

Understanding Yik Yak: Location-based sociability and the communication of place by Jordan Frith and Michael Saker

Abstract

Yik Yak was a location-based social application that allowed users to anonymously create, read, and respond to posts made within a few mile radius. This paper reports on six months of ethnographic work and interviews performed with 18 Yik Yak users. We argue that one of Yik Yak's primary functions was to communicate about place and to find new ways to connect abstractly with the local social situation. The data detailed in this article contributes to the growing literature on the spatial and social impacts of locative media.

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1. Introduction

Much of the initial excitement surrounding the Internet revolved around its impact on space (see Benedikt, 2000; Castells, 2000). Social commentators at the time spoke of "a world of digital sensation" [1], "free from the constraints of geography" [2]. Negroponte (1995) predicted a future in which people would "socialize in digital neighborhoods in which physical space [was] irrelevant" [3]. Friendships in this new environment were expected to emerge through a confluence of interests rather than proximity (Baym, 2015). The famous "No more there" commercial run by MCI in 1994 (No More There, 1994) captured the zeitgeist when it imagined the Internet dismantling the social barriers of distance. While the Internet's broader impact is unquestionable, the suggested effect on physical space was never fully realized. Physical space still matters as much as it ever did (Massey, 2005). After all, the rise of social networking sites has seen people's online connections resemble their off-line, spatially bound, networks rather than the more spatially dispersed interest-based sociability of chat rooms or MUDs (boyd and Ellison, 2007).

Many digital applications are now specifically designed to connect people to their physical surroundings and shift content as people move through space (Wilken and Goggin, 2015). The 'power of the Internet' has accordingly been harnessed "to facilitate connections between people based on geographic proximity" [4]. The GPS functionality of smartphones means that digital information can now be tethered to specific locations, just as it can be accessed on the move. For Silva (2006) this intermingling of physical world environments with digital space has produced what she refers to as 'hybrid space.' As Saker and Evans (2016b) suggest, this 'hybrid space' "[gives] rise to new embodied experiences and social connections in place" [5]. Yik Yak, which was a popular location-based social application, was a recent example of this potential.

Launched in 2013 by a pair of college graduates (Shontell, 2015), Yik Yak quickly became somewhat of a phenomenon with young people (Hess, 2015). The founders raised well over \$US60 million in venture capital funding and earned a valuation of over \$US400 million within a year of the application's creation (Shontell, 2015). Based on the design of earlier location-based applications like Whisper and Secret, Yik Yak allowed users to anonymously publish and read short posts (though the application made a slight shift towards optional persistent identities in 2016). At the same time, Yik Yak represented a different type of anonymity than sites like 4chan because of its engagement with physical proximity. The posts, or "yaks" as they were commonly called, people could see are determined by their physical location. In denser areas, only posts made within a radius one and half miles were available. In less dense areas, the radius could range up to 10 miles. In October 2014, the application was updated to incorporate a "peek" function. This feature allowed users to "peek" into other locations by choosing from a list of (typically) college campuses or placing a pin on a map and seeing nearby "yaks." After the data collection for this study was completed, Yik Yak also added a "base camp" from which people can post to regardless of their location and optional avatars.

Yik Yak closed in April 2017 after going through multiple design interations. The application shut down in part because of the many controversies surrounding Yik Yak's combination of anonymity and location-based sociability. Originally, the application was nearly completely anonymous, only requiring a phone number and not requiring persistent pseudonyms or allowing people to post pictures. As discussed below, that design led to initial popularity but also outcries about sexism, bullying, and racism. The designers then switched to more persistent pseudonymous identities and enabled people to post pictures, but the switch was not popular and not enough to save the application. Consequently, despite initial popularity and excitement from venture capital, the application became extinct in 2017. The analysis in this paper reports on the usage of the application from November 2014 to March 2015. At that point, the application was fully anonymous (at least to end users) and required no pseudonyms or even an e-mail address to register. As we detail in our discussion, however, the analysis in this article will hopefully be useful regardless of application. After all, Yik Yak was only one of many anonymous sites online and one of many social applications that use location. Consequently, the data detailed below will shed light more broadly on practices of location-based, anonymous sociability.

