Safe Spaces and Safe Places: Unpacking Technology-Mediated Experiences of Safety and Harm with Transgender People

MORGAN KLAUS SCHEUERMAN, University of Maryland, Baltimore County (UMBC), USA
STACY M. BRANHAM, University of Maryland, Baltimore County (UMBC), USA
FOAD HAMIDI, University of Maryland, Baltimore County (UMBC), USA

Transgender individuals in the United States face significant threats to interpersonal safety; however, there has as yet been relatively little research in the HCI and CSCW communities to document transgender individuals' experiences of technology-mediated safety and harm. In this study, we interviewed 12 transgender and non-binary individuals to understand how they find, create, and navigate safe spaces using technology. Managing safety was a universal concern for our transgender participants, and they experienced complex manifestations of harm through technology. We found that harmful experiences for trans users could arise as targeted or incidental affronts, as sourced from outsiders or insiders, and as directed against individuals or entire communities. Notably, some violations implicated technology design, while others tapped broader social dynamics. Reading our findings through the notions of "space" and "place," we unpack challenges and opportunities for building safer futures with transfolk, other vulnerable users, and their allies.

CCS Concepts: • **Social and professional topics → Gender**

KEYWORDS

Safe space; place; harm; gender identity; transgender; LGBTQ; intersectionality.

ACM Reference format:

Morgan Klaus Scheuerman, Stacy M Branham, and Foad Hamidi. 2018. Safe Spaces and Safe Places: Unpacking Technology-Mediated Experiences of Safety and Harm with Transgender People. PACMHCI Volume 2, CSCW Issue. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 2, CSCW, Article 155 (November 2018). ACM, New York, NY. 28 pages. https://doi.org/10.1145/3274424

1 INTRODUCTION

There are an estimated 1.4 million adults in the United States who identify as transgender [29]. *Transgender* (or *trans*) refers to a person whose gender identity is different from the one they were assigned at birth.[1] This differs from *cisgender* (or *cis*), which refers to a person whose gender identity aligns with the one they were assigned at birth (e.g., a person who identifies as a woman and was born with a vagina). There has been growing public attention to the

[1] In this article, we also refer to non-binary people as trans [63].

marginalized experiences of transgender people through dialogues around popular entertainment (e.g., trans actress Laverne Cox), government policy (e.g., North Carolina's "bathroom bill" [44]), and extreme violence (e.g., the mass murder at the Pulse nightclub [66,73]), with some arguing that trans people are at the forefront of the modern civil rights movement [52].

The transgender population has historically experienced, and is still experiencing, high volumes of harassment and violence [50]. In 2015, the largest survey of transgender people in the United States––with over 27,000 respondents––found that 46% had experienced verbal harassment, 47% had been sexually assaulted, and 54% had experienced intimate partner violence [41]. Similarly, a 2014 study of over 200 trans women found that 53% had suffered psychological abuse [58]. Trans people occupy a particularly vulnerable position; the National Coalition of Anti-Violence Programs (NCAVP) reported that half of LGBTQ (Lesbian, Gay, Bisexual, Transgender, Queer) people killed in hate crimes in the United States in 2009 were transgender women [81]. Threats to safety are further amplified for transgender people of color and homeless transgender people [41,81], a demonstration of what black feminist scholar Kimberlé Crenshaw labeled *intersectionality*: the compounding effect of interlocking identities and structures of power. [22].

In response to pervasive violence, LGBTQ individuals and women have been constructing *safe spaces* for decades [43]. Safe spaces afford a degree of escape from physical, verbal, and emotional harm, although true safety for these populations remains an ideal rather than a reality [43]. Safe spaces are also sites for exchanging ideas and organizing collective activism [43]. The term safe space may evoke a physical room or location, which is sometimes the case: neighborhood blocks, community centers, health clinics, etc. [43]. But, safe spaces can also be decentralized, like the LGBTQ community in the sprawling Los Angeles region and groups that connect through online communities[43]. Despite the centrality of safe spaces in the ongoing civil rights movement in the West, there has yet to be an exploration within the Human-Computer Interaction field on (1) how safe spaces manifest in the current digital landscape and (2) how technology designers might conceptualize safe spaces that better serve populations with multiple overlapping marginalizations.

To address the two research questions above, we chose to speak directly with some of the most vulnerable and often overlooked members of the LGBTQ community: transgender people, transgender people of color, and transgender women of color. We conducted 12 semi-structured interviews to learn how transgender people experience safety in a digitally connected world. We found, unsurprisingly, that safety was a universal concern for our participants. The novel findings arise from the specific types of harm that participants encountered online, from how these reflected their interlocking identities, and from how abusive users leverage technologies to perpetrate that harm.

To unpack the ways safe spaces and experiences of harm are situated within HCI, we employ a space and place framing as developed by Dourish in [25]. Specifically, we examine the concept of power in space and the way experiences of power embedded in space influence experiences of harm for transgender individuals. We explore our findings through the lens of the social construction of both place and space towards demonstrating the role designers can play as amplifiers of the historical experiences of trans people.

2 RELATED WORK

2.1 Safety and Harm in HCI

Safety, harm, and abuse in online communities are highly situated, subjective concepts that differ depending on context. Online platforms that attempt to maintain safe communities set standards that vary greatly from one another, even in the way safety and abuse are defined. Pater et al. pointed out that some technology platforms categorize the terms "abuse," "bullying," "harassment," and "hate" under the same umbrella within policy documents [59]. In the context of this study, "safety" refers to freedom from emotional, physical, and social harm that may be caused by—but is not always caused by—*abusive* behavior. This is grounded in definitions currently used in research of safety of youth (e.g. [64,68,78]) and women (e.g. [40,61,75]) in online communities. Similarly, this definition is also founded in queer *safe space* literature, which aims to provide LGBTQ communities with spaces free of homophobia, transphobia, queerphobia, and other identity-based discrimination and violence in which to speak and organize freely [43].

There is ongoing investigation into the role of safety, harassment, and fear [13,14,64,68] both online and offline within HCI and CSCW for many user populations. Much of the current work is grounded in the ways abusive online behaviors (like harassment, trolling, bullying, and cruelty [72]) bring harm to users, such as causing emotional distress (e.g., negative feelings or mental health triggers [48]) or jeopardizing physical safety (e.g., death or rape threats [18,75]). HCI researchers have explored the gendered forms of abusive behavior online, particularly as it is aimed at women. For example, some users appropriate systems to harm others for nefarious purposes, as demonstrated by an online event on Reddit referred to as "The Fappening," where users illegally hacked the iCloud accounts of celebrity women and spread their nude images online [53]. Researchers have also pointed out the ways this type of online abuse leads to offline harm. Poland discusses case studies of the abuse of women online and its bearings on women's offline lives [61]. We extend this gendered lens of abuse to focus on transgender individuals and the nuanced ways this population experiences harm relevant to their gender identities.

To address concerns about safety and harmful behaviors, technical solutions have centered around community awareness [46], providing peer support for harassment [9], diminishing local crime concerns [49], and empowering victims of targeted and highly gendered violence, like sex trafficking [74]. Others have looked to researching solutions for mitigating harmful behavior online, through methods such as participatory design sessions [3] and automatic detection.

Due to the ubiquity of online abuse and its associated concerns about safety, many researchers have looked to understand the motivations behind abusive behavior. For example, Guberman et al. have developed a scale of online aggression for use to analyze online content such Twitter posts [31]; Cheng et al. conducted a study to identify triggers, such as a user's mood and the context of a discussion, that contribute to trolling behavior online [19]; Bruckman et al. presented a panel on managing "deviant" behavior on social platforms [15]; and Blackwell et al. ran a workshop aimed at developing a diverse understanding of abusive behavior online [10]. These efforts have contributed to a more nuanced understanding of what can be characterized as "abusive" user behavior and why users engage in it. Yet the complexity of safety and abuse has made mitigating harm difficult. Blackwell et al. have pointed out that attempts to categorize complex experiences of harm in technological solutions can be invalidating to victims and reify structural power dynamics and have recommended centering on vulnerable users through democratic, user-driven processes [9]. Blackwell et al. identified the

lack of input from transgender-identifying participants a limitation of existing studies, including their study, of harm and abuse online. Our study seeks to contribute to this literature by including perspectives of transgender individuals and building on the intersections between experiences of harm and the complexity of identity for transgender technology users.

2.2 Trans-Positive Safe Spaces and Intersectionality

Safe spaces can be traced back to the women's liberation movement in the 1960's United States [43]. While safe spaces emerged as a conceptual space of resistance to violence and freedom to organize, the term has become commonly used to denote safety from any emotional harm or *othering* (being treated as abnormal or alien). The definition of safe space is fluid and contextual; the inferred "safety" of the space varies dependent upon an individual's identity, or multiple identities, historical context, and geographical location (e.g. city community centers) [43].

Online communities can also serve as safe spaces for transgender individuals. Research has also uncovered the benefits of online communities in that they provide support and inspiration specific to this user groups' needs [32,33]. Technology and the proliferation of the Internet has opened new opportunities for transgender individuals and communities to create and join safe spaces [51]. The activities users engage in relevant to their identities transform digital spaces into meaningful places to organize and connect with others [38]. Platforms, forums, and other web-based apps have been adopted by trans users, even if they were not intentionally designed to support their gender identities [34]. Despite their benefits, safe spaces are not necessarily safe from outsiders; they can be coopted by outsiders, sometimes even through violent means [23]. Lack of safety can impact transgender individuals with various identity markers in different ways, demonstrating a need for an *intersectional* approach to researching safety online.

In addition to HCI's recent attention to uplifting voices of marginalized and vulnerable populations, there have been recent calls to start attending to intersections of identity. Schlesinger et al. provided a framework for approaching intersectionality in HCI research, which they point out has not been present in much literature in the field thus far [67]. A concept crafted by black feminist scholars, intersectionality pertains to the relationship interlocking identities have to overlapping systems of oppression [21]. Research in feminist, queer, and transgender studies has discussed at length the role of intersectionality in transgender experiences (e.g. [12,47,76]) and examinations of discrimination and violence (e.g. [41,71,73,79]). This has included conversations about the way institutions of oppression disproportionately impact transgender women, particularly transgender women of color (e.g. [41,73,77]).

