Constructing a Desiring User: Discourse, Rurality, and Design in Location-Based Social Networks

Jean Hardy and Silvia Lindtner
School of Information
University of Michigan
Ann Arbor, USA
{jkhardy, lindtner}@umich.edu

ABSTRACT
A growing body of literature addresses the use of Grindr and SCRUFF, location-based networking applications for gay, bisexual, and queer men. This study builds on that work, asking whose sexuality is produced in the design and use of these applications. Drawing from ethnographic research and discourse analysis, we build on analytical frames from science and technology studies, feminist HCI, and sexuality studies, proposing what we call the *desiring user*: a user whose desires and sexuality are mediated through technological devices in particular ways. In doing so, we demonstrate how the discursive constructions of the user put forth by the creators of Grindr and SCRUFF clash with the lived reality of our rural interlocutors. We address emerging themes in CSCW and HCI related to the construction of sexual subjectivities and social computing in rural settings.

Author Keywords
Location-based social networks; LGBT; rural; Queer HCI; ethnography; discourse analysis; subjectivities of information.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
CSCW has long investigated how the design of computational systems is shaped by ideas about who should be using them and how. From early workplace studies on cyberinfrastructure all the way to research on social media platforms like Facebook, CSCW researchers have shed light on the ways in which system features and situated use are mutually constituent. Much research has shown that this is a continuous process; as systems are updated and social practices and technological cultures shift, what is use and what is design unfold through one another. Building on this long tradition, this paper explores how an emergent genre of social media applications such as SCRUFF and Grindr, location-based social networking apps (LBSNs) for gay and bisexual men, are currently envisioning and cultivating a particular kind of user. While there are many different LBSNs that fall into this category, we focus on Grindr and SCRUFF as the two of the most visible and widely used apps for gay and bisexual men in the United States. Both apps utilize the GPS capabilities of a smartphone and display a limited number of other users (frequently 99 others unless a paid subscriber) in a grid of profile pictures based on distance. Users are able to create profiles, traverse and message other profiles, and frequently utilize additional features such as filtering via physical attributes or location, which vary from app to app (e.g., at the time of writing, users can filter by location on SCRUFF but not on Grindr). While others have examined these technologies as sites of enactment of sexuality, gay culture, and identity [6,8,10,12,14,20,36,37,44], we take a step back and focus specifically on what goes into producing these applications' user.

We explore, in particular, how rural gay men position themselves in relation to the values and ideals of sexuality "scripted" into these applications by the companies' founders and designers. With this, we aim to bring into conversation a small but expanding body of research on queer users and technology in CSCW and HCI [6,7,14,24] with analytical frames on subjectivity and sexuality drawn from science and technology studies (STS), feminist HCI, and sexuality studies. Following in the footsteps of Mary Gray and her ethnographic research with LGBT youth and their use of new media in rural Kentucky [17], we draw from ethnographic research with gay men in a rural part of the American Midwest and pair it with discourse analysis of news articles, promotional materials, and ad campaigns of Grindr and SCRUFF. Drawing from detailed ethnographic insights and analysis of discursive practice, this paper proposes the lens of the "desiring user" that accounts for the ways in which the designer and user of these technologies co-construct a user who desires and expresses sexuality in particular ways. Before we continue with a more detailed account of our methods and related work that shape this project, we begin by offering two stories drawn from our

CSCW 2017, February 25-March 1, 2017, Portland, OR, USA.

ACM ISBN 978-1-4503-4335-0/17/02...$15.00.
DOI: http://dx.doi.org/10.1145/2998181.2998347

ethnographic research and discourse analysis to frame this paper.

A "desiring user"

In January 2016, *Tech Insider* released a short biopic chronicling a day in the life of Grindr CEO Joel Simkhai [41]. It followed Simkhai from his office in West Hollywood to a park in the hills overlooking Los Angeles for an afternoon workout, and then to an event for "LGBT people in tech" that same evening. Throughout the four-minute video, a camera consistently pans to Simkhai, iPhone in hand, surfing Grindr, the location-based social network for gay and bisexual men that he created in 2009. In one of these shots, Simkhai is seen scrolling through profiles, narrating his use for the camera:

> "Just looking around to see who is the closest here. Maybe we can meet someone right now. The closest guy is… 400 feet away. You see that someone is 400 feet away, just walk over and say hi, meet them there. It's a lot more spontaneous, it's a lot more real-time, it's a lot more organic."

This anytime, anywhere access to other gay men is what Grindr claims to offer: 99 profiles (or more if you pay for the premium version) arranged to show who is closest, when they were last active, and a photo that dominates the smartphone screen. In a *New York Times* article, Simkhai explains the interface: "Grindr is a very, very visual experience… the visual leads to the drive to desire and to be desired" [42]. According to Simkhai, the visual and place-based user experience is essential to facilitating processes of desiring and being desired.

Halfway across the United States in a rural part of the American Midwest, Charles had his own way of navigating the visuals of Grindr and his desires.[1] He had recently moved from a large city in the southwestern United States with a vibrant gay community to the small town where he had grown up. After his return, Charles downloaded Grindr and SCRUFF. Setting up his profile, he uploaded a picture of himself standing in his backyard wearing a pair of shorts and a t-shirt. One key thing was missing from the photo he chose: his face. In a 2015 interview[2] Charles explained to us, "there's a lot of people in the closet up here, a lot of people that are very concerned about identity, and I figured that I would be as well." An out and proud gay man for many years, Charles elaborated how his move from urban to rural America entailed a shift in what it meant to be seen. "In the city," he explained, "when I meet or see somebody… if I know them, it's because I want to know them." He distinguished this from living in rural America where seeing people often entailed knowing people: "because they know me, they know my family." Here, the visuals of Grindr were not only "lead[ing] to the drive to desire and be desired" as CEO Simkhai put it, but became the site to negotiate what it meant to be seen and what it meant to desire in the rural Midwest.

These snippets drawn from our data collection tell the tale of two seemingly different experiences of location-based social networking apps for gay, bisexual, and queer men. In one account, we see how Grindr could (and arguably, according to CEO Simkhai, should) be used: being seen and enabling spontaneous, real-time face-to-face encounters with other men. In the other account, the same app is used to remove oneself from particular contexts and to gain a sense of control of one's social presence in a locale. And yet, both accounts also share something: although the visual affordances of the app were deployed in different ways, both designer and user of the app are attempting to construct a particular kind of "desiring user," *i.e.* a user who expresses, lives, and ultimately desires a certain kind of gay life and sexuality [28]. In the articulations of Grindr CEO Simkhai, this desiring user is a gay man who is empowered by digital technology to live his desires publicly and safely. In Charles's case, this desiring user is a gay man who is empowered by the same technology to garner more control over how he is seen on the apps, seeking solace from the familiarity that pervades his everyday life in rural America.

We argue that in moments like these, wherein creators and users make particular decisions to restrict or encourage certain kinds of usage (both their own and others), a desiring user is created that in part shapes experience and use of the app. When CEO Simkhai stipulated that, "for those who live in remote areas, or in places where homosexuality is frowned upon or even illegal, these apps provide a window into a gay world" [22], he not only envisioned certain kinds of usage, but also constructed a particular kind of subject position: that of the gay user empowered to express and live his desires freely, removed from stigma and notions of illegality, anytime and anywhere. This is more than just the ad campaign of a tech company; it inscribes what it means to be gay, designed into this app and others like it. While Charles articulated and constructed his own version of a gay subject position, he was simultaneously enabled and limited by the more universalized notion of gay sexuality scripted into the design and affordances of the app, of how its uses are perceived, who the user is, and where the user is located.