Yik Yak has been the topic of much debate. For the most part, discussions have revolved around the anonymity the application affords its users and the controversy surrounding cyberbullying, racism, and generally unpleasant discussion threads (Dewey, 2014; Mahler, 2015; Stone and Kingkade, 2014). We contend that the focus on the occasionally antisocial effects of concealing one's identity has overshadowed Yik Yak's function as a tool to contextualize and approach a specific locality, a tool that displays data tied to the mobility of the user. As we show through our data analysis, Yik Yak often worked as an exemplar of how the networked connections of locative mobile media could affect how people engaged with physical space and how they understood the shifting spatial dynamics as they moved from one place to another.

Drawing on six months of ethnographic research and interviews with 18 Yik Yak users, the chief aim of this paper is to examine how people use location-based social applications to shape their sense of locality and how the mobility of the body changes the flow of digital information. We also contend with how the anonymity of Yik Yak combined with location-based sociability enabled unique usage patterns. While the literature review and discussion focuses predominantly on Yik Yak's role as a form of locative media, we also examine how anonymity shapes how people communicated place through the application. To situate our argument, the ensuing literature review provides a detailed analysis of location-based mobile applications, paying particular attention to the relationship between mobile social media and place. We begin with an examination of early mobile social networks before moving on to more recent examples of locative applications and linking this research to the mobilities turn. We then discuss the methodological approach underpinning this research before detailing our data analysis and concluding with a discussion of why Yik Yak represents unique ways in which mobile social media can impact how people engage with place.

The main contribution of this article is to both build on existing research on location-based social media and provide an exploratory, original contribution by analyzing how issues of space and mobility interact with anonymity to shape experiences of the physical world. Importantly, while our analysis focuses on the now defunct Yik Yak, our findings extend past this specific application to provide further insight on the social impacts of locative media. As we discuss, information accessed through the Internet is increasingly shaped by physical location, requiring exploratory research into how digital information becomes a new type of "lens" through which people engage with their surroundings (Dourish and Bell, 2011).

2. Locative media and place

Mobile phones were often viewed as negating the importance of space and place. With landlines, location was key. After all, phones were tied to locations, not people (Wellman, 2002). In contrast, mobile phones made it possible to communicate while on the move, negating the importance of being located at a

specific site to receive a call. The ability to coordinate while mobile meant coordination and communication were no longer as spatially bound (Katz and Aakhus, 2002; Licoppe, 2004; Ling, 2004), just as it meant people could partially detach themselves from their physical surroundings to communicate with distant others, a phenomenon referred to as "telecocooning" (Habuchi, 2005) or "absent presence" (Gergen, 2002). Essentially, the mobility of mobile phones often made the importance of physical surroundings less significant than the connections made with distant others.

Even as mobile voice calls and texting became dominant forms of communication, examples did exist of how mobile phones could connect, rather than detach, people to their surrounding space. A notable example of such a service is the mobile social network Dodgeball (Humphreys, 2007). Active between 2003 and 2009, Dodgeball enabled users to compile a list of friends and then broadcast their location to those friends through a single text message. Humphreys' (2010) research on Dodgeball identified a process she refers to as 'parochialization'. Parochialization, a term she developed from the work of Lofland (1998), occurs when individuals experience urban environments as being more welcoming when they know similar others are present in the location. In other words, these individuals felt more connected to a place when they knew other Dodgeball users were similarly frequenting that environment. Put differently, these individuals used the digital data of the text message to enact an altered relationship with their physical space.

Mobile social networks have since been superseded by location-based social networks (LBSNs) that utilize advanced locative capabilities and Internet connectivity of smartphones. While there have been many prominent examples of such applications, including Google Latitude, Gowalla, and Whrrl, Foursquare was the most successful LBSN (Frith, 2012). Following its launch in 2009, Foursquare gained over 50 million users before moving its location-sharing functions to a separate application called Swarm in late 2014. As a result of its popularity, Foursquare has been the subject of much research. The application has been examined in the context of modifying approaches to mobility (Frith, 2013), sociability (Bertel, 2013; Cramer, *et al.*, 2011; Silva and Frith, 2010; Frith, 2014; Licoppe, 2014), place (Frith, 2015; Humphreys and Liao, 2013; Ozkul, 2013), and gamification (Frith, 2013; Saker and Evans, 2016b).