Transgender individuals have unique experiences and perspectives as compared to cisgender and other LGB individuals. The lack of transgender individuals' perspectives in safety literature within HCI and CSCW has been acknowledged as a limitation (e.g. [9]). We set out to understand digital safe spaces for trans people and their experiences with online abuse. In this paper, we explore trans identity in relation to other interlocking identities (such as race, class, location, or age) which also contribute to experiences of safety.

2.3 Place-ing and Space-ing Safe Spaces

The cultural and historical production of meaning tied to both physical and virtual safe spaces can be situated within Dourish's conceptualization on spatiality [25]. These spaces, or *infrastructures*, represent more than the physical construction of a space or artifact. Dourish and Bell describe infrastructure as the "concrete manifestations of relationships, historical events,

and institutional memories" [26]. Social context is embedded within the construction of physical and digital space, weighting space with significant power over the way interactions take place within and around it. In describing the construction of spatiality, Dourish references *power geometry*, the way power is embedded within the architecture of a space [25]. The concept of power geometry as described by Dourish was adopted from Doreen Massey, who describes space as being constructed through relationships, context, and power, positioning space not as a fixed form but as a process tied to historical, interconnected, and social powers [54]. This type of power is demonstrated by the way categories like gender are embedded into the organizational structures of a space [27].

Safe spaces can be defined by this perspective of infrastructure, as they are embedded with cultural and social meaning. In *Mapping Gay L.A.,* Kenney describes the relationship between the political and the physical construction of space, describing safe space as being embedded with the context of the women's movement which developed it [43].The social, political, and cultural contexts of safe spaces are being constantly negotiated. Safe spaces are experienced differently by each individual, dependent on the complex nuances of an individual's identity and experiences, which too are shaped by the composite of power geometry enmeshed in all spaces.

Analyzing space from the perspective of power, specifically intersectional manifestations of power, affords a lens for viewing the way platform infrastructures provided transgender participants with space for establishing safe spaces, as well as experiencing harm. We employ this framing to discuss the findings of this study, as well as to delve into the design of safer digital spaces for transgender individuals.

2.4 (Trans)gender Representation in HCI

Research on transgender identity in HCI is an important and relevant topic as transgender rights continue to gain traction in public discourse and in the realm of academia. There is an abundance of trans identity research in other fields, such as communication and media studies (e.g. [16,20,24]) and feminist studies (e.g. [5,6,42]), but there has been less growth in HCI. Within both CSCW and CHI, for example, the first publications to substantially document transgender experiences were published just recently in 2015 [32,33]. A 2016 literature review of all prior CHI proceedings, specifically, found there were only three papers specifically about or involving transgender individuals [67]. Other papers in the ACM digital library have mentioned transgender identity (often compressed into the acronym LGBT/Q) or have recruited some transgender participants, but they do not center the transgender experience (e.g. [11]). As lesbian, gay, and bisexual describe *sexual orientation*, which determines an individual's sexual attraction, it is distinct from transgender, which describes *gender identity*, an individual's internal sense of gender [56]. Further, feminist theorists, most notably Judith Butler, have argued for notions of sex and gender that go beyond the solely physiological, and acknowledge their socially constructed aspects that are sustained through socially constructed actions that "sustain discrete and binary categories of man and woman" [16]. Our study focuses solely on understanding aspects of the transgender experience, to give due attention to a category that is complex in and of itself.

Many current discussions of gender in CSCW (outside of safety and harm) investigate the relationships between men and women, including the role and language of women in male-dominated online spaces (e.g. [39,60]), explorations of gendered roles in domestic technologies [65], and designing technological solutions to improve the representation bias of women in digital media [55]. For example, Seeman et al. describe how hypermasculinity affects the

disclosure practices of male military veterans, resulting in difficulty opening up about transitional struggles when integrating back into civilian life [69]. These works contribute to a better understanding of the way gender is embedded into technologies, operationalized in society, and experienced by technology users. However, they also limit their scope of examining gendered experiences to a traditionally cisgender and binary gender categories.

Current research in HCI on the transgender population has explored technological solutions for well-known transgender rights issues, such as bathroom access [4] or medical transitioning [30]. There has also been exploration on the ways database constraints inhibit the representation of complex gender identities, opening the door to more nuanced conversations about gender categorization [37]. There has been a call to address the ways technologies that embed gender categorizations might do harm to transgender individuals [36]. Much of the literature also discusses transgender individuals' experiences using online communities, like Facebook [33] and Pinterest [32]. For example, Haimson et al. found that transgender social media users experience stress in dealing with identity disclosure [33] and managing digital identity when transitioning genders [34]. Similarly, Bivens et al. explored how social networks embed gender in platform design for targeted user data collection and marketing, potentially further shaping culture to inscribe binary conceptions of gender [8]. In addition, Ahmed recently contributed design insights on "trans competent interaction design" grounded in findings from a qualitative study exploring transgender individuals' relationships with voice and technology [2].

Recent work by Cho in New Media & Society has more directly addressed instances of harm caused to queer users of social media, specifically due to the affordances of platforms like Facebook [20]. However, safety online for the transgender, or LGBTQ populations in general, has yet to be extensively studied within HCI or CSCW. We build on this work by explicitly analyzing the experiences of physical and emotional safety for transgender users of online communities, especially in the light of trans individuals' largely different and specific experiences regarding safety [41,71] in comparison to other populations.

3 METHODS

3.1 Interview Participants

We first deployed an online recruitment survey aimed at transgender and non-binary individuals. We used this survey to collect demographic data on potential participants. We designed the study following an intracategorical approach [67] in which we included transgender participants across multiple identities. We sought a diverse range of gender identities, as well as ages, races, and locations. The survey asked participants to define age, gender identity, racial identity, and city and state, as well as an email address we could reach them at to schedule interviews. Table 1 summarizes information about the participants. Recruitment materials were distributed on Facebook and in trans Facebook groups. Fliers with the survey link were also posted in trans-positive brick-and-mortar locations in [anonymized] city. The authors also enlisted personal contacts active in the local LGBTQ community to distribute materials. We then sorted through 40 responses to the initial recruitment survey recorded over the course of 2 weeks, reading through each participants' self-identified demographics. We selected 12 interview participants with the intent to balance the demographic data collected, focusing primarily on ensuring diversity of gender identity and racial identity. Each participant was compensated with a $20 Amazon gift card.

Participants					
	G	***P***	***R***	***L***	***A***
P1	Non-Binary Trans Masculine	He/Him	Black	Suburban	21
P2	Non-Binary Trans Woman	She/Her & They/Them	White	Suburban	19
P3	Non-Binary Male	He/Him or They/Them	Black	Suburban	19
P4	Trans Feminine	She/Her & They/Them	Black / Mix	Urban	19
P5	Genderqueer	They/Them	Black Jamaican	Suburban	22
P6	(Trans) Woman	She/Her	White	Suburban	62
P7	Trans Male	He/Him	White	Rural	20
P8	Non-Binary	They/Them	White/Latine	Urban	28
P9	Trans / Gender Non-Conforming	They/Them or She/Her	White	Urban	33
P10	Trans Woman	She/Her	Turkish / Pakistani	Urban	28
P11	(Trans) Female	She/Her	White	Suburban	66
P12	Bigender	Ey/Em[2] or They/Them	White / Japanese	Urban	23

Table. 1. A table summarizing the demographics of participants. All demographics were self-reported by participants. The six demographical categories are: G (gender), R (race), P (pronouns), L (location), and A (age). All participants also had a college education or were currently in college. We use participants' self-identified gender pronouns throughout this paper.

3.2 Interview Design

We designed an interview protocol aimed at exploring the experiences transgender individuals have regarding safety in both the physical world and online. We chose to do qualitative interviews rather than surveys in order to gather detailed and contextual information from our participants. While previous work related to transgender participants in HCI has utilized surveys [1,33,34], our choice to do qualitative interviews was modeled after in-depth analyses of transgender populations and intersectionality within the trans population in the social sciences [70,71]. Interviews offer richer insight into the complexities of identity and safety among our participants and also elevate our participants' voices in defining their own experiences [28].

[2] we refer to P12 with the pronouns ey/em/eir throughout this paper.

Interview questions were designed to elicit perspectives about safety and practices of community-building both online and offline. In contrast, we also asked questions that probed experiences of harm both online and offline, as well as how online experiences of harm affected offline life. Participants were not asked whether or not they were perpetrators of harm themselves. At the beginning of the interview, we asked participants to describe facets of their identities, including and beyond gender. Although we did not ask specifically about if/how these identities participate in shaping experiences of safety and harm, most all participants referred back to interlocking identities in their narratives. The protocol also aimed at discovering what types of technologies participants had these experiences using.

We conducted two pilot interviews; the second pilot later became a participant. We used data collected during the pilot interviews to iterate on the interview protocol before conducting phone interviews. We recruited 12 participants the for in-depth phone interviews. The average length of an interview was approximately 85 minutes. The first author was the primary interviewer in all interview sessions. All phone interviews were recorded using an app with participant consent. Some participants referenced specific incidents or websites, which the first author located in the form of original forum posts and news reports and stored digital copies of for analysis. Phone interviews were chosen for numerous reasons. Firstly, the participants selected for interviews were dispersed, with some residing in different areas of the city and others residing in suburban and rural areas. Transportation was potentially an issue for participants. Secondly, as demonstrated by the literature above, safety was of a large concern to this participant population. In considering both participant safety (who might view researchers as potentially anti-trans) and researcher safety (who may attract anti-trans individuals with recruitment materials), phone interviews were considered a better method than in-person interviews. Furthermore, participants who have regular experiences of misgendering may fear being misgendered in person by researchers. Thirdly, the questions being asked in the interviews probes deeply emotional and potentially troubling content. Phone interviews were chosen over video due to easier coordination and flexibility for participants, as some participants chose to interview while on the go. It also ensured those with slower connection speeds could still participate in the study. For these reasons, we believed it would be easier for particularly participants with multiply-marginalized identities to participate fully on the phone, rather than in person.