In this paper, following the lead of Shaowen Bardzell [5], we ask who and what makes SCRUFF and Grindr's user. Our aim is to account for the ways in which "the user" is not only a situated actor, but also a discursive construct, produced by design as much as by users themselves. As Bardzell and Bardzell [4] argue; designs construct "subjects as well as interfaces, products and services," *i.e.* designs cultivate and transform use, rather than merely supporting or extending it. This paper, then, contributes to and expands

[1] All names of interlocutors are anonymized.

[2] Interview quotations have been slightly edited for readability.

from a small but growing body of CSCW research on sexuality and gay identity. By focusing on the construction of subjectivity, we push this literature beyond the contextualization of the profile and use, investigating what user is being constructed as these emergent technologies are taken up across diverse regions and contexts.

RELATED WORK

Location-based social networks for gay and bisexual men

We situate this work amongst and contribute to recent literature on LBSNs designed for same-sex attracted men. For a more technical account and description of these technologies, see [8,10]. This literature focuses primarily on Grindr and has provided insights in our understanding of user profiles (see Figure 1), needs, and behavior [6,14,20,44] and the embedded nature of the LBSNs as sociotechnical systems in cultural space [9,10,12,32,37]. In addressing user profiles, needs, and behavior, Birnholtz *et al.* [6] and Fitzpatrick *et al.* [14] explore how self-presentation and disclosure behaviors as viewed through Grindr vary across a variety of characteristics including location, relationship status, and age. Using the framework of uses and gratifications from communications theory, which stipulates that user needs influence technology use, which in turn results in potential gratification and other effects [44], Gudelunas [20] and Van de Wiele and Tong [44] explore what motivates the use of Grindr. They find, among other things, that a desire for virtual gay-male only community [20] and the blurring of online-offline boundaries brought about by the location-based nature of Grindr [44] are key factors to understanding the use of these technologies. Emerging from this literature is the key finding that user behavior, especially related to disclosure and presentation [6,14] and desired sexual outcomes [44], changes from location to location. If indeed these local norms exist, how do these multiple users and uses come to be? We take this question as one of our underlying concerns in this research, pushing us to investigate technologies and their use in relation to the local norms of particular regions.

Others have investigated how Grindr and SCRUFF unfold in relation to wider cultural and social processes, specific locales, and situated understandings of place, such as the unique identity practices of rural teens [37]. Crooks [12], for instance, situates Grindr within historical and present day iterations of gay geography and gay male urban semiotics, stipulating that Grindr is a "throwback" to times where gay semiotics or secret codes and ways of dressing were more important, because openly gay spaces were less common. Brubaker *et al.* [10] theorized the quitting of Grindr as an opportunity to further explore how the app is embedded within broader technological practices and norms as well as cultural processes. Finally, both Roth in his study of SCRUFF [36] and Blackwell *et al.* in their study of Grindr [8] develop theories of LBSN use as it unfolds through intense and intimate relationships to specific places and spaces. The way distance is designed into LBSNs, as Blackwell *et al.* argue, "co-situates geographically proximate users in a way that transcends and conflates socially defined places and neighborhoods" [8].

Taken together, this prior research demonstrates that Grindr, SCRUFF, and their respective users are embedded in complex historical, social, and technical systems. LBSN use does not exist in a vacuum, in fact, as many authors have noted, geography and location play a key role in both user behavior and profile creation [6,14,44]. This work has begun opening up understanding of Grindr and SCRUFF as shaped by technological, social, and cultural processes.

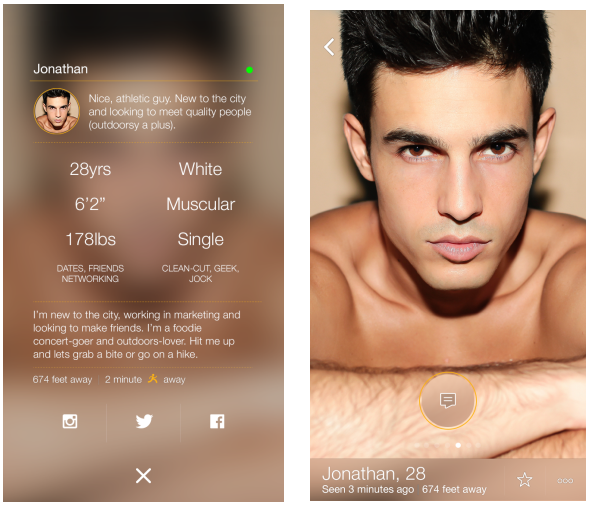

Figure 1: The Grindr user profile (image taken from the Grindr press kit)

We build on this prior research by centering specifically on the question of what and whose gay sexuality is produced in the design and use of these apps. We start with the understanding that both design and use are culturally and geographically situated. We stick closely to both the design and materiality of the apps, analyzing them in conversation with how they are articulated and experienced by their users and creators. More specifically, we explore how the materiality of the apps themselves is affected by scarcity engendered in rural areas. In other words, we unpack how the apps are situated within a rural circulation of non-normative LGBT resources [17]. This analytical approach is informed by STS, Feminist HCI, and sexuality studies, which we introduce next.

Subjectivity, Scripts & Construction

Design entails not only the design of the system or the interface, but also the user [4]. For instance, as our opening of this paper shows, the design of Grindr both envisions and enables a particular kind of user, one that desires immediate and flexible access to like-minded others, while comfortably and quickly navigating dense cities and gay neighborhoods. In other words, through the specific design choices of the app a particular kind of gay subject is constructed: a gay technology user who is empowered by this very use to express and live his sexuality as he desires.

Important to note here is that the notion of construction does not imply a lack of agency of the user or a sense of fixed identity [4]. On the contrary, a focus on the discursive and designerly construction of the user opens up the analysis to include, as Bardzell and Bardzell have shown, both the "subject position, which are social roles that people are thrust into, and subjectivity, which is the felt experience and creative agency of individuals within that situation" [4].

But how are subject positions scripted into the design? We draw here from the analytical framing of scripts as developed by scholars of science and technology studies (STS) [1,33,43] and sexuality studies [15]. The concept of script captures how technological artifacts "enable or constrain human relations as well as relationships between people and things" [33]. In her seminal essay on "the De-Scription of Technical Objects," Madeleine Akrich suggests, "like a film script, technical objects define a framework of action together with the actors and the space in which they are supposed to act" [1]. Technologies, in other words, do not determine action, but "anticipate the skills, motives, interests, and behavior of future users" [1]. This work was both an extension of and departure of work that had investigated "politics of design" [45], a key theme also to CSCW scholars alongside other analytical sensibilities including but not limited to "values in design" and "reflexive design," see for instance [31, 38]. We find utility in the analytical concept of scripts as it was intended to make users more visible as active participants in technology development. "We have to go back and forth continually between the designer and user," Akrich argues, "between the designer's projected users and the real users, between the world inscribed in the object and the world described by its replacement." It is exactly such back and forth that we intend to explicate by bringing together discursive productions of designers and app inventors with the practices and articulations of rural users.

