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“That Looks Like Me or Something i Can Do”: Affordances and Constraints in the Online Identity Work of US LGBTQ+ Millennials

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“That looks like me or something I can do”: How visibility, anonymity, and association enable and constrain the information practices of LGBTQ+ individuals

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Abstract

This paper examines how search engines and social networking sites enable and constrain the identity-related information practices of LGBTQ+ participants. I employ affordances as a process concept to understand the recursive relationship between individuals and technologies and envision information practices as an outcome of this relationship. Guided by this conceptual framework, I conducted 30 semi-structured interviews with LGBTQ+ individuals between the ages of 18 and 38. Data analysis identified three key affordances that enable and constrain their information practices: visibility, anonymity, and association. Findings indicate that participants are highly skilled in appropriating technological features to engage in desired information practices, such as seeking or creating. However, they must also contend with significant sociocultural barriers encoded into these features, which reinforce hetero- and gender-normative identity discourses. Library practitioners and systems designers can use these findings to create and offer services and systems inclusive of LGBTQ+ populations.

Keywords: Affordances, Information practices, LGBTQ+, Qualitative research, Search engines, Social-networking sites, Sociomateriality

Imagine the following scenario. An individual is questioning her gender identity. Lacking a specific label to describe her feelings, she enters the following terms into a search engine: "feel male but only on the inside." Despite millions of results, she only looks at the first few. One result links to an outdated forum post where someone asks whether this feeling is normal and will pass with time. Another provides a list of doctors and therapists. A final result links to a quiz that determines whether the quiz taker has a "male" or "female" brain. These results are not relevant to the searcher's lived experience. Frustrated, she closes out of the results window.

Informed by 30 semi-structured interviews, this description illustrates the complicated relationship between online technologies and the information practices of lesbian, gay, bisexual, transgender, and queer (LGBTQ+) individuals. On the one hand, online technologies provide opportunities for individuals to engage in information-related activities that advance their identity work, or what "people do, individually or collectively, to give meaning to themselves or others" (Schwalbe & Mason-Schrock, 1996, p. 115). However, online technologies can also limit these prospects, as the scenario above demonstrates.

This study explores how the relationship between online technologies and LGBTQ+ individuals enables and constrains their identity-related information practices. These action possibilities and impossibilities represent affordances (Gibson, 1979). I use affordances as a conceptual lens to examine the information practices of 30 LGBTQ+ participants. Since participants cited search engines and social-networking sites as shaping their identity-related information practices, I focus on these two technologies.

Applying affordances to the study of information practices informs a holistic understanding of how people use online technologies to seek, create, evaluate, and share information. Without such a comprehensive perspective, researchers risk viewing technology either as a tool to be mastered or an autonomous force shaping society, rather than understanding how it interweaves with individual users and broader sociocultural contexts. An affordance lens legitimizes the uses of search engines and social-networking sites by LGBTQ+ individuals to interact with identity-related information and also identifies inherent sociocultural issues to these uses. Implications from these findings inform how library practitioners and system designers can create information services and systems more inclusive of LGBTQ+ populations.

Literature Review

Online Technologies and LGBTQ+ Individuals

Research in fields like Communications, Cultural Studies, and Science and Technology Studies has demonstrated how online technologies can act as critical resources for LGBTQ+ individuals. These technologies facilitate the establishment of communities where individuals can feel accepted, particularly when marginalized offline (O’Riordan & Phillips, 2007; Pullen & Cooper, 2010). Reported motivations for online technology use include maintaining anonymity (Dhoest & Szulc, 2016; Fox & Warber, 2015), connecting to LGBTQ+ peers and information (Dehaan, Kuper, Magee, Bigelow, & Mustanski, 2013; Fox & Ralston, 2016), and being exposed to a new set of norms that enable individuals to redefine and reclaim their social realities (Gray, 2009; Raun, 2015).

However, identity development does not occur in a vacuum, as online technologies often reflect offline structural disadvantages. Real name policies provide an example. Adopted by social networking sites like Facebook, these policies suppress names that are not “real enough.” Those affected by these policies include transgender individuals who may not use their birth names (Haimson & Hoffman, 2016), as well as drag performers (Lingel & Golub, 2015). Material¹ features like automated flagging or reporting can amplify authenticity narratives by signaling what types of accounts should be removed – predominately those held by marginalized users (Crawford & Gillespie, 2016). However, these users are not without agency. For instance, they can tactically appropriate features like hashtags to mobilize viral campaigns against real name policies, as was the case with the #MyNameIs campaign on Facebook (MacAulay & Moldes, 2016).