3.3 Interview Analysis

Following the completion of the interviews, the first author transcribed each interview. All authors listened to the interview recordings and took separate notes. We then discussed the themes that arose in the interviews and recorded high-level thoughts. After completing the transcriptions and reviewing the data, the first author conducted a round of *initial coding* of the concepts that emerged in the data. These concepts were continuously developed through numerous rounds of independent segmented coding. Codes were grouped through the process of focused coding as relationships between initial codes emerged. Focused codes represented the larger themes of the data, while open codes were used to denote instances of these themes. The codes were then iteratively and collaboratively refined for each research. We conducted clustering activities using both white boards and sticky notes to draw out similarities between the codes. The finalized codes were clumped into descriptive categories which encompassed numerous instances found in the data.

4 FINDINGS

In organizing the findings, we first present the ways participants describe experiences of harm and lack of safety in offline contexts. We then present the ways participants found technology and the Internet to promote safe spaces for expressing their identities and finding community. These findings reiterate previous work on the benefits online spaces provide transgender individuals. We then present findings that contrast the Internet as solely a safe space for transgender individuals. Participants detail the ways that online spaces and technology augment an already unsafe offline world for transgender technology users. These findings are organized into six categories of harm participants described experiencing.

4.1 Transgender Safety: "I Feel Unsafe All the Time, Really"

Participants (8 of 12) expressed feeling unsafe on a regular basis in non-technology-mediated situations and shared the sentiment voiced by P10 in the heading of this section: almost all spaces are unsafe. Participants described being yelled at and accosted by strangers. For example, P6 expressed being spat on, being called cruel names, and feeling physically threatened while she was in her car; she also describes knowing friends who were beaten for being transgender.

Moving through public spaces in a city where gender-based violence is frequent was a reminder that emotional and physical vulnerability were real. P2, P3, P4, P10, and P12 noted that being in the city and on the street made them feel particularly vulnerable. This vulnerability manifested for participants in a multitude of ways. P2 explained feeling unsafe was due to the high statistics of violence transgender women face. P3 said if they dressed more "femme," they get harassed on the street. P12 described the city ey (pronoun) lived in was altogether unsafe, adding that *"any place that's unsafe in general is going to be more unsafe for trans and queer people."* P4 explained that she *"get[s] coffee a block down from a place where a trans woman was killed two years ago."* She described this awareness as a reminder of her own susceptibility to violence as a trans feminine person.

Various identity markers signified people who might be dangerous: neo-Nazis (P2, P4), *"anti-social justice warriors"* (anti-SJWs; P2, P7), conservatives (P2, P7, P8), *"confederate flag bearers"* (P7), the alt-right (P1, P7), *"TERFs"* (Trans-Exclusionary Radical Feminists; P11), *"country people"* (P8), Christians (P11), and *"trans chasers" / "fetishists"* (P1, P2, P3). Many participants described being wary of cisgender men as a broader group (P1, P2, P3, P4, P7, P8, P10, P11). P2 said this was because cisgender men had a tendency to be *"more outwardly transphobic."* P7 said men tended to look at him *"weirdly"* and that, if he imagined a situation where he'd have *"an imminent level of concern for [his] physical safety,"* it would be due to a cisgender man. P4 simply stated that *"women aren't as evil as men."*

Participants described being aware of the ways intersectional systems of power also impacted safety (P1, P2, P4, P5, P6, P7, P10, P11, P12). P2, P6, and P10 spoke about the risk of violence that comes with being a trans woman of color, a trans sex worker, or both. P6 specifically pointed out that trans women of color are being murdered at a high rate; P4 specified she knew of 15 at the time of her interview. P2, P4, and P10 explained that heterosexual trans women were at a higher risk of violence compared to lesbian trans women or trans women who refuse to date men. P10 identified *"toxic masculinity"* and *"fragile*

masculinity" as the source of male violence towards trans women, which she stated are upheld by American legal institutions through *"trans panic"*[3] defense arguments. She discussed the ways her experiences as a trans woman differed than those hold differing identities:

> *"I know that based on my social position … I'm from a middle-class family and I'm light-skinned … [I am] more secure than a black trans woman …or trans woman who's a sex worker, or a trans woman whose straight and dates men or has to interact with men for her survival." – P10*

Even identities which our participants did not hold could complicate the way trans people assess unsafe situations. P4 described the identities strangers project onto her when being harassed or threatened on the streets of her city:

> *"Does this person think that I'm a gay man and he's calling me a faggot from across the street? … Does this person know that I'm trans and think that I'm trying to deceive him personally? Or is this person a white person who is yelling at me for being black and taking up space? … I'm always thinking about that as I'm navigating spaces. Like, what could this person hate me for?" –P4*

P4's anecdote also spoke to the way other identities beyond being a trans woman impacted her experiences of safety. Being both black and a trans woman compounded the type of harassment she faced on the street, as well as how she processed harmful situations. These experiences demonstrate the unique perspectives transgender individuals have on physical safety, including how feminine trans identity affected perceptions and experiences of safety. The physical world was a place fraught with unsafe situations, where participants faced a range of physical and emotional harms. The digital world hosted safe spaces that participants used to improve this situation.

4.2 Safe Spaces and Technology Mediation: "How Could You Be Trans Before the Internet?"

Participants articulated the revolutionary role of the Internet in building safe, supportive, and affirming spaces for transgender individuals, not only in their online lives, but also in existing offline spaces. Both P6 and P11 came out as transgender before the Internet was widely used, and faced challenges that are more easily overcome in the digital era. Overall, the most common platforms participants viewed positively were Facebook (P3, P4, P5, P7, P12) and Tumblr (P3, P7, P10, P12).

Not only was the Internet considered a provider of safety, but it was also a source of personal and social liberation: *"Undoing years of repression that every single trans person has"* (P2). The Internet was considered so essential to transgender identity that younger adults often asked P6, now in her 60s, *"How could you be trans before the Internet?"* Technology has supported trans users in finding a language for understanding their own identities, connecting with strangers online, providing platforms for activism, and maintaining safety. Below, we share some of the ways participants found digital spaces enabled identity exploration and access to peer support.

[3] a legal defense employed by a defendant of a violent crime claiming that temporary insanity caused their violent behavior towards a transgender person

4.2.1 Finding a Language, Finding a Voice

The Internet has helped many participants come to *see themselves* by helping them collaboratively develop a vocabulary to describe their identities (P2, P4, P5, P6, P7, P8, P11). For P5, this meant finding words that fit the way they saw themselves. Participants also described disagreements or personal ways of defining language. For example, P8 described the tension between defining gender-neutral terms for their ethnicity, and their disagreement with the more common "*Latinx*" over "*Latine*." P10 described how trans language, which is often negotiated between trans people of differing identities, affects the way trans users adopt technology:

> *"People feel like they have to know the cultural language in order to use the hashtags. They have to understand, and they have to buy into or identify with these labels that already exist, where the language that's being used isn't necessarily static. It's always changing in the culture." –P10*

In some instances, accessing new vocabulary for identity online provided emotional support to participants who described experiencing emotional harm offline. For example, P6 recalled a time when she did not have access to supportive resources or community as she tried to make sense of her identity:

> *"When the only info about … you comes out of abnormal psychology books, or little ads in the back of porno magazines, it's hard to figure out that this is something natural, normal, part of life … [Before the Internet] we were lonely, alone, scared." –P6*

Connecting to other trans people online provided affirmation, proof that participants were not alone, and sounding boards for grappling with identity questions:

> *"Having Facebook as a global community that I can bounce things, ideas, off of––'Am I the only person who's … this way?'––and then finding out that I'm not." –P4*

In addition to helping trans people *see themselves*, online spaces also helped to further empower trans people to *make themselves seen*. For example, P4 used the Internet to further engage in local activism crucial to her identity. P12 shares resources about trans terms on eir Tumblr blog. Other participants post art they have created related to their trans experiences, such as P7 who writes poetry and P9 who creates comics.). Online safe spaces allowed participants to further engage in, share, and enjoy their interests relevant to their trans identities.

3.3.2 Strangers Consoling Each Other

The Internet was often a place where participants could find and curate safe spaces by surrounding themselves with other trans individuals. Specifically, its ability to create connections that transcend physical space is significant for building community and personal support structures for trans users. Participants used various platforms to form and maintain connections with other trans users. P1 used Twitter to keep in touch with other trans friends; P2 first met another trans person on a video game called Space Station 13; and P8 described social media as a *"connector for trans people in [my city],"* showing that the Internet benefitted the creation and maintenance of collocated offline relationships as well as distributed ones.. P7

explained the benefits of being able to separate offline social ties from supportive online social ties:

> *"When I wasn't out yet [offline], I didn't have to worry about confiding in people that are already very integrated into [offline] communities where I don't feel safe. It was nice to have strangers consoling each other [online]." –P7*

P7's word implicitly denote the safety consequences of confiding in certain people offline, whereas talking to strangers on the Internet acted as a buffer from offline consequences. The affordances of the web were particularly useful to trans participants with interlocking marginalized identities. For example, P5, a black genderqueer person, used Google to search for other black non-binary people because they could not find these connections offline. These examples indicate the way the Internet provides space for emotional safety that may not be available to trans individuals offline.

4.2.2 Using Technology for Activism and Outreach

Participants used the Internet as a means to organize and engage in social justice activism. For example, P8 described how important Facebook is for organizing in their city by local trans rights groups. P4 also used social media to participate in social action beyond state lines. She noted that thousands of people can sign a petition online and described how she could show solidarity of a protest of a cake shop in North Carolina that denied a wedding cake to a gay couple. She also talked about using information people post online to promote sensitivity about transgender issues in the offline world:

> *"Somebody will say, 'This place denied me service cuz [sic] I was trans' and I'll call that business or take that back to [anonymous organization] and be like this place was transphobic, what do we do? Do we get a training, or do we call someone?" –P4*

P6 discussed how social media allows activists to *"expand [a] live event into a virtual event."* She hosted a local showing of a transgender documentary on Facebook Live to promote understanding and a sense of safety for genderqueer youth in her local community:

> *"The young people who were genderqueer … in the audience, to hear a positive response from people in their community to this documentary, it must have felt good. It must have felt like, 'I can be okay, I feel safe in this community.'" –P6*

These examples show the ways participants used technology to augment the ways they engaged with their communities offline, synthesizing online and offline tactics to promote safety and community for transgender individuals.