A body of work has similarly coalesced around Internet-enabled, locative mobile media as a more general category (Silva and Frith, 2012; Farman, 2012; Frith, 2015; Wilken and Goggin, 2015). Studies have shown that the constant connectivity locative applications enable can produce an enduring sense of copresence between known users (Ling and Horst, 2011; Rainie and Wellman, 2012), provide new opportunities for coordinating social meetings (Campbell and Kwak, 2011; Wilken, 2008) and deepen place-based connections (Humphreys and Liao, 2013). The focus on locative application and their effect on space and place has more recently extended to other areas such as memory (Frith and Kalin, 2016; Kalin and Frith, 2016; Ozkul and Gauntlett, 2013; Saker and Evans, 2016a), temporality (Saker and Evans, 2016a), and the use of location as a modality of identity (Schwartz and Halegoua, 2015).

While the popularity of early locative applications might have waned somewhat (Frith, 2015), the inscription of place and movement through locative media has not. Over time the use of location has been mainstreamed into many other types of social media. People embed location in Instagram photos (Hjorth and Pink, 2014), share location on Facebook (Bertel, 2013; Wilken, 2014), use location to find people on dating applications like Grindr (Licoppe, et al., 2016), and organize search results on location-based review applications like Google Places and Yelp (Barreneche and Wilken, 2015; Wilken, 2014). As Frith (2015) has argued, to understand location-based mobile applications, and indeed hybrid space (Silva, 2006), one must both appreciate the information accessed through the application and how physical space influences that information. Or to put it differently, location-based mobile media of various types can become a "lens through which the spatialities of urban space can be viewed" [6].

Yik Yak, however, was different from the locative applications detailed above. It was not a social network (people do not have "friends") or a spatial search application to sort through location-based reviews. Instead, it was more like an anonymous Twitter (though people do not "follow" other users) that is spatially bound through the location awareness of the smartphone. Perhaps unsurprisingly, given that computer-mediated anonymity has long been associated with antisocial behavior (Christopherson, 2007; Moore, et al., 2012), Yik Yak's popularity was accompanied by significant controversy stemming from the negative aspects of anonymity (Hess, 2015). These controversies in turn dictated much of the interest that surrounded the application. Reports about Yik Yak linked it to the spreading of rumors, bullying, and anonymous threats (Kulp, 2014). Notable cases of racism, and sexism at universities led to calls for the application to be banned (Callendar, 2014; Stone and Kingkade, 2014), with some universities actually prohibiting its use on campus (Orenstein, 2015; Rose, 2015).

Anonymity is not, however, by default a bad thing (Spears and Lea, 1994). In contrast to the overall push online away from anonymous communication, "[some] scholars have questioned these design approaches, suggesting that anonymous contributions and ephemeral participation online can be desirable" [7]. As boyd (2012) has posited, anonymity can enable people to exert power over their identity choices and the ways they communicate online. Likewise, multiple social researchers have shown that individuals can use anonymity to strategically accomplish goals, and that many of these goals exhibit prosocial rather than antisocial behavior (Hogan, 2013; Lampe and Resnick, 2004; Leavitt, 2015; Qian and Scott, 2007).

The argument that anonymity does not necessarily contribute to an explosion in antisocial behavior was also echoed in one of the few empirical studies of Yik Yak content. Black, *et al.* (2016) performed a content analysis of Yik Yak and found that inflammatory posts were not very common and only .3 percent of posts contained an individual's first or last name. That result was partially echoed in a content analysis by Saveski, *et al.* (2016) that found that Yik Yak did not feature a significantly higher number of inflammatory posts than non-anonymous Twitter. However, in an analysis of Yik Yak's design features, Li and Literat (2017) argued three features — anonymity, hyperlocality, and the voting function — "can turn the app into fertile ground for vitriol, particularly in the sociocultural context of the college campus." The voting function was present in the iteration of the application we studied, and people could upvote or downvote posts. When a post reached -5, it disappeared from the feed. Otherwise, people got "Yakarma" that totaled the cumulative number of upvotes on their posts. We return to these studies in the discussion section in which we situate our findings within existing research on the social impacts of Yik Yak.