Prior to Akrich, John Gagnon and William Simon used "sexual scripts" as a way to understand how human sexuality is constructed and learned [15]. According to them, "scripts are involved in learning the meaning of internal states, organizing the sequences of specifically sexual acts, decoding novel situations, setting the limits on sexual responses, and linking meanings from nonsexual aspects of life to specifically sexual experience." Gagnon and Simon explain how sexuality does not come directly and solely from the biological body, but emerges from historically and socially situated relationships, encounters, and interactions with others and oneself through desire. Shortly after Gagnon and Simon published their work on sexual scripts, Ken Plummer's *Sexual Stigma* took a similar constructionist approach to gay male sexuality, showing the "importance of emergent and contested sexual meanings" and a "sense of the 'constructed' nature of human sexualities" [35]. As noted by Plummer, the work by Gagnon and Simon was key in moving past the view of a necessitated and static sexual drive, allowing sexuality to be viewed as something contingent [34].

In this paper, we employ these analytical frames of scripts, subjectivity, and construction to examine how scripts such as sexuality, desire, and distance shaped subjectivity and the construction of SCRUFF's and Grindr's user. As Bardzell and Bardzell [4] argue, this approach resists any notion of there being a universal user shaped by one single subjectivity such as the "gay man," all the while accounting for the ways in which system designs co-construct their user subject.

METHODS

We draw from ethnographic research with gay men, conducted in 2015 and 2016, with a total of six weeks on site. The first author has been a user of Grindr and SCRUFF for five years at the time of writing and has been critically engaged with studying the apps for the past two years. This work was partially motivated by calls for more understanding around rural uses of social media [16, 25] and a concern we saw in dramatic urban biases in research on LBSNs among gay men. We chose ethnography as a method to better understand, on the ground, how rurality affects the day-to-day uses of these apps.

As is typical for standard ethnographic method, this research included hundreds of hours of participant observation online (the apps), at events including annual gay prides and meetings of a local LGBT organization, and at cafes and restaurants frequented by rural LGBT people. Locations for observation were selected based on conversations with local LGBT people who were in contact with the first author. Participant observation, though not a primary source of data for this paper, enables us, through an engagement with a much broader LGBT community beyond the immediate use of the apps, to better situate the use of these apps within particular locales.

We conducted semi-structured interviews with 13 gay identified men (six in person, seven over the phone), ages ranged from 20s to 60s. Each man was a resident of a non-metropolitan county as defined by the United States Department of Agriculture[3], and was recruited via direct message on the SCRUFF application inviting them to participate in an interview about their use of the application. The interviews included a guided walkthrough of the individual's user profile; questions about ease of use, meeting others through the app, privacy, safety, and geography; as well as questions about their LGBT friends and community. While the men were recruited via SCRUFF, all were users of other LBSNs, such as Grindr, Jack'd, or Growlr. In fact, during multiple interviews, users had difficulty recalling whether particular interactions they

[3]http://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/what-is-rural.aspx

had with others were indeed on SCRUFF, or on another app such as Grindr. Because our interlocutors often viewed and interacted with those around them across multiple platforms, we bring these apps together in our analysis to account how they were experienced on the ground.

Given the nature of ethnographic engagement, our research enabled us to have informal conversations with approximately 20 others outside of a formalized interview setting. These conversations helped frame our understanding of the rural use of these technologies. Quotes used in this paper, however, stem solely from our semi-structured interviews. All names are anonymized and geographic place-names omitted to preserve identity. We stayed in contact with many of our rural interlocutors through this process and this particular study is part of ongoing research on rural queer sexualities at the site of information and communication technology use and design.

Alongside our ethnographic engagement, we conducted in-depth discourse analysis of news articles, advertisements, interviews with the founders and CEOs, as well as blog posts by and about the companies Grindr and SCRUFF. In total, we analyzed and coded approximately 80 news articles, blog posts and interviews with the founders and developers of the apps. These were collected from the respective websites, blogs, and social media feeds of Grindr and SCRUFF in early 2016. In addition to sexuality, desire, and distance, privacy and safety emerged as central themes. Our discourse analysis followed standard qualitative research coding methods, *i.e.* identifying recurring as well as new themes across numerous accounts. To bring together our ethnographic data with our discourse analysis, we employed Adele Clarke's approach of "Situational Analysis: Grounded Theory after the Postmodern Turn" to map themes that emerged from the fieldwork and from discourse analysis alongside one another and in an iterative cycle [11]. A central goal of Situational Analysis is to avoid falling into the trap of treating discourse as simply what frames or supersedes practice. Instead, it provides a methodological and analytical approach to treat articulations and discursive practice alongside one another, tracing how they are mutually constitutive. This method was central for the purposes of our aim to unpack the co-construction of user subjects at the intersection of lived experience, discourse, and material affordances.

FINDINGS

In what follows, we explore themes related to distance, desire, familiarity, safety, and privacy. Across these themes, we unpack how the official narrative provided by Grindr and SCRUFF and the experiences and articulations of the people we worked with did not always align, and often even clashed. It was in these moments of rupture that users negotiated their own subjectivity in relation to the particular kind of *desiring user* as constructed through the design and the articulations thereof. Throughout, we demonstrate how the simple yet common frames of "the empowered gay user" or "the rural user," who is portrayed as not having access to a community and is empowered through his use of these apps, precludes us from understanding how the very construct of a rural user both limits and enables practice.

Creating the desiring user

Across popular press and company-generated public relations material including but not limited to op-eds, blog posts, and interviews, app companies Grindr and SCRUFF articulate their technologies as designed for the interests and values of a particular kind of user, what we call the "desiring user." While Grindr and SCRUFF are two distinct apps, they articulate this desiring user in very similar ways. This user almost always lives in a city with a dense gay population, portrayed as a never-ending supply of new contacts and opportunities for sexual encounter. As Joel Simkhai, the CEO of Grindr, stated in a January 2016 interview with *Passport Magazine*, "Even different parts of a city are a whole new world. You walk for ten minutes, and you see a whole different set of guys. That's the beauty of Grindr for me" [22]. Second, the users of these apps are travelers. In the same interview, Simkhai notes that part of the inspiration for the app came from finding out who is gay and where the gays go in unfamiliar places. Similarly, an October 2015 article on the *New York Times*' travel blog lauded SCRUFF for rolling out new features specifically for gay travellers [30]. Often, there is an implicit notion that the SCRUFF or Grindr user is a cosmopolite, no matter where he lives or travels. In an interview with gay news website *Queerty*, Johnny Skandros, the founder and face of SCRUFF, elaborated this as, "SCRUFF is also the most international gay social dating service out there: Our members have helped us translate SCRUFF into ten different languages" [2]. In an interview with *Fast Company*, Grindr's Simkhai notes that language translation isn't necessary when a user experience is reduced to its simplest form: "Grindr is such a basic experience that you don't really need to speak English to understand how to do it. So, our simplicity of service allows us to scale globally and not actually have to be localized" [3]. Through these press articles and promotional materials, a global, urban-dwelling, and often times well-traveled gay man emerges as the user who has been inscribed into the workings and machinations of Grindr and SCRUFF.

This articulation of the cosmopolite gay as SCRUFF and Grindr's scripted user helps construct and stands in contrast to how these companies speak about rural users. In an interview with *Gay Star News*, Skandros addresses the barriers that rural users face: "There are guys that message me in rural areas that have no gay community at all; no clubs, no resources, no support at all, and they're able to go on Scruff and find a community, find other people to talk to" [26]. A Grindr blog post celebrating the Obergefell v. Hodges court case, which overturned gay marriage bans in the USA in June 2015, chronicled the marriage of two men from rural Minnesota, with Grindr serving as a tool that enabled that union in a place where very few

communication channels existed for gay men [19]. The rural, here, is spoken of as constituting a problem space, largely one of access, yet one that can be overcome by hooking people into the digital networks of Grindr and SCRUFF. These apps are portrayed as sites of empowerment for rural gay men by providing them access or a "window into a gay world" [22].

Whose window?

The rural user, as portrayed in these articulations, fits uneasily with the lived experience of rural gay life we observed in our research. Far from being given access to a wealth of new connections, SCRUFF and Grindr made visible, often painfully so, how limiting and limited one's network of likeminded gay men in their area was. Many described this to us as an "everyone knows everyone" experience, which was central to rural life and which the apps made even more visible. Take, as an example, the following vignette, drawn from our research:

It's 4:30am and Joe sits down in his home to drink a cup of coffee before getting ready for work. He pulls out his iPhone 3G and navigates to the folder that he keeps all of his LBSNs in and opens SCRUFF. The "Global" tab is the first thing that opens and he scrolls through the faces, looking for anything that might catch his eye.[4] *After doing that for a couple minutes he switches over to the "Nearby" tab and shoots a message to a friend who is online and about to end a shift at work, "Hey! Good morning!" Navigating back to the "Nearby" tab, Joe scrolls through the 99 profiles that he can see; the closest person is five miles away, the farthest is 58 miles to the north: 99 profiles, 99 familiar faces. Joe hits the Home button on his iPhone and switches over to Grindr to repeat this process.*

Many of our interlocutors shared similar experiences with us. Dean, for instance, grew up in the rural Midwest but had moved away from home for college when he was 18. Living in Las Vegas for the majority of his adult life, he had become accustomed to having "lots of options" as a gay man, both socially and sexually: "We get 30 million visitors a year [in Vegas]. It was a buffet. If you've ever been to Las Vegas, they have a lot of buffets. Well, SCRUFF was a good buffet as well." When he moved away from Las Vegas back to his hometown, he quickly became familiar with the people that kept appearing regularly on his user grid:

> "I'll turn it on to see who's on 'cause there's only about like 30 gays within the region and I'm friends with half of them. Then I'll check out who's hot on the [Global tab]… And see if there's anybody new in town, of course, anybody visiting, obviously. But for the most part in [my region], it's the same grid."

The buffet lifestyle of Vegas contrasted drastically to the life that Dean lived as he claimed humorously to be the "only gay in the county." Being gay in his region was experienced through heightened visibility and a lack of privacy. If you were to travel to his county and ask anyone if they knew someone who was gay, Dean emphasized when we interviewed him, all fingers would point to him: "It would be better than SCRUFF's GPS locator." For people like Dean and Charles, with whom this paper began, the use of apps like Grindr and SCRUFF made them feel ever more intensively the small-town nature and heightened familiarity of their locales. The difference between the kinds of urban life they had experienced and their own rural context was literally inscribed into the screen in front of them. Far from being a window into a constantly updating and evolving gay world, the apps put on display, over and over, the limiting social world of gay life in the rural Midwest.

In contrasting the discursive construction of the user by the founders and CEOs of SCRUFF and Grindr with the lived experiences of our rural interlocutors, we show that what the user desires shifts dramatically when observed from different vantage points. The user envisioned by the press of Grindr and SCRUFF is an urban gay man with the desire and ability to contact and interact in a multitude of ways with others similar to him. As mentioned earlier, one of Charles' desires, for instance, was to gain more control over his sense of privacy and security in a geographic location that according to him pushed people into the closet. Indeed, the men we interviewed did desire new connections with other gay men nearby, but these desires were often unaccounted for in the current app design, an aspect we turn to in greater detail in the next section.

What we have shown so far challenges any simple notion of there being a rural user empowered by the access provided through location-based apps. And yet, at the same time, we want to emphasize here that the experience and articulations of our interlocutors did not unfold in outright resistance or counter to the story of these applications' scripted ideal user: the user who is empowered by access and global connections to other like-minds. Although their experiences point to the limits of stories of empowerment, many of our interlocutors did not simply abandon the apps as a lost cause. In lieu of access to a wealth of contacts, they found richness in the (albeit limited) resources they mobilized and drew upon in their specific locales. From local bars and gay pride parades to reconnecting online, we found that men communicated with friends, explored sexual encounters, and reflected collectively on their world. Rather than SCRUFF or Grindr offering access to a world of constantly updating grids of gay men, they constituted a key site to decontextualize and reflect what it meant to be gay on their own grounds.

[4] The "Global" tab shows recently logged on users of SCRUFF from all over the world.

The intersection of design & distance

Since at least the 18th century, men who seek other men for sexual purposes have been using coded language and movements to communicate their same-sex desire [32]. This behavior, in the present day often called cruising, is usually situated within a particular location, which adds an additional contextual layer for those deciphering these cues. These spaces are often public or semi-public in nature (e.g. a bar, sidewalk, or park) and spread by word-of-mouth or through websites such as Craigslist or CruisingGays.com. Location-based apps like Grindr and SCRUFF exploit this history in their design, using GPS and locative services that were included in new waves of smartphones in the late 2000s [12,20,36]. Whereas previous social networks and online dating services for gay and bisexual men may have allowed users to filter by location or displayed location information on user profiles, these new location-based apps leverage new technological capabilities and visualize their users on a grid of profile pictures based on proximity. Contemporary technologies created by and for gay and bisexual men are embedded in a social and cultural history wherein proximity and distance become key factors for generating sexuality and community. In the next section, we explore what happens at the intersection of design and distance, what happens when urban scripted notions of gay community are designed into new technologies for gay and bisexual men, and what does that intersection provide for our rural interlocutors?

Frustrations in the "Nearby"

Earlier we demonstrated that there was a disconnect between the rural user as perceived by the app creators and the actual experiences of the rural users we spoke to. Here we show how the design of the application itself enables some of these differences to be enacted. The primary visual feature of these apps is the grid of users that displays others by proximity (See Figure 2).

Though these grids take many forms, every app has a grid with the closest users starting at the top of the screen and getting farther away as you scroll down. Distance becomes the primary feature by which users orient themselves to each other, and outside of sexual orientation itself, is arguably the most important determining factor in facilitating successful encounters. In our interviews, we asked people to take out their phones and tell us how far away the farthest visible users were. On SCRUFF, the men who were non-premium users (*i.e.* only able to see the 99 closest users) were often able to see men up to 180 miles away. To contrast, non-premium users of SCRUFF in a gay neighborhood of a large city may have 99 users within a quarter mile.