4.2.3 Using Technology for Physical Safety

Participants (P4, P5, P7, P9, P10) used information online to avoid or minimize exposure to unsafe spaces in the offline world, often by fluidly transitioning between online and offline spaces to maintain safety. P4 would check public transit online to minimize the risk of street harassment. P4 also explained that trans people use online crowdfunding platforms, like Kickstarter, to fundraise for gender affirming surgery or to find safe housing, which help mitigate exposure to physical and emotional harm. P5 researched *"the general demographics of the area"* before going somewhere to avoid unsafe spaces. P7, P9, and P10 all mentioned an app that helps transgender people find safe, gender neutral bathrooms nearby. P1 used mobile

technology to connect him with family and friends who could help navigate threats in the offline world:

> *"I use Find My Friends, which allows [my family] to see my location, and if I'm out, my friends might say, 'Oh, message me when you get home safely.'" –P1*

Other participants used technology to disconnect from abusive strangers. For example, P4 relied on mobile technology to filter out street harassment offline:

> *"Headphones are the greatest weapon against harassment and misgendering for an urban transgender … I put in headphones and I can't hear people yell shit at me." –P4*

Participants used the safety of connected mobile technologies to enhance their feelings of safety in unsafe offline environments. Yet, P4 thought technology could only help so much. She believed seeking advice from local elders in the community, either offline or online—(who could tell younger trans people things like: *"don't go to this place, they'll fuck you up' or 'don't speak with this person, they'll sexually assault you'"* (P4))––was the most effective way of staying safe.

That technology only helped transgender individuals so much reflects the remainder of our findings. While pervasive technologies offered safe spaces for support and safety, we also found that they enabled harm to transgender individuals.

4.3 Harm and Technology Mediation: "I Have Been Harmed"

Participants saw the Internet as a tool for safety through connecting with trans-positive people and insulating themselves from trans-negative people. However, online spaces can also be appropriated by what P2 called *"abusers,"* or abusive users. The same affordances that make the Internet a place for trans organization also enabled abuse by anti-trans people:

> *"There's always a loophole or a backdoor for people … who would want to access information with the intent of harming trans people. The thing on the Internet that I'm most afraid of is … places that give people who want to hurt us or harm us a place to organize." –P7*

Although considered the most positive platform among our participants, P1, P4, and P10 noted negative aspects of Facebook for trans individuals as well. P1 said *"certain portions of really big social media sites, like Facebook, Twitter, Instagram … are vehemently transphobic."* He expressed that abusive anti-trans users occupied much of the space on social media platforms. P10, despite finding the platform important for organizing as well, also described being upset with the way Facebook handles the banning of activists.

Abusers made up all or parts of digital platforms—Reddit (P4, P7, P9, P10, P12), YouTube (P9, P12), Twitter (P1, P9), Facebook (P1), Instagram (P1), 4chan (P1), 8chan (P2), and various dating apps (P1, P2, P3, P4, P6, P7, P9)—unsafe for trans people. Participants describe the different, multi-faceted, and often overlapping forms of harm experienced online. We describe these forms of harm as Outsider Harm, Insider Harm, Targeted Harm, Incidental Harm, Individual Harm, and Collective Harm. In the content below, we present findings representing each of these.

4.3.1 Outsider Harm

Outsider harm is defined by anti-trans harm perpetrated by individuals outside of participants' social circles or the larger transgender population. In a defining example, P11 describes the way the Internet gives abusive users access to transgender *"enemies"* they can harass:

> *"[The Internet] has … given [reactionaries] the power to identify 'the enemy'. If somebody's a right-wing religionist who feels that trans individuals are an abomination, technology has given them the ability to identify who those abominable people are." –P11*

Affordances of web-based technology and online platforms have allowed outsider to be appropriate technology and attack transgender users. While some participants used anonymity as a tool for safety, it also enabled harassment and abuse online. Participants identified websites that they considered unsafe due to anonymity or polynimity, such as 4chan (P1), 8chan (P2), Tumblr (P12), Reddit (P12), and YouTube (P12). P1 called this anonymity a *"shield people will hide behind"* in order to participate in trans-antagonistic behavior. P9 and P12 break down the ways a websites' reputation impacts why they view it as unsafe:

> *"Reddit has the reputation of being the land of trolls. YouTube, also, though not as bad as Reddit, but I'd also put it on the list." –P12*

> *"The thing about Reddit is that there's all these sub-communities that have very strong opinions. I think there are very white supremacist communities … I generally stay away from internet communities because they're typically a lot of, even if it's the vocal minority, you can get a lot of vitriol." –P9*

P10 explained that on Tumblr, trans people use hashtags like #mtf (male to female) and #trans to find each other, but there are people who troll these hashtags by using them to annotate trans-negative posts. Other participants came across anti-trans content on forums that disturbed them:

> *"The website 8chan—I stumbled across board called 'transfags', which is basically bunch of cis men talking about how they want to brutally murder or hate crime trans women and encouraging them to kill themselves." –P2*

Lack of safety on online platforms was also attributed to homogenous online *"bubbles"* (P9) of *"destructive"* (P9) anti-trans communities. P9 described these bubbles as "*the tension between finding [one's] own community, which has certain homogeneity in a way, … but at same time [allowing] destructive communities to live in isolation."* P1 described how such homogenous user demographics of websites determine how unsafe they are to trans users, "*like 4chan where alt right movement is transphobic." –P1*

4.3.2 Insider Harm

Insider harm was committed against participants by individuals who were within participant social circles, the larger LGBTQ population, or spaces considered otherwise trans-positive or safe. Some participants (P2, P4, P9, P10) described incidents of harm in spaces they regularly sought comfort and validation. P2, who enjoys online gaming, feels the need to sacrifice her

gender identity when using voice chat and *"will accept fact everyone will assume [she] is male."* P9 described using both YouTube and Reddit for education trans-related content, but also witnessing cruel behavior on those platforms. Similarly, P10 stopped going on Reddit for information about transgender identity due to the "toxic" content she found.

People within LGBTQ groups and communities can also display anti-trans or anti-non-binary attitudes, which P4 refers to as "lateral violence" (bias perpetrated from within a population or community, rather than from those on the outside). This is exemplified when P1 said he had interactions with other trans people in comments sections where he was told *"non-binary is not real"* and it *"[makes] 'real' trans people look bad."* P2 described an online community of trans women called *"Baeddels"* who used abusive tactics to harm other trans individuals.

Awareness that people within your own community or from "inside" your social circle could be harmful led participants to alter their online behavior to protect themselves. For example, P4 chose not to post some things on social media, and spent time deleting others:

> *"[I deleted my] old name, and just shit that could be dragged up to disparage me … People will lurk on my page just to get material to fuel their hate-filled whatever against me." –P4*

Altering behaviors in response to experiences of harm was not limited to insider harm, but was also discussed in many of the overlapping types of harm participants described.

4.3.3 Targeted Harm

Targeted harm was categorized as abuse, harassment, or cruelty aimed directly at participants. For example, P12 received hateful anonymous messages on eir trans Tumblr blog, and anti-trans users invaded eir trans Discord chat servers that ey advertised on eir blog.

> *"A group of people decided to start invading the servers and they made a huge campaign on the "aspec" (asexual spectrum)* [server]*. They were known to have abused and stalked one user and they were trying to shit on the staff everywhere they could. on Tumblr, on discord. one was harassing me via discord and … so if they had more personal info about me they would probably use it in really bad ways." –P12*

Participants (P1, P2, P4) also described being subject to direct objectification online by users with *"toxic fetishizing attitudes"* (P2), called *"trans chasers"* (P2, P3). These users targeted trans individuals with invasive questioning about their bodies that *"invalidate[d]"* (P1) their trans experience. For example, P1 said that people *"message [him] on dating apps and ask 'What's in your pants, or what really are you?'"* P4 said this was a common experience for trans women on dating apps, and she has also received *"jarring"* messages that were *"unwelcome and unwanted overly aggressive sexual things."*

> *"[On dating apps], you either get not many responses—because people don't see you as attractive because you're trans—or you get a lot of messages that are invasive and aggressively sexual in nature." –P2*

Bridging offline connections with those trans users meet online can also be risky, even if the other did not necessarily appear abusive. While many users of localized meet-up apps, like

dating apps, likely take precautions, our trans participants were wary of the dangers of meeting users offline due to their gender identities. For the trans population, transphobia on localized meet-up apps have dangerous implications for those who meet others offline. P2 described a friend who appropriated dating apps in order to do sex work *who "was held at knifepoint"* (P2) after going to meet their client. P8 also described taking safety measures when using dating apps, as well as feeling the need to describe intimate details about their body to avoid negative reactions from others:

> *"[When I used Grindr] and I was meeting somebody, I would tell friend and let them know where I was going … just to be safe, as a safety precaution … I think about, "Do I have to tell people certain things about my body in order to feel like they're not going to react a certain way?'" –P8*

4.3.4 Incidental Harm

Incidental harm described abusive or harmful content witnessed by participants, but which was not directed at them specifically. This included observation of comments, conversations, posts, pictures, ads, and news articles. Participants more commonly experienced incidental harm than targeted harm; still, participants attributed negative emotional and mental outcomes from observing this content. Witnessing anti-trans and LGBTQ content resulted in emotional distress.

In one instance, P8 witnessed an incident on Facebook after the 2016 U.S. presidential election that made them feel "anxious" on the platform. As a result, they restricted their Facebook use to direct messaging friends and finding events:

> *"[My queer friend's] family members piled on him … saying things like … 'Why would you want gay marriage if you're just gonna get AIDS and we'll have to pay for your healthcare?' … His family has not … no one is speaking to him." –P8*

Some participants felt the way digital technology and social media is designed allowed for negative experiences. Participants expressed that portrayals of trans people online are often *"starkly cis people's perspectives, whether it's well intentioned or not"* (P8) and tend to propagate *"misinformation"* (P10) about trans people. P4 and P9 attributed the way some platforms bred unsafe spaces to the lack of consideration or understanding of trans peoples' needs:

> *"There's massive problems in the way that dating apps are structured that make them unwelcome for trans people … There's no dating app for me that I can be like 'You know what, I don't wanna see any cis people.'" –P4*

> *"They're not made with the concerns I would have in mind. Like, the way that Twitter has really allowed a lot of awful trolling, for example. That's just a clear demonstration that their values are different than my values." –P9*

P3 described a specific example of incidental harm caused by platform design: the way targeted ads on Facebook can *"inadvertently out"* people by revealing their gender identity to others who might see their screen. In another instance, Facebook's auto-play video feature resulted in P4 unexpectedly witnessing triggering (emotionally distressing) content:

"A video of a Brazilian transgender woman being beaten to death, and it was an autoplay video on Facebook … Seeing the death of black people recurring over and over again [on social media] got to be incredibly frustrating and hurtful." –P4

Participants seeking out positive resources sometimes came across negative ones by accident. P9 recalls looking for trans resources on Reddit and stumbling across a TERF subreddit (a user-created forum hosted on the website Reddit) they originally thought was trans affirmative, while P10 describes the impact this content had on her own self-image.