Anonymity is only half of the design that made Yik Yak interesting and unique. The other half, location awareness, is just as important for understanding how people use the application and how it fits within the growing literature on mobile social media. While the application is different from other locative applications, existing research on location-based mobile media and place nonetheless provides valuable analysis for how people employ mobile interfaces to engage with their physical surroundings. Building on that literature, this paper argues that Yik Yak represented a tool people could use to communicate about place, a tool they used to interact with their surroundings in relatively novel ways. With this in mind, the article uses Yik Yak to specifically examine how similar applications could contribute to new forms of spatial engagement.

3. Methods

Our qualitative work focused on one specific city that we describe in more detail later in this section. After receiving IRB approval, we checked Yik Yak multiple times a day from October 2014 to March 2015 and took notes each day on the different behaviors observed from users. Screenshots of user practices were similarly captured throughout this period and then returned to later during data analysis. We made the choice of screenshots to capture inductively. Following the tenets of grounded theory (Glaser and Strauss, 1967), we did not begin our observation with pre-determined research questions and we did not read existing Yik Yak research before beginning our data analysis. Instead, we captured a variety of interactions in our observational period and used those observations to shape our initial interviews. After three months of observation, we began recruiting interview participants. We waited three months to allow sufficient time to establish a base of inductive knowledge concerning how people use the application and what areas should be covered in our exploratory interviews.

Our recruitment strategy involved posting details of the project to the city's subReddit, posting to Yik Yak (we asked people to use the instant messaging application to reach us), and speaking to known students. In sum, four participants were recruited through Reddit, nine participants were recruited through Yik Yak (they contacted us through the messaging application Kik), three participants were referred to us by other participants, and two participants were former students of one of the researchers. In total 18 Yik Yak users were interviewed, with interviews lasting between 40–90 minutes, resulting in 21 total hours of interview data. Except for one interviewee who was 36 years old, participants were between 18–23 years old. Participants included 10 female users and eight male users. 16 of the 18 participants were enrolled in university at the time of the interview. These demographics are reflective of Yik Yak's largely college-age user population (Hess, 2015).

The coding of our ethnographic notes and interview data were guided by the naturalistic grounded theory techniques described by Charmaz (2006). This process began by using a constant comparative method (Huberman and Miles, 1994). In so doing, categories were able to emerge organically from the data without pre-determined research questions. We also used early ethnographic observations to develop a rough interview script. Subsequent interviews were accordingly semi-structured. This approach meant that interviews could branch off in different directions if interesting issues emerged.

As with our ethnographic data, interview data were coded early and often. The approach enabled categories to emerge naturally from the material, which meant we could identify areas to be addressed in more detail during later interviews. Later in the coding process, we began grouping concepts into categories to thematically segment off sections of data that related to a more cohesive picture of different aspects of Yik Yak usage. For the purposes of this article, we report on the group of categories that concerned data pertaining to issues of place and mobility. The grouping of our organic categories will hopefully help further theory relating to how the use of locative social media influences perception of space and place.

Finally, to break slightly with research tradition, we want to explain our research site in some detail. We do so because one of our main points is that the city in which the data was collected significantly shaped

our data because Yik Yak is intricately tied to mobility. If someone travels five miles, they see a totally different Yik Yak feed shaped by the local population of users, a point we cover in more detail in our data analysis. So to provide more context, the site of our research is a mid-sized college city (around 130,000 people) with two public universities totaling 45,000 students. The city is located in a seven million person metropolitan area in a conservative state in the United States, but the city is significantly more progressive than the surrounding cities in the metro area and especially the rural areas just outside the metro area. As we show in the next section, much of the interview data includes direct quotes that detailed city names. In the interest of anonymity, these names have been changed so that "City A" now refers to the city in which the research was performed. Other cities are referred to as "City B," "City C," and so on. The same naming convention was used for the universities mentioned in participant quotes. The names of cities and universities have also been blacked out in the accompanying screenshots.

4. Data analysis

The data reported in this study combines quotes from our interviews and screenshots from our ethnographic work.on the locational aspects of Yik Yak. We do not go into detail on issues related to the application such as anonymity, privacy, and identity because they are not as relevant to the central argument of this paper. The five categories we cover are as follows: (1) The relational nature of location; (2) The social dynamics of proximity; (3) Racism and proximity; (4) Temporality and proximity; and, (5) Location-based exploration.