The literature reviewed has denoted the dual roles of human and material agencies in shaping the practices and technologies that LGBTQ+ people use in their everyday lives (Faraj & Azad, 2012). However, few studies have considered both agencies – veering either toward voluntarism, i.e., viewing technologies as neutral tools, or determinism, i.e., positing that technology determines identity-related outcomes (Shaw & Sender, 2016; Wakeford, 2000). An affordance lens gives equal emphasis to human and material agencies. Studies that have employed this lens (Dame, 2016; Fox & Ralston, 2016; Fox & Warber, 2015; MacAulay & Moldes, 2016; Niedt, 2016; Tan, 2016) have highlighted tactics for LGBTQ+ individuals to resist sociocultural norms when using online technologies while also recognizing how these technologies limit their identity expressions. Implications from findings lend agency to LGBTQ+ individuals by identifying means for tactical resistance and offering design and policy-based recommendations for more inclusive systems.

Affordances in Library and Information Science (LIS) Literature

Within LIS, an affordance lens provides a holistic understanding of information practices by highlighting "how systems and users interact within a broader social frame" (Sadler & Given, 2007, p. 116). Consider an academic library adopting e-journals. E-journal technology does not merely represent a new tool or feature. Instead, this technology shapes how users select information, perhaps influencing their preference for e-journals since they are convenient to retrieve without visiting the physical library. This technology could also impact the library's layout, with print journals going into storage and librarians repurposing the new space into areas for collaboration. Also, library practices can influence e-journal technology. For instance, the way e-journals are searched and accessed by users can affect their subsequent packaging and dissemination. This example illustrates the importance of understanding information practices within a broader material and sociocultural context or else risk not comprehending them at all (Sadler & Given, 2007).

Affordances remain an understudied concept within LIS. Studies that have employed this lens (Björneborn, 2010, 2017; Fajkovic & Björneborn, 2014; Lloyd, 2012; Sadler & Given, 2007) adopt ecological (Gibson, 1979) and Human-Computer Interaction (HCI) (Norman, 1988) perspectives of affordances as relational and perceived. In other words, the affordances people consider valuable vary based on context. This variation can lead to affordance gaps or the differences between affordances perceived by users and those intended by designers. Sadler & Given (2007) have contrasted academic library affordances experienced by graduate students with those librarians attempt to provide. Findings demonstrated that students make use of intended affordances, such as inter-library loan, but are unaware of others, such as information literacy instruction. Students also perceived unintended affordances, like sharing unauthorized journal articles with friends.

Conceptual Framework

This study builds on prior research by framing online technologies as shaping and being shaped by LGBTQ+ individuals' identity-related information practices. The study's conceptual framework addresses this recursive relationship using two concepts – information practices and affordances.

Information Practices

Information practices represent an emergent “umbrella concept” within LIS (Savolainen, 2007). Unlike information behaviors, which denote a cognitivist conception of needs and motivations that drive actions like information-seeking, information practices signify constructivist and constructionist perspectives where people’s relationships to information are established based on their memberships to larger cultures and social groups (Savolainen, 2008). Practices constitute routine behaviors shaped by these forces. They are familiar ways that individuals get through everyday life and provide a lens through which to see the world.

Research that has used an information practices approach challenges a problematic assumption often made by information behavior research – that “needy” individuals have an articulated goal they are motivated to fulfill by seeking information (Julien, 1999; Olsson, 2005). Information practice research has demonstrated the importance of actions beyond seeking, such as sharing and evaluating, which people use when making sense of their larger information worlds (Jaeger & Burnett, 2010; Savolainen, 2008). These actions are not always intentional. People may stumble upon relevant information when passively scanning the news (McKenzie, 2003); alternatively, they might avoid information entirely, particularly if it is stigmatizing (Lingel & boyd, 2013). These observations have expanded the scope of what researchers define as information and information sources – incorporating elements like emotion (Julien, 1999) and embodiment (Lloyd, 2010) into these definitions.

An information practices approach also challenges the assumption that information mediators are all-knowing, while users of their systems and services lack the requisite knowledge to “correctly” navigate them (Frohmann, 1992; Tuominen, 1997). A practices approach recognizes that people’s information interactions are rooted in sociocultural context, meaning there is no right way to interact with information, but rather diverse ways, some of which are dominant because cultures or social groups sanction them. One can extend this recognition to technology use. Returning to Sadler & Given (2007), an approved use of a library system by a user is to complete an inter-library loan request; however, users can also use this system for unsanctioned practices like unauthorized downloading and sharing of academic articles.

Prior research has described how cultural and social group factors, such as stigma and discrimination, shape the information practices of LGBTQ+ individuals, which differ from those of their heterosexual, cisgender peers (Morris & Hawkins, 2016). To understand the information practices of LGBTQ+ individuals, researchers must address the broader cultural and social factors

influencing them. Further, it is also essential to apprehend the role of online technologies, which these individuals increasingly use, in shaping these practices. An affordance lens extends the routine, quotidian nature of information practices by examining how they are shaped by and shape technological features – a critical theoretical contribution of this work.

Affordances

Affordances constitute a “multifaceted relational structure” (Faraj & Azad, 2012, p. 254) between a technological feature and user that enables or constrains potential outcomes in a given context (Evans, Pearce, Vitak, & Treem, 2017). The affordances concept was first advanced in ecology (Gibson, 1979), then later adapted within HCI (Norman, 1988). However, both applications did not establish affordances as a clear ontological category – rooting them within the minds of either individuals or physical objects (Oliver, 2005). Sociomateriality research has addressed this challenge by envisioning affordances as a process concept. Here, affordances represent the interrelationship between individuals, their social worlds, and the material properties of technologies. Affordances mediate, rather than determine, this relationship (Faraj & Azad, 2012). Leonardi (2011) used the metaphor of imbrication to illustrate this mediation. In this metaphor, two factors – society and technology – are envisioned as different types of tiles. Separately, these concepts do not have epistemological utility, much like an individual tile only comprises a building block for a more substantial structure. However, when the tiles interlock in a patterned relationship, they become structurally sound and create something – whether a roof, a wall, etcetera – more than the sum of their parts. Affordances represent this imbrication, rather than the tiles.

Representing affordances in empirical research remains difficult since there exists no established list of affordances. Evans et al. (2017) defined affordances as fulfilling three criteria: 1) not a technological feature, 2) not an outcome, and 3) vary in degree from enabling to constraining. The authors exemplified affordances that meet these criteria (e.g., visibility, anonymity) and those that do not meet them (e.g., privacy, collaboration). In this study, I employed the criteria set by Evans et al. (2017) to identify affordances from semi-structured interview data. Information practices represent the outcomes mediated by affordances.

Methodology

I recruited 30 LGBTQ+ individuals from the US between the ages of 18-38 for semi-structured individual interviews. Semi-structured interviews are well-suited for exploratory

research and to obtain an in-depth sense of sociocultural context (Miles, Huberman, & Saldaña, 2014). The age range represents people with shared traits centered on online technology use (Howe & Strauss, 2000; Pew Research Center, 2016). Further, people from this age range are likely to have engaged in identity-related information practices in adolescence, allowing them to recall these experiences (Groß, Bimbi, Nanín, & Parsons, 2006; Savin-Williams, 2009). For recruitment, I used purposive and snowball sampling strategies. Specifically, I reached out to personal contacts and local LGBTQ+ centers in New York and New Jersey, asking them to participate and suggest potential participants. Table 1 displays participant information. I used pseudonyms when referring to participants to maintain their privacy.

Table 1. Participant Names, Identity Labels, and Pronouns

P#	Pseudonym	Identity labels	Pronouns
1	Ben	Gay, Male	He/him/his
2	Will	Gay, Gender questioning, Male	He/him/his
3	Emerson	Queer, Masculine-of-center, Gender questioning, Female	She/her/hers
4	Stephanie	Queer, Bisexual, Female	She/her/hers
5	Eva	Gay, Female	She/her/hers
6	Jamie	Straight, Transgender, Male	He/him/his
7	Diane	Gay, Female	She/her/hers
8	Casey	Queer, Gender non-conforming	They/them/theirs
9	Rihanna	Queer, Androgynous, Female	She/her/hers
10	Rose	Queer, Female	She/her/hers
11	Amina	Queer, Female	She/her/hers
12	Stefan	Non-binary, Queer, Genderqueer	They/them/theirs
13	Whitney	Gay, Female	She/her/hers
14	Sebastian	Queer, Bisexual, Polysexual, Pansexual, Female	She/her/hers
15	Sage	Queer, Transgender, Genderqueer, Genderfluid	They/them/theirs
16	Sierra	Transgender, Bisexual, Female	She/her/hers
17	Campbell	Queer, Gender Non-conforming	They/them/theirs

P#	Pseudonym	Identity labels	Pronouns
18	Lauren	Queer, Female	She/her/hers
19	Nicole	Queer, Gay, Female	She/her/hers
20	Rachel	Transgender, Female	She/her/hers
21	Cole	Queer, Butch, Lesbian, Female	She/her/hers
22	Kristen	Queer, Female	She/her/hers
23	Kyle	Queer, Transgender, Male	He/him/his
24	Sarah	Queer, Female	She/her/hers
25	James	Transgender, Gay, Male	He/him/his
26	Jessica	Bisexual, Female	She/her/hers
27	Mary	Transgender, Bisexual, Asexual, Female	She/her/hers
28	Joanna	Queer, Gender non-conforming	They/them/theirs
29	Autumn	Queer, Transgender, Female	She/her/hers
30	Mark	Transgender, Male	He/him/his

Participants were from 17 distinct locations, almost half of which overlap (n=13, 43%). This overlap represents the impact of convenience and snowball sampling methods on data collected. Eight participants were in the Northeast (47%), four in the West (24%), three in the Midwest (18%), and one in the South (6%). One participant resided outside of the US in El Salvador but grew up in the Northeast US (6%). Figure 1 depicts a map of participant locations.

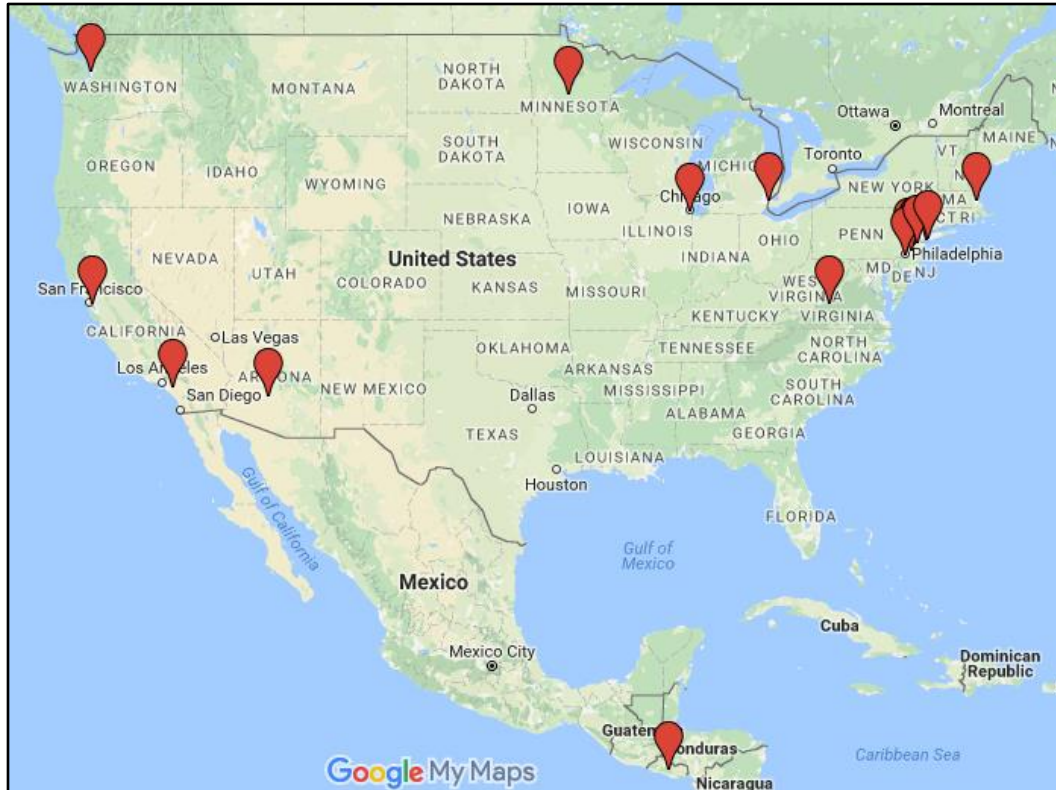


Figure 1: Participant Locations

I developed a semi-structured interview protocol informed by affordances and information practices. Interviews were conversational, a technique that allowed participants to bring up relevant topics not included in the protocol and for me, the researcher, to share with participants some of the power inherent to an interview situation (Kong, Mahoney, & Plummer, 2001; Rothbauer, 2004). The Critical Incident Technique (CIT) (Flanagan, 1954) and micro-moment, total time-line method (Dervin, 1983) informed the protocol. The CIT asked participants to recount their information practices related to online technology use during a recent, memorable moment within the last six months. The total time-line had participants consider when they first became aware of their LGBTQ+ identities to the present – as well as future goals and aspirations – and focus on the most critical steps bridging these points in time. These methods are complementary to the study’s conceptual framework because they capture the embeddedness of sociocultural context with technology use and how this embeddedness shapes information practices. I also maintained field notes, which reflected on participant interviews and included these in my analysis.

To maintain participant privacy, I audio-recorded and transcribed all interviews myself. The average interview lasted approximately one hour. I imported interview transcripts and field

notes into NVivo for analysis using etic/emic coding (Miles & Huberman, 1994). Etic codes represent those deductively informed by the conceptual framework, i.e., information practices and affordances. I generated inductive emic codes from participant accounts and nested them under the high-level etic ones. While coding, I constantly compared the emergent codes to established ones, combining and reorganizing codes and coding categories as needed (Charmaz, 2014). A trained second coder coded 20% of the data based, and we achieved an acceptable inter-coder reliability score of $\kappa = 0.93$.