"When I first found [this group], I was like, 'Oh cool, a trans group, this'll be fun, there's a community for me here'… I didn't understand all the acronyms at first … then I realized this was just a group that was really upset about trans people taking away what it means to be like female." –P9

"[On Reddit, there were] subreddits for people who believed it was a sexual fetish. … That made me feel more pathologized, more fucking deviant or abnormal because I was reading this fucked up shit people were writing." –P10

P10 also stated that this experience resulted in her no longer seeking out information on trans identity on Reddit, demonstrating the ways harm, in this case incidental harm, may impact user behavior on forums and social media.

4.3.5 Individual Harm

Individual harm described harm that impacted a specific individual, rather than a collection of individuals. This harm could be committed by outsiders or insiders, and in some cases could be targeted or incidental.

One impact of harmful behavior that was a major concern for participants (P2, P3, P8, P10, P12) was *"outing"* (having one's trans identity disclosed without consent). Participants' fears of repercussions from being outed included: being kicked out of one's home (P12), having trouble getting hired (P10), being harassed by coworkers (P9, P12), oneself or one's relatives being fired from their job (P8, P12), having one's home vandalized (P8), and being physically or sexually assaulted (P12). P12 also described the fear of anti-trans abusers finding em offline:

"There are people [online] who … want to rape, or beat up, or kill people who are queer, and so if they knew where I lived or they found me on the street at night, then they might try that." –P12

Stalking was a concern for participants (P2, P10, P12). C*yberstalking* (also "cyberbullying" or simply "online harassment") describes the use of technology to monitor, threaten, and harass participants; for our participants, this was motivated by their gender identity. This practice was also often perpetrated by strangers on the web, but also by those close to participants. P11 explained various ways she has been the target of stalking by TERFs and how it affected her offline life:

"I had one TERF call family members of mine and tell them I was crazy and needed to be institutionalized and that I have, because I've medically transitioned … self-mutilated my body." –P11

One participant (P2) was outed due to stalking from an insider, a family member who found trans content on her Tumblr blog. Despite being careful to make two social media accounts to

conceal her gender from family, she was unexpectedly confronted by her mother about being trans:

> *"I specifically limited my online presence because I knew that my mom sort of stalked my internet presence to try to figure out stuff about me … I would keep my Tumblr blog in like a hidden mode … Previously she'd actually physically taken my computer and gone through my browser or my chat history." –P2*

Cyberstalking can also be accompanied by *doxxing*, where online abusers publish personal, identifying information of a person online with the intent to harm. P10 found her name on an online list and was afraid of the implications it could have offline, including job security:

> *"There was someone who had a list of trans people. You would go on this thing online—basically, if you were public in anyway, you could find yourself. I could find myself … I don't know how they did it, maybe they scraped Google searches … Honestly it looks like something just used for doxxing … It was pretty fucking scary … That person never asked me if I could be on that thing." –P10*

P10's fear was enhanced by the non-consensual nature of her identity being posted online by a stranger and where the data on her identity was taken from. These concerns contrast the web affording trans people opportunities for safely *making themselves seen* or participating in activism.

4.3.6 Collective Harm

Collective harm had implications beyond the individual and could affect larger trans communities. For example, some participants (P4, P7) talked about local trans safe spaces being targeted by anti-trans communities online. P4 explained that neo-Nazis identified brick-and-mortar DIY (do it yourself) spaces—which often serve as affordable housing and places of free expression for trans community members—and then mobilized on Reddit and 4chan to shut them down. Both P4 and P7 stated that their city's own DIY space was targeted, leaving many trans people homeless. P4 described the way intersectional systems of power influence these sorts of tactics:

> *"Racism and white supremacy is always at play in the suppression of black art and getting black artists out of housing. It was all incredibly racist. It was all homophobic, transphobic, it was all of that. It's classist, it's all of that." –P4*

P7 provided researchers with screenshots of this online organizing. The researchers then found the forum on 4chan's board, /pol/, to discover that the abusers P4 referenced called themselves the *"Safety Squad"* and replicated digital iconography of Pepe the Frog[4] and the Nazi party's stylized "SS"[5] to brand their effort. They used the web to find and catalog DIY spaces in

[4] a meme appropriated by the alt-right to become a racist hate symbol

[5] short for "Schutzstaffel," the Nazi party's governmental body, literally meaning "Protection Squadron"

urban cities around the county. Then, they used social media to coordinate distributed efforts to alert local officials about these locations and have them closed, under the guise of preventing another fire like that in Oakland, California's Ghost Ship DIY space [80].

These stories provided by participants offer insight into the ways malicious online organizing can impact transgender individuals and their communities. As demonstrated by these findings, while many transgender technology users find online spaces beneficial, they also experience harmful and threatening interactions of a type previously unexplored in HCI. These findings show the complex interactions transgender technology users experience when engaging in social spaces, and the implications of those interactions for both online and offline life.

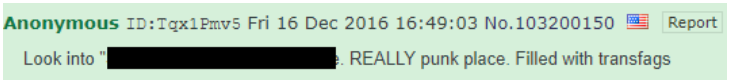

Figure 1. An anonymous post in 4chan's /pol/ ("politically incorrect" forum) discussing the shutdown of the trans-inclusive DIY space P7 named.

Figure 3. A meme posted on the same /pol/ thread tallying the number of DIY safe spaces for whose shutdown users claimed responsibility and/or took credit.

5 DISCUSSION

Current research regarding transgender individuals' experiences with technology addresses the important issues of digital gender representation [8,34,35] and support for the transition process [30,33]. Adding to this growing corpus, the present study sought to understand relationships of transgender individuals to safety with sensitivity to the role played by technical devices and applications. Much like prior work from the social sciences concerning the LGBTQ community and safe spaces online [51], we found that the digital technology affords community-building by facilitating language development, connecting empathetic strangers, and enabling pro-trans activism. However, unlike prior research from the social sciences or otherwise, we documented faceted ways in which safe spaces can become stages for interactions that do harm to transgender and gender non-conforming technology users.

Below, we synthesize the facets of harm identified in this study into a figure that foregrounds the ways these facets can overlap and interact, with regard for how this format

contributes to previous work [9]. We then consider how safe space can be read through Harrison and Dourish's [25,38] notions of space and place, to demonstrate how the behaviors we observed are neither new or unpredictable phenomena. We argue that the "technological structures around which social practices emerge"––for example, the design of the Facebook wall––"are themselves the outcomes of other forms of social practice – political, organizational, economic, historical, and more [25]." To demonstrate this, we lay out two examples that help us see new opportunities for technology design of saf*er* spaces and places.

5.1 Experiences of Harm are Salient and Diverse for Transgender Technology Users

Based on experiences and perspectives shared by our participants, we identified six intersecting facets of harm (Figure 2). This flat, overlapping representation highlights that

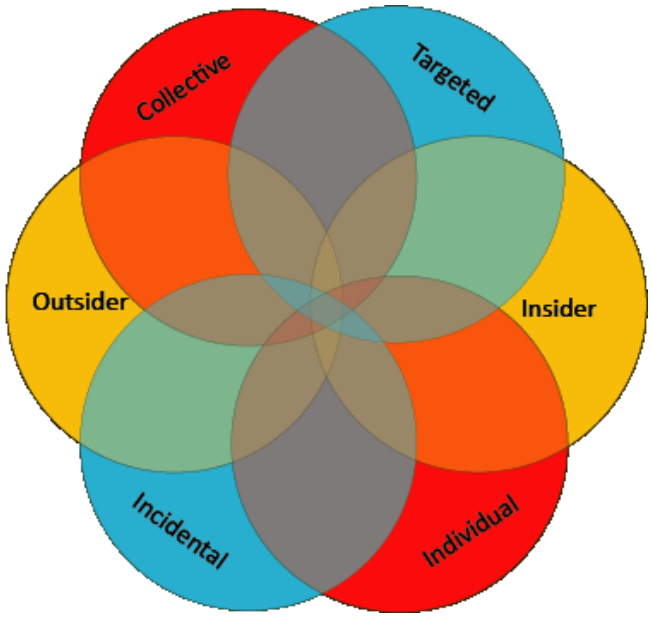

Figure 2. Visual representation of the six forms of harm identified through qualitative analysis of interviews. We conceptualize these as three intersecting facets: (1)

relationships between facets were not hierarchical, and that relationships within facets were not mutually exclusive: for example, incidents of individual harm may cause collective harm if observed by other community members. While this model compiles a taxonomy of harm, we agree with Blackwell et al. [9] that the model may invalidate the feelings of those whose experiences do not fit within its borders. We therefore see this as one possible lens for understanding the range of harm experienced by transgender individuals. It is also worth noting that the circles on the diagram are of equal size solely for convenience; we did not find that each facet of harm was experienced by every participant, and/or with equal frequency.

Our general findings about harm are not limited to technology-mediated contexts; they replicate years of prior work in the social sciences. Studies of both technical and non-technical environments have documented similar phenomena: studies of marginalized communities, like

women and trans youth, have uncovered a range of experiences that illustrate how abusers incur different forms of *targeted, individual* harm by intentionally harassing, cyberstalking and trolling victims [68].

In studying safety, prior research has tended to LGBTQ identities as presenting a unified front [51], which would suggest that harm comes from the *outside* (e.g., from neo-Nazis). However, we document that much of the harm experienced by participants was instead encountered in interactions within their own social circles: *lateral*, or *"peer-to-peer,"* violence. We call this *insider harm*, though these phenomena are increasingly reported by journalists (e.g., [45]).

For technology designers seeking to address issues of safety with technology, it may be natural to focus on the most visible, easy-to-categorize, or troubling types of harm––for example, the intentional harm perpetrated by neo-Nazis. However, this fails to recognize the more normative, incidental, subtle, and mundane violations (e.g., microaggressions)––enacted even by people who use the system in the ways preferred by design scenarios. These types of harm, while less "flashy," may contribute to the "death-by-a-thousand-cuts" experienced by trans individuals on a daily basis [19].