4.1. The relational nature of location

A common type of post we observed was the self-referential post about Yik Yak. These posts contrasted Yik Yak based on the location in which it was used. After all, the feed a person sees is determined by their location, and for the participants interviewed as well as many of the anonymous users observed, Yik Yak was a different social tool in City A than elsewhere (see <u>Figure 1</u>).

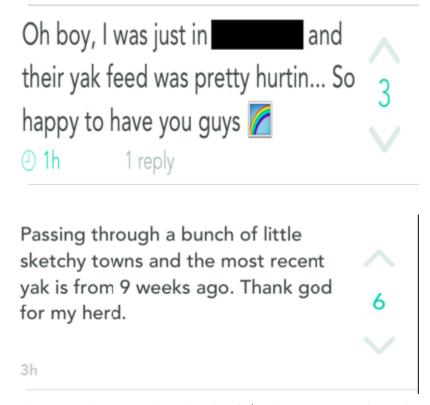


Figure 1: Place comparisons in Yik Yak (herd was a commonly used term to refer to one's local Yik Yak community).

The differences pointed out in both interviews and observations are partially captured in the interview quotes below:

"Back home it's just a bunch of highschoolers talking about all that drama bullshit. I hate it. Here we don't have any highschoolers here and it's like a college thing."

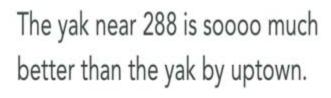
"I tried using it when I was down in City B [a more rural college town] this weekend, and it was just all Greek stuff. Who wants to read about that? So happy I don't go there."

"So I'm out, and I feel like City A is down with that. If I post about being gay or something, I get upvoted. No way would I ever do that down in City C. I never see anyone posting anything like that when I'm home visiting my Mom."

"Yeah .. The City D Yik Yak is just more racist or something. Like, I see these posts calling people n*&\$er get all these upvotes and I'm like 'what?'. At least here those get reported or something most of the time."

These extracts reveal how the connection to place can be strengthened through the use of Yik Yak. The descriptions are all relational and related to corporeal mobility: City A's feed is better than City B's feed. Importantly, such discussions extended past the dynamics of the Yik Yak feed. Participants were not simply differentiating between feeds in these examples; more importantly, they were often differentiating between places and addressing how the movement of their body altered the feed they received. The use of Yik Yak enabled participants to get a feel for a locality, rather than simply a feel for the Yik Yak community. So, in the first quote, the participant went on to criticize the entire town for being too fraternity-focused. The participant in the last quote did the same in her criticisms of City D for being racist. In this vein, the feed became a proxy for the place as a whole and the mobile screen became an interface through which one could view the surrounding space.

In other cases the relational nature of Yik Yak feeds was more finely grained. Some posters differentiated between feeds in different parts of City A (it only takes about 20 minutes to drive from one side of City A to the other) (see Figure 2). They acknowledged how the digital information altered with even relatively small movements of their body and smartphone. In addition, people frequently posted to differentiate between the Yik Yak feeds near the city's two main university campuses (which are only about two miles apart).



15

② 11h 3 replies

Figure 2: Comparisons within the city.

For example, University A students occasionally complained about fraternity posts from University B, and University B students complained about the supposed "man hating" in the feed closer to University A. One participants addressed this directly in the quote below (she lives near University A, but is a student and works at University B):

"Oh yeah, it's totally different. I like checking Yik Yak more when I'm at home. The people just seem older and nicer or something. I don't know. When I'm on campus [University A] the posts are about poop and drinking and hooking up. It gets old."

In this instance, Yik Yak was used to communicate about different parts of a relatively small city. More often than not these posts revolved around the frequency of "yaks" in different locations. Multiple people

explained that they could tell how many college students lived nearby just by physical moving to a different location and accessing the Yik Yak feed. In some cases, posters even encouraged a playful form of competition to see which parts of the city could share the most on the application.

4.2. The social dynamics of proximity

The majority of the Yik Yak content we observed would likely be unsurprising to anyone who has spent significant time with college students. People posted frequently about sex, drugs and alcohol; they complained about classes, traffic, and parking; they asked about the location of parties. Most of the content was fairly mundane, but our interview data suggested that the value participants took from the content was related to the location-based nature of the application. For example, we witnessed frequent questions about the proper age to lose one's virginity, questions about other people's number of sexual partners, questions from women asking if other women faked orgasms, questions from males asking about other males' penis size, and questions about relationship issues (see Figure 3 for an example of a relationship question).

Serious question: does it flatter you guys when someone drunk texts you? Also, does it bum you out if they DON'T text you when they're drunk? I just want to hear thoughts lol.

2 replies

Figure 3: Relationship questions on Yik Yak.

Multiple interview participants had either asked relationship or sexual questions on Yik Yak, and when we probed as to why they used the application instead of looking the information up online (we were specifically discussing posts about appropriate ages to lose one's virginity), one participant explained that, "I just didn't want to do that. I don't care all that much, but I wanted to know, and I'd rather ask other college students I might know or something than just find some random page online. I trust it more."

The quote above is representative of much of the interview data. What made Yik Yak interesting for our participants was not just the content, but more importantly the content combined with the physical proximity. A complaint about traffic, for example, might not be interesting in itself. However, when another user immediately recognized the traffic being discussed it became what one participant described as a "bonding experience." The traffic post, the complaint about a math class, or the brag about a sexual encounter became a window into the community, a new way to anonymously discuss a place. The quote below highlights this point:

"I look at Yik Yak as a way to kind of get the pulse of City A. I can see what's going on that weekend or hear about the stupid things people did or something happening on campus. It's just cool. I feel like it helps me know City A better."

The "pulse" of the city captures the overall feelings our participants expressed about Yik Yak. Abstractly, the feed became a way to glimpse into what was going on, to feel a connection to the similar experiences of other nearby students. Of course, the "pulse" was not always positive, as the next section examines.

4.3. Racism and proximity

One of the criticisms of Yik Yak in the popular press has been the high frequency of racist and sexist posts on college campuses. In alignment with these criticisms, City A's Yik Yak did occasionally feature sexist, homophobic, and racist material (see Figure 4).

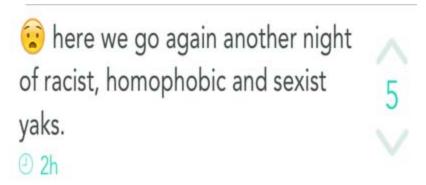


Figure 4: A complaint about Yik Yak content.

For the most part, the "downvoting" and reporting systems kept the majority of overtly offensive posts from staying on Yik Yak for a long time. However, one participant stopped using the application from late November until early February specifically because of racist posts that were not always downvoted. She explained the problem was worse when she was down by her mother's house in City E, but City A also featured too much racist content, particularly surrounding the death of Mike Brown and the "I can't breathe" protests related to the murder of Eric Garner. As she put it,

"Way too much of that nonsense wasn't getting downvoted. Some of it even ended up with upvotes, and I don't want to see that. I get Mike Brown. I mean, he might have done something to deserve it. But the "I can't breathe thing"? Seriously? There was a video. I bet those assholes wouldn't be making jokes about that if they weren't anonymous. I know that stuff happens, but it just bothered me to know people I go to school with can be so ignorant."

The racism and bullying that takes place on Yik Yak are commonly linked to the dangers of anonymity. However, the last sentence of the quote above, which was shared in similar terms by two other interview participants, demonstrates how the locative aspects of Yik Yak can make the offensive content feel more hurtful. Unlike a random online comment section or message board, participants who watched a racist post get "upvoted" on Yik Yak were aware that the views being expressed were posted by people nearby, people they may interact with on a daily basis. As one participant explained, a racist post on Yik Yak does not have the distance of a random racist remark online, but instead feels more like seeing racist graffiti on campus. For the two African American students we interviewed, proximity to such posts made them more personal and made them slightly more wary of the place as a whole.

4.4. The temporality of proximity

College towns are unique places. City A has 130,000 full time residents, and an extra 40,000 students during the school year. The city is a noticeably different environment when school is not in session. Essentially, as the trajectories of bodies that make up a place pour out of the city, the city becomes a different place: restaurants change their hours, traffic decreases, and bars become much less crowded. These changes also made their way to the city's Yik Yak feed. With no exaggeration, at points over the Holiday break the feed slowed to a crawl. After college students left the city, the number of posts decreased by more than half. