of the trans community. Prioritizing agency and transparency includes clear communication about data collection practices and ensuring that users understand whether, and how, their data will be used, and have control over those choices. Technologies that prioritize trust and transparency will use explicit consent mechanisms, inform users about how their data is being used and stored, and what the life-cycle for data storage will be.

Finally, addressing AI hesitancy in technology will require new approaches to transparency and consent. Beyond the already listed mechanisms to tend to user data, it is vital that technology designers **make the boundaries between AI and AR clear, and avoid using AI** without enthusiastic, informed, and unambiguous consent from users. Providing detailed information about how a technology functions will help to mitigate fears of surveillance and data misuse.

We argue that these design implications do not solely apply to AR face filters; they can be more broadly applied to any technology that aims to address the needs of the trans community.

6 Limitations and future work

Our study's participant demographics represent a disproportionate number of white and Asian individuals, making up the majority of our sample and underscoring the need for greater diversity in future work. We saw a particularly low representation of people who identified as transfeminine, especially Black transfeminine people. This limits the generalizability of our findings across the broader trans community.

Further, our research was confined to participants located in North America, with either a stable internet connection or the means to travel to a sizable metropolitan area. This may not capture the diverse experiences and perspectives of trans individuals

globally, or those with limited time and resources to participate in a two-hour workshop. Future research should aim to prioritize Black transfeminine people and other groups underrepresented in this work. This broader inclusion is essential for developing comprehensive technologies that serve a diverse community.

Moving forward, we plan to expand on this work by prototyping AR technologies specifically designed for trans people, in collaboration with two other universities (anonymized for review). This practical application will allow us to iterate and refine our concept with members of the community, and explore the tension between what radical possibility might promise and what is realistically feasible. We encourage other researchers to apply these design principles when designing or building other technologies for similar communities.

7 Conclusion

In this work, we outlined trans individuals' attitudes toward AR face filters and broader insights about the relationship between trans identity and technology. Participants described their ambivalent relationship with "gender swap" face filters, both drawn to and harmed by them. We categorized these attitudes as they related to either *identity* (addressing identity exploration, intersectionality, and identity affirmation) and *data* (addressing data agency, privacy, and AI hesitancy). We highlighted the importance of identity affirmation and meaningful exploration, while also cautioning against data practices that might exacerbate an extant relationship of harm, surveillance, and trans experience. In discussion with participants, we found that trans-affirming face filters would need to support data privacy, agency, intersectionality, and consideration for expansive identity categories. Meeting these design goals would enable trans people to explore many different radically possible futures, facilitating expansive, transformative, self-perceptions that honor the multiplicity inherent in trans identity.

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