5.2 Space, Place, and Power Geometries

It might be tempting to infer from the previous section that the challenge we face as technology researchers and designers is to predict the behaviors of "bad actors" and the tactics they use to harm others as per Harrison and Dourish [38], the challenge is that bad actors participate in the cultural construction of harmful spaces. But a focus solely on the cultural production of abuse and harm via technological platforms erroneously assumes that "safe space" can only be read as––again, as per Harrison and Dourish––*places*. It finds fault with people but not with the tools they use. We wish to reinforce that safe spaces are still *spaces*, and that leads us to interesting insights from Dourish [25] regarding the cultural production of space.

Drawing from cultural theorist Michael de Certeau and Doreen Massey, Dourish argues that space is constructed within specific power relationships that differentially affect how people can move through it. Namely, those who create the spaces (e.g., designers of Twitter) have control over the broad narrative and flows within the space, and those who inhabit the space (e.g., users of Twitter) are in a relative position of weakness. Further, different social groups and individuals have varying degrees of control over their movement through the space. Dourish borrows Massey's terminology, "power geometries," to capture this notion. An important implication of this reading of space is that, because it is socially constructed and exerts power, it can reproduce and sustain extant power structures. In the following two sections, we explore how our findings provide additional examples of power geometries at work in the context of transgender experiences of technology-mediated spaces.

Power Geometries Example 1: Redlining and Redditing

Dourish describes how the design of a space can limit how people with marginalized identities are able to move within it: "the production of space is conditioned by one's access to and legitimacy within that space" [25]. Similarly, our participants described how users of digital platforms like 4chan utilize their modern digital resources to attempt to remove transgender individuals from their housing. These users appropriate the platforms' affordances of anonymity to enable themselves to be effectively untouchable while intervening in the livelihoods of people with comparatively less spatial access and power. P4 described this social practice as being heavily linked to racism, transphobia, and classism. Circling back to Dourish

[25], we see how well this example fits Doreen Massey's notion of power geometries: "Different social groups have distinct relationships to these anyway-differentiated mobility: some are more in charge of it than others; some initiate flows and movement, others don't; some are more on the receiving end of it than others; some are effectively imprisoned by it."

This example of technology appropriation in order to run trans people out of safe spaces is not a new phenomenon at all. Consider, for example, the historical practice of 'redlining': the class- and racially-motivated practice of financial institutions withholding capital and thereby locking primarily black neighborhoods into continuous cycles of poverty [57]. Modern DIY artist spaces described by participants are themselves the result of unaffordable housing, historical poverty that impacts vulnerable populations, related patterns of gentrification, and contentious relationships between community members and city officials [62]. We therefore see the appropriation of 4chan, anonymity, and search engines, to displace trans people from their safe spaces, to be an extension of a long history of power geometries that restrict spatial access of marginalized people.

Power Geometries Example 2: Intersectionality and Hate Speech Policies

We found that intersectionality was a salient frame for understanding our participants' experiences of harm. For example, many of our trans women participants reported being targeted specifically regarding their identities as trans women, as opposed to their identity as trans. A recent report from *The New York Times* revealed that official Facebook training document for employees hired to spot and flag hate speech do not incorporate an intersectional perspective. For example, one of the guidelines suggests that the statement "black people should still sit at the back of the bus" would be considered hate speech, but "poor black people should still sit at the back of the bus" would *not* be considered hate speech [17]. The interlocking identities of class and race negate rather than compound each other, rendering lower-class people of color effectively invisible and even less protected by the policy.

Again, in this example, we see how the power geometries of the space (the formal rules governing what speech is possible on Facebook) are echoes of those that have played out for decades in various contexts. We can compare this example to the one cited in 1989 by Kimberlé Crenshaw, who coined the term *intersectionality* [21]. She was inspired by the power structures in place which rendered black women invisible to antidiscrimination laws—laws that protected white women and black men separately, but not black women. Again, overlapping marginalized identity categories further confined a person's access to space.

Crenshaw's insight carried forward nearly two decades has led to more nuanced understandings of interlocking identities. Misogyny aimed at transgender women, for example, has had its own term since 2007––*transmisogyny*––and has been well documented in reports about violence towards the LGBT community [41]; in 2015, we gained *transmisogynoir*, or misogyny aimed at transgender women of color [73,79]. Yet, in the year 2017, Facebook hate speech policies reflect no understanding of intersectionality.

5.3 Design of Safe Spaces and Safe Places

In the previous sections, we have made the case that safe spaces that are digitally mediated can be understood through the lens of power geometries; designers (of technology or otherwise) enact power relations on people who inhabit those spaces in ways that reflect their differential identities. Further, the designs of these spaces are themselves socially constructed, and reify the political, organizational, economic, and historical contexts in which they were made. It is therefore no surprise that key observations from our study, in which relatively new

technologies are being put to use, are resonant with patterns of historical oppression that long predate the 4chans and Facebooks and Tumblrs of our time. What are software engineers to do?

We again turn to Dourish for a hopeful refrain: "recent technological developments provide opportunities to re-encounter and re-imagine everyday space." In our current investigation, we see how lack of awareness of intersectional power structures simply reproduces power inequities that beget harm. In this case, the "re-encountering" and "re-imagining" is forced on trans people, in the sense that they experience recurring reminders of their own vulnerability, not unlike an autoplay video on a Facebook news feed of a trans woman being murdered. The hopeful message is that each new design *can* be an opportunity for designers to re-encounter and re-imagine and break cycles from a position of relative power. We present two recommendations, made visible by this space-place framing of trans safe spaces.

1. Designers can exercise their space-constructing power to protect against abusive behavior. CSCW researchers are currently exploring abusive behavior and how best to mitigate it [9,15], and working with marginalized populations to uncover issues of safety and abuse perpetrated through technology (e.g. [9,64]). As abusive users commonly appropriate technologies to harm others, designers can make efforts to understand the methods, intentions, and motivations of these bad actors. Additionally, they can seek to understand how power is being enacted and reified on their platforms, beyond intentionally abusive individuals. Rather than viewing harmful and abusive behavior as "layered" onto technologies after their conception [25]—and hence offloading all responsibility to users—designers can choose to examine the very structures of their technological creations and the way they enable harm against marginalized individuals.

2. Cisgender designers should amplify the voices of marginalized users. Our transgender participants, just like those involved in prior research [7,36], demonstrated deep knowledge and thoughtfulness about gender theory, cultural practice, and the deep-rooted histories of oppression against marginalized communities. Yet participants expressed frustration with which technologies they felt reflected solely cisgender perspectives. Leveraging transgender individuals' expert knowledge of gender may help cisgender designers incorporate more nuanced, holistic perspectives into gendered technology features that could benefit users of all genders. Designers should access the rich history of knowledge about intersectional marginalization that activists and scholars have documented for decades, so they can understand how to sensitively fold them into new policies, practices, and software encodings.

6 LIMITATIONS AND FUTURE WORK

Diversity among participants was sought in order to explore safety with an intersectional lens. Despite this effort, participants were all college-educated or currently attending college. Additionally, we asked participants to self-report socioeconomic status without clear ranges. Self-reporting of participant income was unreliable for determining accurate diversity among socioeconomic status, thus could not be accurately used to analyze participant data collected from interviews. The small sample size also limited the diversity of narratives collected during this study. In the future, we would like to seek out a broader pool of diverse transgender participants with more clearly defined educational and socioeconomic backgrounds. Analyzing educational and socioeconomic backgrounds could bring new insights to research on transgender technology users.

7 CONCLUSION

There is increasing interest in understanding how technology design can support transgender individuals within CSCW and HCI. However, little is known about trans experiences of safety and abuse as mediated through technology. To address this gap, our study documents how the high risk of violence and harassment transgender individuals face are amplified through prevalent digital systems. Many participants felt unsafe due to the intentional exploitation of unforeseen affordances of mundane technologies by other malicious parties. Additionally, we found that the same tools that afford safety for trans individuals––search engines, social media applications, discussion forums, blogging tools, hashtags, etc.––also afford targeting, infiltrating, and abusing them. We argue that "place" and "space" provide a lens with which we can motivate technology designers to include marginalized histories in design towards safer spaces for trans people.

ACKNOWLEDGMENTS

We would like to thank our participants for sharing their experiences with us, as well as the broader transgender and non-binary population for the wisdom and insight they offer researchers like ourselves. We would also like to acknowledge the reviewers, who helped to improve this paper through their hard work and constructive feedback.

REFERENCES

[1] Melissa Adler. 2013. Gender Expression in a Small World: Social Tagging of Transgender-themed Books. In *Proceedings of the 76th ASIS&T Annual Meeting: Beyond the Cloud: Rethinking Information Boundaries* (ASIST '13), 52:1--52:8. Retrieved from http://dl.acm.org/citation.cfm?id=2655780.2655832

[2] Alex A Ahmed. 2017. Trans Competent Interaction Design: A Qualitative Study on Voice, Identity, and Technology. *Interacting with Computers*: 1–19. https://doi.org/10.1093/iwc/iwx018

[3] Zahra Ashktorab and Jessica Vitak. 2016. Designing Cyberbullying Mitigation and Prevention Solutions through Participatory Design With Teenagers. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems - CHI '16*, 3895–3905. https://doi.org/10.1145/2858036.2858548

[4] Diana Beirl, Anya Zeitlin, Jerald Chan, Kai Ip Alvin Loh, and Xiaodi Zhong. 2017. GotYourBack: An Internet of Toilets for the Trans* Community. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '17*, 39–45. https://doi.org/10.1145/3027063.3049272

[5] Talia Mae Bettcher. 2007. Evil Deceivers and Make-Believers: On Transphobic Violence and the Politics of Illusion. *Hypatia* 22, 3: 43–65. https://doi.org/10.1111/j.1527-2001.2007.tb01090.x

[6] Amy Billingsley. 2015. Technology and Narratives of Continuity in Transgender Experiences. *Feminist Philosophy Quarterly* 1, 1: 1–24.