A shared frustration among nearly all of our interlocutors was, "The grid never changes!" This lack of change or difference in the grid of local or regional users reflects the theme of familiarity in our previous section. In describing his navigation of the "Nearby" grid on SCRUFF, Matt said that, "by the time you get to the second row, it's already going from users that are six miles away to users that are ten miles away. By the time you're at the end of the third row, it's already fifty miles." In other words, Matt's profile would have been the first picture in the grid, so by the third row of users on this particular app, there would be eleven other users displayed within a 50-mile radius of his position at that moment. Joe expressed similar frustrations when navigating the grid: "You pretty much know who they all are…You're one of like forty [gay men] that may live in [the region]." This is dramatically different from the world that Grindr CEO Simkhai portrayed as, "you walk for ten minutes, and you see a whole different set of guys" [22]. As Mel, a graduate student in a small college town told us, "That's the main purpose of the application: you need to see other people so that you can talk to them. You can't use all these features [when you don't see them]." In other words, every time a rural gay man logs onto SCRUFF or Grindr, takes a peek of that grid, and sees the same profiles staring back at him, he is reminded that this app is not designed for people like him.

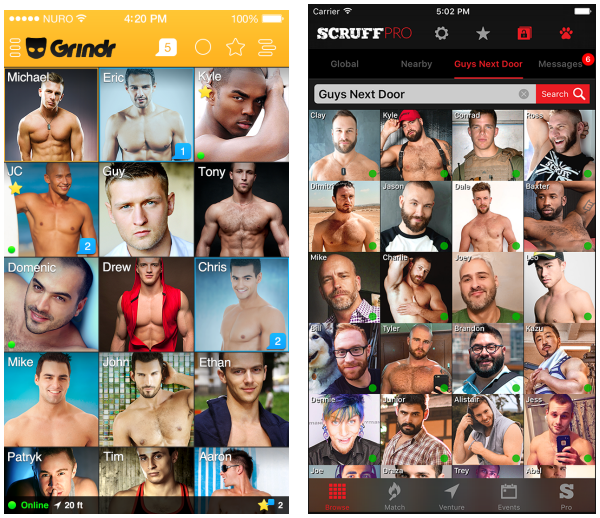

Figure 2: The grids of Grindr (left) and SCRUFF (right) (Images taken from respective press kits)

The profiles on your screen may be farther than they appear

Another key feature that co-locates users to each other is a distance indicator in the profile. This aids in creating a sense of access and immediacy in some cases (e.g. when there are actually users to be viewed close by) and a sense of a spread out and less accessible community in other cases. On both SCRUFF and Grindr, users are able to turn off their distance indicator, meaning that those who viewed their profile would be unable to see how far away they are. As one of our interlocutors Caleb put it: "It's really irritating seeing someone appear and not knowing how far away [they are]. You could look at someone three miles away, and then the next person could not add [the distance feature]. I'd maybe message them, but then the next person is fifty miles away. They could be nearby, or they could be like an hour drive. You just don't know." In turning off the

distance indicator in a rural area where close proximity can no longer be assumed, contextual information was removed, dramatically altering (and sometimes hindering) the user experience.

As with Caleb, distance was often a defining factor for the men interviewed on whether or not they found interactions with other users to be worth their time and energy. Though distance was useful for filtering out interaction, due to the nature of infrastructure in rural areas, the true distance displayed was not necessarily indicative of travel time. Joe summed it up nicely: "I live in the country, up north. So as a bird flies, you're 36 miles away, but why does it take me an hour and a half to get there?" Additional infrastructure that isn't taken into account by the apps is the international border parts of the rural Upper Midwest share with Canada. Caleb spoke of his interactions with Canadian users: "Guys from Canada would appear on the nearby [tab], and they'd be right across the lake, but right across the lake is like 500 miles driving distance or more." Though this is a dramatic and frustrating example of particular user experiences in this area of the world, it is representative of what occurs when the scripted user is not the end user.

While designing for co-location and interaction has its downfalls when put in a rural context, for some of the men we interviewed, the ability to see other users for longer distances had major benefits. Tom spoke about moving away from his hometown years ago. When he bought his first smartphone and downloaded apps like SCRUFF and Grindr, the ability to see users for hundreds of miles enabled him to have conversations and maintain relationships with those he moved away from. He was even surprised at one point, seeing a friend's son back from college and newly out of the closet using the app. As Tom put it, "...when Scruff started...it amazed me how many guys are up here...I just had no clue about that before. Your social network was kind of limited. This has really expanded my social network amazingly...It's been positive that way." Tom used SCRUFF to supplement his existing LGBT social circle that he found through his church, a local straight bar that was known as a safe space for gay people to meet, and a circuit of summer house parties thrown by other LGBT people each year. Tom's account challenges the notion put forth by the creator of SCRUFF that rural gays have "no community at all" and must go to SCRUFF to "find a community" [26].

Situating LBSNs Grindr and SCRUFF within a history that prioritizes proximity and the nearby, we address two features that exist at the intersection of design and distance: the grid of users and the distance indicator. A user grid that rarely changes shows rural users that these apps are not designed for them. A distance indicator that allows for increased privacy also allows for decreased context, inhibiting a decision-making process for our interlocutors. We show that when a particular urban user becomes the default being designed for, the features that get deployed at the intersection of design and distance begin to break down for the rural users we interviewed. While these breakdowns occur, drawing our rural interlocutors farther away from the user scripted by the app companies, our interlocutors still made the apps work, reinterpreting and renegotiating themselves in relation to that constructed user.

Privacy, safety, and familiarity

Concerns around the intersection of design and distance do not only affect perceptions of community visibility and accessibility; the way distance is designed for also addresses concerns around privacy and security, as shown with the ability to turn off the distance indicator on the profile in the previous section. Due to recent severe breaches in the safety of its users [13,39,40], SCRUFF and Grindr have both implemented new features that address some of these concerns. This section asks, how are privacy and safety designed for by SCRUFF and Grindr and what happens when conscious design choices are made for particular others?

Different place, different concerns, different design

Spawned in 2014 by global incidents wherein LBSNs were purportedly used to entrap gay men [13,18,39], Grindr and SCRUFF implemented new controls to increase the perceived safety and security of their users. While these security incidents were not explicitly in rural areas, the resulting design decisions affected the ways in which distance was perceived in the apps themselves. In a Huffington Post article, CEO of SCRUFF, Eric Silverberg explained one of the ways his company dealt with issues of distance security:

> "When a user elects to hide his distance on SCRUFF, we not only remove the information from his profile data, but we also randomize his location on our servers. This means that, if he lives in the West Village in NYC, he could potentially appear in between two people in SoHo. However, if he uses SCRUFF in the countryside, randomizing his location by a few blocks might still not be enough. That's why we take density into account, so if you live in the city, your location will be randomized by a few blocks, but in the country it could be a few miles or more" [40].

In this case, design decisions were made based on perceived concerns around distance indicators and the ability of nefarious others to exploit those indicators to cause harm. What is particularly important to note in relation to our rural focus is that the design decisions implemented *vary depending on location*. In particular on SCRUFF, as Silverberg explained, users who have their distance indicator turned off have their location scrambled based on the density of user population (i.e. rural and urban user locations are treated differently). While it is clear that the app companies are concerned for the privacy and safety of their users, for those we spoke to navigating these concerns was not as simple as a flip of a switch.

Safety and visibility, together

Perceptions of privacy, security, and safety were navigated collectively by the men we interviewed in a variety of ways, including photo choice (e.g. Charles using a picture without a face), the user grid, and through the sense of familiarity provided by the area in which they lived. Multiple men interviewed spoke about others' privacy concerns in their own use of the app. For example, even though Joe was an out gay man, he noted on his profile that he was "discreet," sending a message to men that may be closeted that he is someone who is willing and able to respect their privacy concerns. Additionally, while we were not able to interview many closeted users (partially due to the expected outcome of self-selection bias in an interview study about sexuality), many of our respondents informed us that closeted users were a regular part of their interactions with others on the apps.

The visual nature of the grid of users was also a way that the users interviewed were able to navigate privacy concerns. Fred explained it well when asked about his coming out process and how that influenced his use of these apps:

> "I'm just looking at who's around me, who's gay, because given a small community like this, not everybody is open and comfortable going to LGBT events or things like that. It's kind of like seeing who's flying under the radar and only wants to be seen by gay people, so that's why initially when I first got the app…'cause I wanted to see who else in my area when I was coming out was like me, and maybe wasn't super open about it."

Due to the identity-based nature of Grindr and SCRUFF, the apps were seen as a sort of safe space wherein people could gain access to and visualize a community that was harder to access without outing oneself. In this way, the apps were seen as inherently private in the rural, as Charles noted as quoted earlier in the paper, a place where he has more control over who knows him. This sense of privacy and community is afforded by the identity-based nature of the applications.

In addition, the "everyone knows everyone" nature of the user grid encouraged different experiences of security. Adam, for instance, told us, "I think people up here are...raised to be more honest and more friendly...[we] are a different breed of people. In cities I do [have concerns]. I'm more reserved of what I say and what I give out to people." Adam felt like he knew what he was getting himself into when meeting up with another local, but meeting with someone in a city, a place he was less familiar with, made his use more reserved. Joe had similar concerns: "In [the city], I'm probably a little more cautious...It's like a whole different world down there." These examples show that not only does the familiarity experienced in these apps provide a level of safety and comfort in rural areas, but it also exists in contrast to the perceived dangers of a city.

This section demonstrates that privacy, security, and safety aren't simply settings that can be turned on and off. Grindr and SCRUFF implement design decisions that still treat user populations as stereotyped personas. We show that rather than always having more severe privacy and safety concerns as rural users, LBSNs provided a private visual community where our interlocutors might explore their identity and gain a sense of familiarity with those around them.

Taken as a whole, our three findings sections demonstrate how a scripted desiring user, generated by the app creators and designers, is embedded in Grindr and SCRUFF. These location-based social networks rely on co-location and proximity as a framework of displaying other users. This proximity breaks down outside of dense urban areas with large gay populations, leaving rural users often wondering, "Why do I already know everyone on here?" Responding to an app that has designed a negotiated other, we demonstrate the complex and nuanced ways that rural users interact at the intersection of desire, design, distance, and familiarity.

DISCUSSION

Scripting & its consequences

What can a study of scripts and the scripting of desire, sexuality, privacy, and distance tell us about how emergent platforms like SCRUFF and Grindr construct their user? We have shown in this paper that SCRUFF and Grindr construct not only a particular kind of user (*i.e.* a gay man empowered by technology to desire sexuality anytime and anywhere) but also sexuality itself. Sexuality, as scripted by the app companies, can be codified through profile pictures and enabled by physical proximity and nearness. This universal language of the gay technology user and the kind of sexual subjectivity he experiences breaks down in the face of rural technology use. Recalling the experiences of our interlocutors who became frustrated seeing nearby users who weren't actually nearby, proximity and distance rather than a feature became a burden. It was in these moments, when the scripted subject positions of the apps and the multitude of sexual subjectivities in rural America clashed, that it became clear how limiting the range of identity practices was, quite in contrast to the stories of empowerment and access the companies' ad campaigns promote.

And yet, both app designers and users aspired, albeit differently, towards living the life of an empowered gay technology user. From the perspective of the app companies, this meant to design systems that would make available subject positions of the empowered gay user across diverse populations and timeframes (anytime and anywhere). From the perspective of the rural population of gay men we worked with, this meant to make their own situation work with and alongside, even if often uncomfortably, the more dominant notion of the empowered gay user. For instance, we have shown that when our interlocutors were unable to enact desires for

immediate and constant contact with similar others as laid out by the app companies, their use went beyond a simple sexual desire or drive and became an additional resource to address desire for gay culture and community.

We saw numerous creative ways in which our interlocutors appropriated these apps, be it the ways in which they made use of rural familiarity to toy with profile settings or how they used the apps to keep in contact with distant others. While these practices demonstrate the creative work-arounds and highlight human agency, an explanation through appropriation only tells half the story. Instead, we want to slightly shift our analytical emphasis here to account specifically for the moments and situations where technologies become embroiled in the negotiation over what counts as ideal use, an ideal user, an important design feature, and more broadly a meaningful app.

In this paper, we have demonstrated how moments of breakdown, *i.e.* moments when it became clear that the apps were designed for a particular kind of subject position (the urban dweller, the international traveler, the anytime and anywhere connected gay) and not for others (*e.g.* the rural or the one living in less politically stable contexts), were moments of pause and reassessment of what it meant to live and embody a gay subjectivity. When the designerly scripts clashed with the specific social, cultural, or at times political reality of gay life, what it meant to be gay in today's world was again subject to negotiation. It is in many ways understandable that a mobile phone app can only proximate and never fully encompass the complexity of gay sexuality and experience. What is striking to us, though, is how both app designers and users stuck with the often failing and too simplistic technological frame to express and reflect on what and how they were desiring. It was in these moments, where the incommensurability between what a mobile app can afford and the embodied lived experience of gay life became most pronounced, that what it meant to desire and how one was desiring was up for grabs.

To move beyond breakdown and to make things work, a compromise is achieved of sorts: an approximation of the rich and complicated life of minority groups in order to live the life of a desiring user. What we see at work here is how fairly unified notions of both gay sexuality and technology use are co-constructing who the user is and how he is supposed to experience sexuality. Paying attention to such processes of scripting and its consequences allows us to move beyond more common approaches such as designing *for* gay users and identity, which rarely accounts for the multiplicity and situated nature of sexuality and desire we reported in this paper.

Putting the queer back into the queering of computing

In doing this work, we put the study of particular kinds of queer sexualities at the center of our investigation.[5] In previous work, Ann Light proposed a study of Queer HCI[6] that investigates resistance to computing through the process of queering wherein queering is defined as "problematizing apparently structural and foundational relationships with critical intent" [29]. At the same time, and as we covered in the related literature section, a growing body of work in HCI and CSCW has stressed the importance of centering in on the identities and experiences of queer users [7,9,14,21]. Would this latter work speak to Light's call for a "queering of HCI?" We doubt this research with queer users would currently be seen as such as it has predominantly focused on expanding use to include ever more diverse and minority populations rather than articulating a critical intervention. We do believe, however, that there is room for connection here.

In this paper, we have accounted for the many ways in which the people we worked with both related to but also challenged categories of there being a universal gay user who lacks access to the complexities of gay life. In focusing on these negotiations of sexuality we are able to see multiple subjectivities of information in the making [4]. These subjectivities emerge from both the scripted ideal use of the global urban gay male put forth by Grindr and SCRUFF and the appropriations and negotiations of our rural interlocutors. As queer theorist and historian, David Halperin poses, these multiple subjectivities are not a mistake: gay men have a history of "receiving, reinterpreting, and revising mainstream culture, of decoding and recoding the heterosexual or heteronormative meaning already encoded in that culture, so that they come to function as vehicles of gay or queer meanings" [23]. Queerness and queering means not only reinterpreting the heteronormative for new queer uses, but also reinterpreting the queer for further queer meaning.

We believe that a starting point towards a Queer HCI is to account for the many ways in which experiences of queer subjectivity through technology happens at the intersection of design decisions and use, and how people articulate both. A Queer HCI, we argue, should not foreclose the lived experiences of those whose day-to-day practice might be, even if inadvertently so, engaging in the status-quo. As Gray shows through her interlocutors' abilities to create a space for themselves as rural LGBT youth in the aisles of Wal-Mart [17], in order to make space for community as a

[5] We use queer as an umbrella term to encompass lesbian, gay, bisexual, and other non-heterosexual sexualities.

[6] While our subjects identify as gay men, it is useful to follow the lead of Ann Light in thinking about non-heterosexual and non-heteronormative sexualities and further the use of the term Queer HCI rather than pushing for something like a "gay" HCI.

rural LGBT person, it is almost a necessity to engage with/in the heteronormative. This is not to argue that queer designers, queer users, or queer researchers are in some ways more authoritative or better equipped to intervene in the status-quo. As we have shown throughout our study, it is not enough for queer technologies to be created by queer people. Our attempt, rather, is to locate critical intervention in sites that appear as seemingly unexpected: in the articulations of queer desires, or when users perform micro-actions of negotiation, making do, or fitting in, even when it is uncomfortable to do so.

Negotiating the nearby & designing for rurality

Previous research on Grindr and SCRUFF developed theories of LBSN use that rely on intense and intimate relationships to space and place [8,36]. In particular, Blackwell et al. argue that co-situation or co-presence are defining features of applications like Grindr that, as they say, "co-situates geographically proximate users in a way that transcends and conflates socially defined places and neighborhoods" [8]. They state that Grindr "collapses or erases contextual information that people use in discerning norms and others' intentions…" While we have also argued that co-situation through proximity on the user grid is a key feature of the apps, we have shown, to the contrary, that instead of erasing contextual information from the user experiences of our rural interlocutors, that co-situation actually reinforces awareness of geography and lack of resources.

For instance, as noted by one of our interlocutors Caleb in his use of Grindr, "Guys from Canada would appear on the nearby [tab], and they'd be right across the lake, but right across the lake is like 500 miles driving distance or more." Instead of allowing Caleb to ignore the vast space between himself and the men being shown to him on the grid of users, Caleb actually became acutely aware of how few gay men lived near him. Additionally, the feelings of familiarity and the "everyone knows everyone" experience that emerged out of almost all of our interviews shows that not only do people become aware of the scarcity, but it becomes engrained as key to their experiences of LBSNs.

These examples show not only how co-situation reinforces awareness of geography and resources, but also how design that can be seen as inherently urban breaks down in rural areas. Previous work has tackled sociotechnical systems and the urban/rural divide, showing not only that the user behavior in rural social network sites is different [16], but that the user-generated data from sites like Twitter and Wikipedia that researchers in CSCW and HCI often rely on is biased in providing higher quality data for urban areas [25,27]. These findings necessitate a better understanding of sociotechnical systems in rural America.

We believe that there are key themes from our study that moving forward can help address design concerns for rural users, especially in the design of LBSNs. First, the scarcity of users experienced by our interlocutors allows some features to break down. For example, when the distance indicator is turned off in a user's profile that eliminates necessary contextual information helpful for decision-making processes related to meeting nearby others. Second, familiarity complicates notions of anonymity and privacy. As we have shown with our examples from Dean and Charles, the familiarity provided by LBSN use in rural areas made them very aware of how different their current life was in contrast to their previous life in cities. Third and finally, designing for proximity and distance gets more complicated when scarcity and large geographic boundaries are taken into account. Not only do profiles appear closer than they actually are, as the case with our example from Caleb in this section, but nearby-ness itself as a concept for navigating interpersonal relationships and meeting face-to-face can change. What "nearby" means is going to be inherently different in the SCRUFF offices in Manhattan compared to the "nearby" experienced by our rural interlocutors in the rural Midwest, who would often justify traveling hours to meet others.

CONCLUSION

This paper has shown how rural gay subjectivities are negotiated in relation to the values and ideals of sexuality and gay identity "scripted" into Grindr and SCRUFF by the companies' founders and designers. In doing so, we argue, a *desiring user* is created, a user whose desires and sexuality are mediated through technological devices in conflicting ways. We extend work being done in the CSCW and HCI communities on the use of location-based social networks by gay and bisexual men. Through our ethnographic engagement with our interlocutors, we show how multiple subjectivities of information are created, demonstrating the value of investigating the pragmatics of gay sexuality and pushing for more attention to be paid to the experiences of rural users of social technologies.

ACKNOWLEDGEMENTS

We thank Nicole Ellison and Cliff Lampe for their invaluable input during data gathering, analysis and write-up as well as Shaowen Bardzell, Lindsay Blackwell, and Stephen Molldrem for feedback on drafts. Initial findings from this work were presented at the "Let's Talk About Sex (Apps), CSCW" workshop at CSCW 2015 and we appreciate the input from the organizers and participants of that workshop, especially Mark Handel, Jeremy Birnholtz, and Irina Shklovski. This work was supported in part by the National Science Foundation under awards 1513596 and 1321065, the University of Michigan Rackham Merit Fellowship program, and a Master's Thesis grant by the University of Michigan School of Information.

REFERENCES

1. Madeleine Akrich. 1992. The De-Scription of Technical Objects. In *Shaping Technology/Building Society: Studies in Sociotechnical Change*, Wiebe E. Bijker and John Law (eds.). MIT Press, 205-224.

2. Dan Avery. 2012. APP FAB: Hooking Up With SCRUFF's Johnny Skandros. Retrieved April 24, 2015 from http://www.queerty.com/app-fab-hooking-up-with-scruffs-johnny-skandros-20120622
3. Drake Baer. 2014. CEO of Grindr on The Power of Simplicity and Becoming an Unintentional Activist. Retrieved April 24, 2016 from http://www.fastcompany.com/3025128/bottom-line/ceo-of-grindr-on-theg-power-of-simplicity-and-becoming-an-unintentional-activist
4. Jeffrey Bardzell and Shaowen Bardzell. 2015. The User Reconfigured: On Subjectivities of Information. In *Proceedings of The Fifth Decennial Aarhus Conference on Critical Alternatives* (AA '15). Aarhus University Press 133-144.
5. Shaowen Bardzell. 2010. Feminist HCI: Taking Stock and Outlining an Angenda for Design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '10), 1301-1310.
6. Jeremy Birnholtz, Colin Fitzpatrick, Mark Handel, and Jed Brubaker. 2014. Identity, Identification and Identifiability: The Language of Self-Presentation on a Location-Based Mobile Dating App. In *Proceedings of Mobile HCI 2014*, 3-12.
7. Jeremy Birnholtz, Irina Shklovski, Mark Handel, and Eran Toch. 2015. Let's Talk About Sex (Apps), CSCW. In *CSCW '15 Companion*, 283-288.
8. Courtney Blackwell, Jeremy Birnholtz, and Charles Abbott. 2015. Seeing and Being Seen: Co-Situation and Impression Formation in a Location-Aware Gay Dating App. *New Media & Society.* 17, 7, 1117-1136.
9. 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).
10. Jed Brubaker, Mike Ananny, and Kate Crawford. 2014. Departing Glances: A sociotechnical account of 'leaving' Grindr. *New Media & Society*. 18, 3, 373-390.
11. Adele Clark. 2005. *Situational Analysis: Grounded Theory After the Postmodern Turn.* SAGE Publications.
12. Roderic N. Crooks. 2013. The Rainbow Flag and the Green Carnation: Grindr in the Gay Village. *First Monday*. 18, 11 (November 2013).
13. J. Lester Feder. 2014. Grindr Warns Egyptian Users as Six Accused of Homosexuality are Convicted Over Facebook Post. *Buzzfeed*. Retrieved on May 27, 2016 from https://www.buzzfeed.com/lesterfeder/grindr-warns-egyptian-users-as-six-accused-of-homosexuality
14. Colin Fitzpatrick, Jeremy Birnholtz, and Jed Brubaker. 2015. Social and Personal Disclosure in a Location-Based Real Time Dating App. In *Proceedings of the 48th Annual Hawaii International Conference on System Science*, 1983-1992.
15. John Gagnon and William Simon. 1973. *Sexual Conduct: The Social Sources of Human Sexuality*. Aldine Publishing Company.
16. Eric Gilbert, Karrie Karahalios, and Christian Sandvig. The Network in the Garden: An Empirical Analysis of Social Media in Rural Life. In *Proceedings of the 2008 SIGCHI Conference on Human Factors in Computing Systems* (CHI '08), 1603-1612.
17. Mary L. Gray. 2009. *Out in the Country: Youth, Media, and Queer Visibility in Rural America*. NYU Press.
18. Grindr. 2014. Grindr's Location Security Update. Retrieved May 27, 2016 from http://www.grindr.com/blog/grindrs-location-security-update/
19. Grindr. 2015. Marriage Equality: 0 Feet Away. Retrieved April 24, 2016 from http://www.grindr.com/blog/marriage-equality-0-feet-away/
20. David Gudelunas. 2012. There's an App for that: The uses and gratifications of online social networks for gay men. *Sexuality & Culture*. 16, 347-365.
21. Oliver Haimson, Jed Brubaker, and Gillian Hayes. 2014. DDF Seeks Same: Sexual Health-Related Language in Online Personal Ads for Men Who Have Sex With Men. In *Proceedings of the 2014 SIGCHI Conference on Human Factors in Computing Systems* (CHI '14), 1615-1624.
22. Stuart Haggas. 2016. Grindr & Scruff & Hornet… Oh My! Using Gay Social Networking Apps When Traveling. Retrieved April 1, 2016 from http://passportmagazine.com/grindr-scruff-hornet-oh-my-using-gay-social-networking-apps-when-traveling/
23. David Halperin. 2012. *How to be Gay*. Harvard University Press.
24. Mark Handel, Rena Bivens, Jed Brubaker, Oliver Haimson, Jessa Lingel, and Svetlana Yarosh. 2015. Facebooking in "Face": Complex Identities Meet Simple Databases. In *CSCW '15 Companion*, 122-125.
25. Brent Hecht and Monica Stephens. 2014. A Tale of Cities: Urban Biases in Volunteered Geographic Information. In *Proceedings of the Eighth International AAAI Conference on Weblogs and Social Media*, 197-205.
26. David Hudson. 2015. Meet the man behind Scruff. Retrieved April 24, 2016 from http://www.gaystarnews.com/article/meet-the-man-behind-scruff/#gs.fR5_FxU

27. Isaac L. Johnson, Yilun Lin, Toby Jia-Jun Li, Andrew Hall, Aaron Halfaker, Johannes Schöning, and Brent Hecht. 2016. Not at Home on the Range: Peer Production and the Urban/Rural Divide. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (CHI '16), 13-25.
28. Gopinaath Kannabiran, Shaowen Bardzell, and Jeffrey Bardzell. Designing (for) Desire: A critical study of technosexuality in HCI. In *Proceedings of NordiCHI '12*, 655-664.
29. Ann Light. 2011. HCI as Heterodoxy: Technologies of identity and the queering of interaction with computers. *Interacting with Computers*. 23, 430-438.
30. Steven McElroy. 2015. An App for Gay Travelers that Focuses on the Social. *New York Times*. Retrieved on May 27 from http://www.nytimes.com/2015/10/21/travel/an-app-for-gay-travelers-that-focuses-on-the-social.html
31. Helen Nissenbaum. 2001. How Computer Systems Embody Values. *IEEE Computer*, 118-119.
32. Rictor Norton. 2002. *Mother Clap's Molly House: The Gay Subculture in England 1700-1830*. Heretic Books.
33. Nelly Oudshoorn and Trevor Pinch. 2003. Introduction: How Users and Non-Users Matter. In *How Users Matter: The Co-Construction of Users and Technology,* Nelly Oudshoorn and Trevor Pinch (eds.). MIT Press, 1-25.
34. Ken Plummer. 1983. Symbolic Interactionism and Sexual Conduct: an emergent perspective. In *Human Sexual Relations: Towards a redefinition of Sexual Politics*, Mike Brake (ed.). Pantheon Books, 223-241.
35. Ken Plummer. 2003. Queers, Bodies and Post-Modern Sexualieties: A note on Revisiting the "Sexual." *Qualitative Sociology*. 26, 4, 513-529.
36. Yoel Roth. 2014. Locating the "Scruff Guy": Theorizing Body and Space in Gay Geosocial Media. *International Journal of Communication*. 8, 2113-2133.
37. Raz Schwartz. 2011. Out of the Grindr? Location-based Services and Teen Queer Identity Work in Rural US. Paper presented at the American Anthropological Association Invited Session.
38. Phoebe Sengers, Kirsten Boehner, Shay David, and Joseph 'Jofish' Kaye. 2005. Reflective Design. In *Proceedings of 4th Decennial Conference on Critical Computing*, 59-68.
39. Conor Sheils. 2014. Egyptian Cops Using Grindr to Hunt Gays. *Cairo Scene*. Retrieved May 27, 2016 from http://www.cairoscene.com/LifeStyle/Egyptian-Cops-Using-Grindr-To-Hunt-Gays
40. Eric Silverberg. 2014. Privacy, Security and GPS-Based Apps: An Inside Look From SCRUFF. Retrieved April 24, 2016 from http://www.huffingtonpost.com/eric-silverberg/security-location-and-the_b_5793216.html
41. Tech Insider. 2016. The man behind Grindr—the dating app that a Chinese gaming company just bought. Retrieved April 24, 2016 from http://www.techinsider.io/grindr-ceo-joel-simkhai-daily-routine-2016-1
42. Guy Trebay. 2014. The Sex Education of Grindr's Joel Simkhai. Retrieved May 19, 2016 from http://www.nytimes.com/2014/12/14/fashion/the-sex-education-of-grindrs-joel-simkhai.html?_r=0
43. Ellen van Oost. 2003. Materialized Gender: How Shavers Configure the Users' Femininity and Masculinity. In *How Users Matter: The Co-Construction of Users and Technology,* Nelly Oudshoorn and Trevor Pinch (eds.). MIT Press, 193-208.
44. Chad van De Wiele and Stephanie Tom Tong. 2014. Breaking Boundaries: The Uses & Gratifications of Grindr. In *Proceedings of UbiComp 2014*.
45. Langdon Winner. 1986. *The Whale and the Reactor: A Search for Limits in an Age of High Technology*. University of Chicago Press.