Findings and Discussion

Participants identified search engines and social-networking sites as critical online technologies for their identity-related information practices. Therefore, findings address these technologies. Three key affordances emerged from data analysis: visibility, anonymity, and association. These affordance themes organize the presentation of findings. Further, each theme mediates various information practices. I employ thick description and lightly edited participant narratives to illustrate each affordance type and the practices it mediates.

Visibility

Affordances literature defines visibility as "the amount of effort people must expend to locate information" (Treem & Leonardi, 2013, p. 150). Visibility has additional meaning for LGBTQ+ individuals – it reflects their ability to perform non-hetero or gender-normative identity expressions (Berlant & Warner, 1998). These performances can be visible to other LGBTQ+ individuals, providing them with alternate, affirming identity expressions, as well as to heterosexual and cisgender individuals, opening them up to new understandings of sexuality and gender. In the context of the interview data, both definitions of visibility applied. Visibility mediated information seeking and creating practices.

Heterosexual culture and its "sense of rightness and normalcy" (Berlant & Warner, 1998, p. 554) limit not only participants' awareness of LGBTQ+ identities but also their ability to express them. This difficulty in expressing one's LGBTQ+ identity is exacerbated by systems that traditionally organize information via controlled vocabularies (Rothbauer, 2004). When information seeking, participants identified search engines like Google as affording visibility to identity-related information because they do not require such articulated queries. Rose stated:

Google's great because you can type in a whole question. I put in "Are you gay if you kissed a girl?" Questions like that, [which] were specific based on my own experiences [in the hope] that something [similar] might come up.

Google's blank search box facilitated Rose's identity-related information seeking by allowing her to express a natural language query specific to her experience. Other participants relied on this blank search box and recalled some of their first queries using search engines, such as "I was born a boy and want to be a girl" (Rachel) and "feel male but only on the inside" (Jaime).

While a blank search box enabled identity expression that can lead to information seeking, the results made visible may not be of value to participants. Instead, results can stigmatize LGBTQ+ identities, as Joanna's account illustrates:

[On Google] a queer person gets murdered, a queer person gets shot. It's impossible to search without running into these things. Unless you're searching for something specific, you'll come up with at least one thing that's bad in the results that will taint your experience.

Participants identified Google's search algorithm as an essential feature rendering such stigmatizing information visible. Participants recognized that this algorithm reproduces dominant sociocultural discourses that stigmatize marginalized groups (see also Noble, 2018). According to Sebastian, "groups [which are] very heavily underrepresented in media and mainstream culture [won't] come up on Google cause no one's talking about it in the mainstream."

Since Google does not publish its algorithm, there is no way to know the full logic behind its ranking decisions. Because it makes real-time, machine-learning decisions based on millions of dynamic features, even those who engineered it cannot explain how it works (LaFrance, 2015). An algorithm exemplifies a literal black box that one can only describe by its inputs and outputs, rather than its internal workings (Latour, 2005). As such, participants solely can infer how to seek information when using search engines, rendering the potential for obtaining relevant, identity-affirming results a "crapshoot," as Sage put it.

Information creation represents another critical practice enabled and constrained by the visibility affordance. Information creation is more specific than creation writ large in that it describes instances of creation in service of fulfilling information needs (Koh, 2013). Research has traditionally positioned the practice as wielded by intermediaries (e.g., Savolainen, 2008). However, with the advent of Web 2.0, recent research has demonstrated that users can use online

technologies for information creation (Koh, 2013). Participants accounts reflected this finding. Consider Cole's description of her information creating practices on YouTube:

I did [a YouTube channel] all about gender presentation, and different topics I didn't feel were being covered. People started commenting, "So what do you think about this," and I was like, "What do I think about that, I guess I hadn't thought about that before." [It also] helped me, re-watching [my videos] and being like, "I've evolved past that or I've taken how I think about myself in a different direction." I ended up interviewing my mom and putting it up. It's one of the most watched videos on my channel.

As exemplified by her account, Cole created YouTube videos to fulfill the information needs of others and herself related to gender presentation. To meet the needs of others, Cole used features like keywords and video upload to a server for streaming. YouTube's search engine, as well as commercial ones like Google, made the videos visible to those entering relevant search terms. YouTube's subscription feature also contributed to the visibility of Cole's videos by alerting subscribers to new video uploads. Metadata including the number of views, ratings, and the comments let Cole know her viewership numbers. These features and the visibility affordances they provided shaped Cole's information creation practices, as she could address comments and her viewership numbers in future videos. Cole also fulfilled her own information needs by using the videos she created and comments she received as texts from which to re-read and re-interpret her identity expressions.