[7] R. Bivens and O. L. Haimson. 2016. Baking Gender Into Social Media Design: How Platforms Shape Categories for Users and Advertisers. *Social Media + Society* 2, 4: 1–12. https://doi.org/10.1177/2056305116672486

[8] Rena Bivens and Oliver L. Haimson. 2016. Baking Gender Into Social Media Design: How Platforms Shape Categories for Users and Advertisers. *Social Media + Society* 2, 4: 1–12. https://doi.org/10.1177/2056305116672486

[9] Lindsay Blackwell, Jill Dimond, Sarita Schoenebeck, and Cliff Lampe. 2017. Classification and Its Consequences for Online Harassment: Design Insights from HeartMob ACM Reference format. *Proc. ACM Hum.-Comput. Interact. Proc. ACM Hum.-Comput. Interact. Article Proc. ACM Hum.-Comput. Interact* 1, 2: 1–19. https://doi.org/10.1145/3134659

[10] Lindsay Blackwell, Mark Handel, Sarah T. Roberts, Amy Bruckman, and Kimberly Voll. 2018. Understanding "Bad Actors" Online. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems - CHI '18*, 1–7. https://doi.org/10.1145/3170427.3170610

[11] Lindsay Blackwell, Jean Hardy, Tawfiq Ammari, Tiffany Veinot, Cliff Lampe, and Sarita Schoenebeck. 2016. LGBT Parents and Social Media: Advocacy, Privacy, and Disclosure During Shifting Social Movements. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)* (CHI '16), 610–622. https://doi.org/10.1145/2858036.2858342

[12] Karen L. Blair and Rhea Ashley Hoskin. 2015. Experiences of femme identity: coming out, invisibility and femmephobia. *Psychology & Sexuality* 6, 3: 229–244. https://doi.org/10.1080/19419899.2014.921860

[13] Jan Blom, Divya Viswanathan, Janet Go, Mirjana Spasojevic, Karthik Acharya, and Robert Ahonius. 2010. Fear and the City: Role of Mobile Services in Harnessing Safety and Security in Urban Use Contexts. *Chi'10*: 1841–1850.

https://doi.org/10.1145/1753326.1753602

[14] Stacy M. Branham, Ali Abdolrahmani, William Easley, Morgan Scheuerman, Erick Ronquillo, and Amy Hurst. 2017. "Is Someone There? Do They Have a Gun": How Visual Information about Others Can Improve Personal Safety Management for Blind Individuals. In *Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility - ASSETS '17*, 260–269. https://doi.org/10.1145/3132525.3132534

[15] Amy S. Bruckman, Jennifer E. Below, Lucas Dixon, Casey Fiesler, Eric E. Gilbert, Sarah A. Gilbert, and J. Nathan Matias. 2018. Managing Deviant Behavior in Online Communities III. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems - CHI '18*, 1–4. https://doi.org/10.1145/3170427.3186319

[16] Jamie C. Capuzza and Leland G. Spencer. 2015. *Transgender communication studies : histories, trends, and trajectories*.

[17] A Carlsen and F Haque. 2017. What Does Facebook Consider Hate Speech? Take Our Quiz. *The New York Times*. Retrieved July 11, 2018 from https://www.nytimes.com/interactive/2017/10/13/technology/facebook-hate-speech-quiz.html

[18] Despoina Chatzakou, Nicolas Kourtellis, Jeremy Blackburn, Emiliano De Cristofaro, Gianluca Stringhini, and Athena Vakali. 2017. Measuring #GamerGate: A Tale of Hate, Sexism, and Bullying. In *Proceedings of the 26th International Conference on World Wide Web*, 1285–1290. https://doi.org/10.1145/3041021.3053890

[19] Justin Cheng, Michael Bernstein, Cristian Danescu-Niculescu-Mizil, and Jure Leskovec. 2017. Anyone Can Become a Troll: Causes of Trolling Behavior in Online Discussions. *In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17)*. https://doi.org/10.1145/2998181.2998213

[20] Alexander Cho. 2017. Default publicness: Queer youth of color, social media, and being outed by the machine. *New Media & Society*: 146144481774478. https://doi.org/10.1177/1461444817744784

[21] Kimberle Crenshaw. 1989. Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Policies. *The University of Chicago Legal Forum* 1989, 1: 139–167. https://doi.org/10.1525/sp.2007.54.1.23.

[22] Kimberle Crenshaw. 1991. Mapping the Margins: Intersectionality, Identity Politics, and Violence Against Women of Color. *Source: Stanford Law Review* 43, 6: 1241–1299. Retrieved November 15, 2017 from http://www.jstor.org/stable/1229039

[23] Daniel D'Addario. 2016. The Gay Bar As a Safe Space has been Shattered. *Time*. Retrieved August 28, 2017 from http://eds.b.ebscohost.com/eds/detail/detail?vid=3&sid=9c1509cb-dda2-4881-8c11-6a523d5eb30d%40sessionmgr102&bdata=JkF1dGhUeXBlPWlwLHVybCx1aWQmc2l0ZT1lZHMtbGl2ZSZzY29wZT1zaXRl#db=mth&AN=116134177

[24] Avery Dame. 2016. Making a name for yourself: tagging as transgender ontological practice on Tumblr. *Critical Studies in Media Communication* 33, 1: 23–37. https://doi.org/10.1080/15295036.2015.1130846

[25] Paul Dourish. 2006. Re-space-ing place: "place" and "space" ten years on. In *Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work - CSCW '06*, 299. https://doi.org/10.1145/1180875.1180921

[26] Paul Dourish and Genevieve Bell. 2007. The Infrastructure of Experience and the Experience of Infrastructure: Meaning and Structure in Everyday Encounters with Space. *Environment and Planning B: Planning and Design* 34, 3: 414–430. https://doi.org/10.1068/b32035t

[27] Melanie Feinberg, Daniel Carter, and Julia Bullard. 2014. A Story Without End : Writing the Residual into Descriptive Infrastructure. *DIS '14 Proceedings of the Designing Interactive Systems Conference*: 385–394. https://doi.org/10.1145/2598510.2598553

[28] Janet Finch. 2004. Feminism and Qualitative Research. *International Journal of Social Research Methodology* 7, 1: 61–64. https://doi.org/10.1080/1364557030100164064 4

[29] Andrew R. Flores, Jody L. Herman, Gary J. Gates, and Taylor N. T. Brown. 2016. *How Many Adults Identify As Transgender in the United States?* Los Angeles, CA. Retrieved August 22, 2017 from https://williamsinstitute.law.ucla.edu/wp-content/uploads/How-Many-Adults-Identify-as-Transgender-in-the-United-States.pdf

[30] Amy Gonzales and Nicole Fritz. 2017. Prioritizing Flexibility and Intangibles: Medical Crowdfunding for Stigmatized Individuals. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (CHI '17), 2371–2375. https://doi.org/10.1145/3025453.3025647

[31] Joshua Guberman, Carol E. Schmitz, and Libby Hemphill. 2016. Quantifying Toxicity and Verbal Violence on Twitter. In *Proceedings of the 19th ACM Conference on Computer Supported Cooperative Work and Social Computing Companion - CSCW '16 Companion*, 277–280. https://doi.org/10.1145/2818052.2869107

[32] Oliver L. Haimson, Anne E. Bowser, Edward F. Melcer, and Elizabeth F. Churchill. 2015. Online Inspiration and Exploration for Identity Reinvention. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15*, 3809–3818. https://doi.org/10.1145/2702123.2702270

[33] Oliver L. Haimson, Jed R. Brubaker, Lynn Dombrowski, and Gillian R. Hayes. 2015. Disclosure, Stress, and Support During Gender Transition on Facebook. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*, 1176–1190. https://doi.org/10.1145/2675133.2675152

[34] Oliver L. Haimson, Jed R. Brubaker, Lynn Dombrowski, and Gillian R. Hayes. 2016. Digital Footprints and

Changing Networks During Online Identity Transitions. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*, 2895–2907. https://doi.org/10.1145/2858036.2858136

[35] Oliver L. Haimson and Anna Lauren Hoffmann. 2016. Constructing and enforcing "authentic" identity online: Facebook, real names, and non-normative identities. *First Monday* 21, 6. https://doi.org/10.5210/fm.v21i6.6791

[36] Foad Hamidi, Morgan Klaus Scheuerman, and Stacy M Branham. 2018. Gender Recognition or Gender Reductionism? The Social Implications of Automatic Gender Recognition Systems. In *2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*.

[37] Mark J. Handel, Rena Bivens, Jed R. Brubaker, Oliver L. Haimson, Jessa Lingel, and Svetlana Yarosh. 2015. Facebooking in "Face": Complex Identities Meet Simple Databases. In *Proceedings of the 18th ACM Conference Companion on Computer Supported Cooperative Work & Social Computing - CSCW'15 Companion*, 122–125. https://doi.org/10.1145/2685553.2699337

[38] Steve Harrison and Paul Dourish. 1996. Re-place-ing Space: The Roles of Place and Space in Collaborative Systems. In *Proceedings of the 1996 ACM conference on Computer supported cooperative work - CSCW '96*, 67–76. https://doi.org/10.1145/240080.240193

[39] Libby Hemphill and Jahna Otterbacher. 2012. Learning the Lingo ? Gender, Prestige and Linguistic Adaptation in Review Communities. *Computer Supported Cooperative Work*: 305–314. https://doi.org/10.1145/2145204.2145254

[40] Susan Herring, Kirk Job-Sluder, Rebecca Scheckler, and Sasha Barab. 2002. Searching for Safety Online: Managing "Trolling" in a Feminist Forum. *Information Society* 18, 5: 371–384. https://doi.org/10.1080/01972240290108186

[41] Sandy E. James, Jody L. Herman, Susan Rankin, Mara Keisling, Lisa Mottet, and Ma'ayan Anafi. 2016. *The Report of the 2015 U.S. Transgender Survey*. Retrieved August 22, 2017 from http://www.transequality.org/sites/default/files/docs/usts/USTS Full Report - FINAL 1.6.17.pdf

[42] Stephanie Julia Kapusta. 2016. Misgendering and Its Moral Contestability. *Hypatia* 31, 3: 502–519. https://doi.org/10.1111/hypa.12259

[43] Moira Rachel Kenney. 2001. Mapping Gay L.A.: The Intersection of Place and Politics. 1–20.

[44] Tal Kopan and Cnn Eugene Scott. 2016. North Carolina governor signs controversial transgender bill. *CNN*. Retrieved March 13, 2018 from https://www.cnn.com/2016/03/23/politics/north-carolina-gender-bathrooms-bill/index.html

[45] Andrew Kramer. 2017. 'They Starve You. They Shock You': Inside the Anti-Gay Pogrom in Chechnya. *New York Times*. Retrieved January 7, 2018 from https://www.nytimes.com/2017/04/21/world/europe/chechnya-russia-attacks-gays.html

[46] Stacey Kuznetsov and Eric Paulos. 2010. Participatory sensing in public spaces: Activating Urban Surfaces with Sensor Probes. *Proceedings of the 8th ACM Conference on Designing Interactive Systems - DIS '10* 34, 1: 21. https://doi.org/10.1145/1858171.1858175

[47] Sarah Lamble. 2008. Retelling Racialized violence, Remaking White Innocence: The Politics of Interlocking Oppressions in Transgender Day of Remembrance. *Sexuality Research and Social Policy* 5, 1: 24–42. https://doi.org/10.1525/srsp.2008.5.1.24

[48] Katie O Leary, Arpita Bhattacharya, Sean A. Munson, Jacob O. Wobbrock, and Wanda Pratt. 2017. Design Opportunities for Mental Health Peer Support Technologies. *CSCW '17 Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, February: 1470–1484. https://doi.org/10.1145/2998181.2998349

[49] Sheena Lewis and Dan A Lewis. Examining Technology that Supports Community Policing. Retrieved October 11, 2017 from http://delivery.acm.org/10.1145/2210000/2208595/p1371-lewis.pdf?ip=130.85.58.236&id=2208595&acc=ACTIVE SERVICE&key=5F8E7AA76238C9EB.E2B546BDBAFC5578.4D4702B0C3E38B35.4D4702B0C3E38B35&CFID=815583551&CFTOKEN=92367669&__acm__=1507766305_ab7ad3c01dec7b4059dcc47b5f3a7432

[50] E L Lombardi, R A Wilchins, D Priesing, and D Malouf. 2001. Gender violence: transgender experiences with violence and discrimination. *Journal of homosexuality* 42, 1: 89–101. Retrieved December 23, 2017 from http://www.ncbi.nlm.nih.gov/pubmed/11991568

[51] Leanna Lucero. 2017. Safe Spaces in Online Places: Social Media and LGBTQ Youth. *Multicultural Education Review* 0031, June: 1–12. https://doi.org/10.1080/2005615X.2017.1313482

[52] Nico Machlitt. 2014. The Next Civil Rights Frontier: How the Transgender Movement Is Taking Over. *Huffpost*. Retrieved July 11, 2018 from https://www.huffingtonpost.com/nico-machlitt/the-transgender-movement-is-taking-over_b_5974198.html

[53] Adrienne Massanari. 2017. #Gamergate and The Fappening: How Reddit's algorithm, governance, and culture support toxic technocultures. *New Media & Society* 19, 3: 329–346. https://doi.org/10.1177/1461444815608807

[54] Doreen Massey. 1993. Power-geometry and a progressive sense of place. In *Mapping the Futures: Local Cultures, Global Change*. Routledge, 75–85. https://doi.org/10.4324/9780203977781-12

[55] J. Nathan Matias, Sarah Szalavitz, and Ethan Zuckerman. 2017. FollowBias: Supporting Behavior Change toward Gender Equality by Networked Gatekeepers on Social Media. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing - CSCW '17*, 1082–1095. https://doi.org/10.1145/2998181.2998287

[56] Sj Miller. 2016. Glossary of Terms: Defining a Common Queer Language. In *Teaching, Affirming, and Recognizing Trans and Gender Creative Youth*. https://doi.org/10.1057/978-1-137-56766-6

[57] William Norton. 2006. *Cultural geography : environments, landscapes, identities, inequalities*. Oxford University Press. Retrieved July 11, 2018 from https://books.google.com/books/about/Cultural_Geography.html?id=oqVhQgAACAAJ

[58] Larry Nuttbrock, Walter Bockting, Andrew Rosenblum, Sel Hwahng, Mona Mason, Monica Macri, and Jeffrey Becker. 2014. Gender abuse and major depression among transgender women: a prospective study of vulnerability and resilience. *American journal of public health* 104, 11: 2191–8. https://doi.org/10.2105/AJPH.2013.301545

[59] Jessica A. Pater, Moon K. Kim, Elizabeth D. Mynatt, and Casey Fiesler. 2016. Characterizations of Online Harassment. In *Proceedings of the 19th International Conference on Supporting Group Work - GROUP '16*, 369–374. https://doi.org/10.1145/2957276.2957297

[60] Emma Pierson. 2015. Outnumbered but Well-Spoken. *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing - CSCW '15*: 1201–1213. https://doi.org/10.1145/2675133.2675134

[61] Bailey Poland. 2016. *Haters : harassment, abuse, and violence online*. Retrieved January 5, 2018 from https://dl.acm.org/citation.cfm?id=3126001&CFID=839489828&CFTOKEN=57861800

[62] Meghan Ashlin Rich. 2017. 'Artists are a tool for gentrification': maintaining artists and creative production in arts districts. *International Journal of Cultural Policy*: 1–16. https://doi.org/10.1080/10286632.2017.1372754

[63] Christina Richards, Walter Pierre Bouman, and Meg-John Barker. 2017. *Genderqueer and Non-Binary Genders*. https://doi.org/10.1057/978-1-137-51053-2

[64] Kathryn E Ringland, Christine T Wolf, Lynn Dombrowski, and Gillian R Hayes. 2015. Making "Safe": Community-Centered Practices in a Virtual World Dedicated to Children with Autism. *CSCW*: 1788–1800. https://doi.org/10.1145/2675133.2675216

[65] Jennifer A. Rode. 2010. The roles that make the domestic work. In *Proceedings of the 2010 ACM conference on Computer supported cooperative work - CSCW '10*, 381. https://doi.org/10.1145/1718918.1718984

[66] Marc Santora. 2016. Last Call at Pulse Nightclub, and Then Shots Rang Out. *The New York Times*. Retrieved July 10, 2018 from https://www.nytimes.com/2016/06/13/us/last-call-at-orlando-club-and-then-the-shots-rang-out.html

[67] Ari Schlesinger, W Keith Edwards, and Rebecca E Grinter. 2017. Intersectional HCI: Engaging Identity Through Gender, Race, and Class. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (CHI '17), 5412–5427. https://doi.org/10.1145/3025453.3025766

[68] Andrew Schrock and Danah Boyd. 2008. *Online Threats to Youth: Enhancing Child Safety & Online Technologies*. Retrieved January 7, 2018 from http://cyber.harvard.edu/pubrelease/isttf/

[69] Bryan Semaan, Lauren M. Britton, and Bryan Dosono. 2017. Military Masculinity and the Travails of Transitioning: Disclosure in Social Media. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing - CSCW '17*, 387–403. https://doi.org/10.1145/2998181.2998221

[70] Eve Shapiro. 2004. 'Trans'cending Barriers: Transgender Organizing on the Internet. *Journal of Gay & Lesbian Social Services* 16, 3–4: 165–179. https://doi.org/10.1300/J041v16n03_11

[71] Anneliese A. Singh and Vel S. McKleroy. 2011. "Just getting out of bed is a revolutionary act": The resilience of transgender people of color who have survived traumatic life events. *Traumatology* 17, 2: 34–44. https://doi.org/10.1177/1534765610369261

[72] Vivek K. Singh, Marie L. Radford, Qianjia Huang, and Susan Furrer. 2017. "They basically like destroyed the school one day": On Newer App Features and Cyberbullying in Schools. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing - CSCW '17*, 1210–1216. https://doi.org/10.1145/2998181.2998279

[73] Jack Sullivan, Catherine Shugrue, Dos Santos, Shelby Chestnut, Darlene S Torres, Suzy Salamy, Robert Lopez, Larissa Pham, Sue Yacka Bible, Cecilia Wolfe, Osheen Lucasian, Robert Gomez, Lucina Morelos, Mariana Marroquin, Cara Presley, Lidia Salazar, Rachel Tillman, and Serena Johnson. 2017. Lesbian, Gay, Bisexual, Transgender, Queer, and HIV-Affected Hate Violence in 2016. Retrieved March 29, 2018 from www.ncavp.org

[74] Tad Hirsch. 2016. Case Study: Pivot—Surreptious Communications Design. In *Civic Media: Technology, Design, Practice*, Eric Gordon and Paul Mihailidis (eds.). 521–526.

[75] Jessica Vitak, Kalyani Chadha, Linda Steiner, and Zahra Ashktorab. 2017. Identifying Women's Experiences With and Strategies for Mitigating Negative Effects of Online Harassment. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17)*: 1231–1245. https://doi.org/10.1145/2998181.2998337

[76] Kylan Mattias De Vries. 2012. Intersectional Identities and Conceptions of the Self: The Experience of Transgender People. *Symbolic Interaction* 35, 1: 49–67. https://doi.org/10.1002/SYMB.2

[77] Aimee Wodda and Vanessa Panfil. 2015. "Don't talk to me about deception": The necessary erosion of the trans* panic defense. *Albany Law Review* 78, 3: 927–971. https://doi.org/10.1017/CBO9781107415324.004

[78] M. L. Ybarra, K. J. Mitchell, J. Wolak, and D. Finkelhor. 2006. Examining Characteristics and Associated Distress Related to Internet Harassment: Findings From the Second Youth Internet Safety Survey. *PEDIATRICS* 118, 4: e1169–e1177. https://doi.org/10.1542/peds.2006-0815

[79] *2015 U.S. Transgender Survey: Report on the Experiences of Black Respondents*. Retrieved September 29, 2017 from http://www.transequality.org/sites/default/files/docs/usts/USTS-Black-Respondents-Report.pdf

[80] *Oakland fire: The last hours of the Ghost Ship warehouse*. Retrieved January 7, 2018 from https://www.eastbaytimes.com/2016/12/11/oakland-fire-ghost-ship-last-hours/

[81] 2014. Sexual Assault: The Numbers | Responding to Transgender Victims of Sexual Assault. *Office for Victims of Crime*. Retrieved August 22, 2017 from https://www.ovc.gov/pubs/forge/sexual_numbers.html

Received April 2018; revised July 2018; accepted September 2018