Visibility could also constrain LGBTQ+ identity expressions into monolithic representations. For instance, people can wield editing features on YouTube to control their identity expressions (Raun, 2015). Jessica's account exemplified this argument:

All the YouTubers, like their video editing, they fit their whole [coming out] story into five minutes, and I think it takes longer to explain parts of it. They can cut out the bad things and all the confusion that they went through.

Jessica's account demonstrates that while individuals can create and publish information online without going through a formal process of institutional approval, such as peer review, online technologies still afford visibility to information that conforms to their institutionalized evaluative criteria. Rating and ranking mechanisms render content with the most favorable values high in search results. These rating and ranking decisions, accordingly, communicate specific identity discourses. In Jessica's account, the YouTube videos made visible to her deliver a particular,

"coming out" discourse in which identity disclosure leads to instant acceptance and other positive outcomes.

Anonymity

Anonymity represents a condition where someone is not identifiable to one or more individuals (Marx, 1999). Visual anonymity indicates that a person's physical presence is not available and cannot be detected, while discursive anonymity denotes when a person's verbal communication cannot be attributed to them by others (Qian & Scott, 2007). Anonymity afforded two essential information practices: seeking and evaluating.

Anonymity was a key motivator for participants using online technologies to seek identity-related information. For example, Rachel decided to use online technologies for identity-related information, rather than a library because of "anonymity. I wasn't out five years ago. Going to a library to then have to interact with a stranger and check out a book that would then out me would be a scary prospect."

Information practices are inherently communicative and closely linked to LGBTQ+ self-disclosure. For Rachel, checking out an LGBTQ+ themed book is not a neutral act of information seeking. Instead, it communicates something about Rachel, outing her to a "stranger" librarian as LGBTQ+. Rachel implied that a sense of safety came from others not being able to see *who* was looking for information – in other words, she wanted to maintain her visual anonymity.

Participants maintained visual anonymity by tactically choosing platforms that did not require identifying information, like a profile picture. Eva explained her preference for the online personals site, Craigslist, to meet other queer women over the dating site OkCupid: "I was too afraid to put myself on OkCupid ... putting up my photo terrified me. I would more comfortably look at Craigslist because I was so scared of revealing myself."

While Craigslist does not require pictures, OkCupid places importance on them via features like image upload, as well as the visibility afforded to the picture on the person's page and in search results. Eva did not want to couple what she and others perceived as a visually identifying feature, her picture, with her gay identity. This desire likely stems from Eva regarding both Craigslist and OkCupid as hetero- and gender-normative environments where her gay identity could be stigmatized by others (see also Fox & Warber, 2015).

Participants tactically enacted their knowledge of how anonymity is defined, encoded, and practiced within online technologies for information seeking. Jamie was recognized offline as

female. However, he would represent himself as male online by uploading photos of men onto social networking sites requiring profile pictures. He recalled:

When I was catfishing, I would wake up and be like, "Oh yeah, that's not me. I can't go to school and act the same way as at home. I can't do that." It was a lot of self-exploring and figuring out what [performing masculinity] was like.

In this account, Jamie used the verb "to catfish," which characterizes situations where someone "sets up a false social networking profile for deceptive purposes" (Merriam-Webster Dictionary, 2018). Implicit in this definition is the idea that a "false" social networking profile represents the mismatch between someone's physical body and the images they use to express themselves online. For Jamie, however, this disconnect between his body and photo allowed him to express masculinity and be recognized by others as male. He was able to learn about himself and his male identity based on experiences he could not have offline, where his physical body and sociocultural expectations restricted him. While Jamie's catfishing may represent a deceptive act within a hetero- and gender-normative context, the meaning of this act becomes reinterpreted within a queer lens as facilitating space for Jamie to express his male identity (Wakeford, 2000).

While participants desired greater visual anonymity for themselves when information seeking, they did not want others to be anonymous when evaluating them as interpersonal information sources. Consider Sierra's description of her 4Chan use:

[4Chan's] LGBT board was really useful but problematic. Since everyone's posting anonymously, you have people who aren't trans saying whatever it is they wanna say. You also have people who use tripcodes, which [are] usernames with passwords, so the person has an identity on the site, which is weird for an anonymous site. But on that board and especially for the trans girls there's more people with names than anonymous. Because it's an image board, they're posting pictures of themselves in various stages of transition. And that helps, it's like, "That looks like me or something I can do."

The fact that Sierra found 4Chan to be a useful information source to learn about transgender identities was initially surprising to me, considering 4Chan's reputation as an unwelcoming environment for women and LGBTQ+ people (Manivannan, 2013; Trammell, 2014). In Sierra's case, 4Chan had features that she could wield to manage anonymity – choosing to be anonymous when looking for information while evaluating interpersonal sources based on whether they visually and discursively identified themselves. Sierra considered anonymity

problematic when evaluating information, since anyone, particularly those who stigmatize transgender identities, could post. As she explained: "If people aren't posting pictures of themselves, [I] give them less weight. Especially because you have people going on [4Chan] to hit on trans girls."

Both Sierra and Eva's accounts exemplify a tension between participants' desire for personal anonymity when information seeking, but when evaluating interpersonal sources. The tension between these two conflicting expectations produced an environment where anonymity was both avoided and desired.

Association

Association is a final, critical affordance identified by participants. It represents the connections established between individuals, and individuals and content in online environments (Treem & Leonardi, 2013). Examples include social ties, such as friends and followers, and metadata, such as social tagging. Essential information practices afforded by association were information seeking, evaluating, and sharing.

Mark explained how the association between individuals via the "follow" feature found on many social-networking sites can foster information seeking: "Once you follow one [transgender] person [on YouTube or the image sharing site, Instagram] it comes up with many more people that you can follow. You can connect with them, and that leads to more information." The follow feature connected Mark with transgender interpersonal information sources. Other practices like scanning are supported by the "follow" feature, which Mark used to keep track of this information. Whom Mark followed, in part, informed both sites' algorithms, which in turn engendered serendipitous information discovery by recommending new interpersonal information sources.

Another critical feature connected with association is social tagging. Social tagging is the practice of labeling content in a way understood by other group members. These tags embed varying, often contesting, identity-centered discourses (see also Adler, 2013; Dame, 2016). As Stefan explained:

[The Tumblr tag] "truscum" are transpeople who believe you have to have dysphoria to be trans or you have to be trans to be trans. You can't be non-binary, you can't be genderqueer.

You have "radfemmes" who may be lesbians, but they believe trans women are men.

Tags like the ones Stefan described maintain boundaries between different social groups. Individuals who identify as radfemmes, for instance, can click on this tag to see other individuals,

content, and tags related to this ideology. Therefore, association can facilitate information evaluation by affording participants' identification of insider information sources, or those who share their group norms and values (see also Chatman, 1999). However, association inhibits the information seeking of those who lack the language necessary to find relevant, identity-affirming information (see also "Visibility" section).

Association can intersect with visibility and anonymity affordances in ways that constrain what information participants share and with whom they share it. Consider Amina's description of how all three affordances shaped her sharing of identity-related information:

I was the executive director of a [Catholic] organization [and] gave a workshop [at] a gender and sexuality conference. That's public online. If you Google my name, you'll find that. The watchdog of this Catholic group and some conservative bloggers [wrote] about me and how I was this homosexual activist. People at work found out.

Details about Amina's workshop were visible to both those seeking information related to gender and sexuality and those ideologically opposed to a queer woman being the executive director of a Catholic organization (see also Marwick & Boyd, 2011). This visibility affordance ultimately compromised the anonymity of Amina's queer identity at work.

After interviewing Amina, I took her directive and Googled her name, finding several blogs with content matching her description. These blogs included screenshots displaying metadata from Amina's Facebook account, including LGBTQ+ content Amina "liked" and events she was attending. Amina may not have been aware that this metadata was visible, given Facebook's ever-changing privacy policy. Alternatively, she may have known of its visibility, but assumed that only her Facebook friends would care to see this content.

Features such as "People You May Know"¹ also could have associated Amina's Facebook profile, where her queer identity was visible, with her co-workers' profiles. The purpose of "People You May Know" is to grow an individual's social connections within Facebook. Prominently displayed on the Facebook homepage, the feature suggests to the user potential connections based on their shared social ties. Sometimes the feature can be beneficial, for instance affording association between two long-lost high school friends. However, the associations made between individuals can also be problematic, such as between Amina and her co-workers.

Amina's account exemplifies how the affordances of online technologies can amplify the surveillance and policing of marginalized identities in online environments. While findings from

other empirical studies have demonstrated that tactics can be employed by LGBTQ+ individuals to mitigate such surveillance and policing (MacAulay & Moldes, 2016), they risk discouraging identity-related information practices online.

Implications

Based on these findings, how can services and systems support visibility, anonymity, and association in ways that engender the identity-related information practices of LGBTQ+ people? Within libraries, practitioners should reconsider information literacy efforts. Findings argue against a "one-size fits all" approach to literacy, which assumes a uniform set of skills and competencies for connecting people with information relevant to their everyday lives (Lloyd, 2005). As informed by participant accounts, one person might be successful in using Google to locate identity-related information, while another might only see results that stigmatize LGBTQ+ identities. Per the conceptual framework, these outcomes, or information practices, vary because the interrelationship between material features and sociocultural contexts mediates them. If librarians want to incorporate themselves into the lives of LGBTQ+ users and potential users, then they must understand the technological and structural issues that shape their information practices before imposing a definition of what these literacies are onto these groups.

Current information literacy efforts can integrate this approach by making individuals aware of the underlying issues of black-boxed technological features and systems, such as machine learning algorithms. Librarians should not exclude library systems from this consideration. Prior research has demonstrated that library databases, particularly those supplied by commercial vendors, contain biases that disproportionately affect marginalized groups (Reidsma, 2016). To address these issues, librarians must understand them, which speaks to the need for more research. Librarians can ask users to send them biased search results from library databases, which also engenders critical literacy among users. Librarians can also collect anonymized searches from these databases to ascertain which results may exhibit such bias. Finally, they can engage in participant observation, surveys, and interviews to determine how algorithms shape people's information practices. Such research can inform advocacy efforts by librarians on behalf of their users when discovering bias in their search systems.

Institutionally sanctioned information sources are not the only ones creating information; as a result, librarians should recognize the legitimacy of information created by LGBTQ+ individuals. For instance, librarians might expand their catalogs to include information sources

curated by LGBTQ+ users, such as containing a social tagging layer in library metadata. This approach can enhance the trust of potential LGBTQ+ library users, who may view someone providing pictures of themselves transitioning medically on a 4Chan thread as more trustworthy than a librarian who might judge them negatively for checking out a book on transitioning. Librarians should also better market services like self-checkout, which can afford anonymity, to LGBTQ+ individuals. By understanding how affordances are enacted in various contexts, librarians have the potential to shape system and services that facilitate LGBTQ+ identity work.

Within a systems-design context, I invoke the concept of a stress case as a possible design ethic. Stress cases highlight the processes through which dominant sociocultural discourses become embedded into technologies by focusing on unexpected and unintended outcomes of technological use (Meyer & Wachter-Boettcher, 2016). For instance, a fundamental assumption underlying Facebook's "People You May Know" feature is that it expands an individual's social network. However, the meanings and outcomes of this feature vary for marginalized groups. What if the person who is now associated with an LGBTQ+ individual's social media account is a homophobic work colleague? A basic assumption made by Google's search algorithm is that people want relevant results. But what the algorithm deems results relevant that stigmatize LGBTQ+ identities? Stress cases supplant the conventional "edge case" approach, which envisions these outcomes as unfortunate, but unintentional byproducts of material features. Reorienting an edge case into a stress case means that designers should account for these outcomes, rather than viewing them as negligible exceptions to the rule. To address the Facebook example, designers could allow users to opt out of others' "People You May Know" suggestions. For the Google example, designers could present results horizontally, rather than vertically, clustering them by topical themes. This approach would allow users to determine which topics are identity-affirming and view related results.

Identifying stress cases is a skill that educators should impart to those who will go on to be systems designers, engineers, executives, etcetera. Further, designers must integrate marginalized voices into the design process. Perhaps a team of cisgender, heterosexual men will not view the binary gender options their new app offers as problematic. But put a non-binary individual on the team or in a test group, and the stress case quickly becomes apparent.

Conclusion

This study examined how online technologies, specifically search engines and social-networking sites, enable and constrain the identity-related information practices of LGBTQ+ individuals. By adopting an affordance lens, findings revealed the interrelationship between sociocultural context and technological features in shaping what meanings participants assigned to their information practices.

Of course, these findings do not exist without limitations. First, I sampled from participants who had stable, consistent access to online technologies. Such access is not the reality for many, particularly LGBTQ+ individuals who disproportionately face disadvantages – social, economic, and otherwise. Therefore, future research should sample from these populations to extend the analytic strength of the conceptual framework. Second, and related, the research did not examine the interdependence between other marginalized identities, such as race, and LGBTQ+ identities. An intersectional perspective applied to data collection and analysis will enhance study findings since it may complicate the interrelationship between individuals and the technologies they use.

A third limitation is methodological – a critical method to capture the habitual nature of information practices is participant observation, which is lacking in this study. Therefore, another future research direction is to combine semi-structured interviewing with participant observation. For instance, Duguay (2014) has examined how LGBTQ+ individuals from the UK managed context collapse on Facebook using semi-structured interviews and walkthroughs where participants demonstrated their use of the site. Combining these two methods would add transferability to future study designs by supporting the coding scheme across two separate data sources.

This work synthesized an information practices approach with an affordances lens. Informed by thick description of participant accounts, findings demonstrated how both approaches could be used complementarily to better understand the interrelationship between people and technology, especially in marginalized contexts. This approach can be used in future research to describe the information practices of other marginalized groups online. Findings can also inform design ethics and practices that support non-dominant means through which LGBTQ+ individuals engage with online technologies to promote their identity-related information practices both within and outside of libraries.

Footnotes

1. Traditionally, researchers envisioned technology as material in the sense of its physical components, like hardware, but materiality has also come to represent digital materials, like software (Leonardi, 2010).
2. <https://www.facebook.com/help/336320879782850>

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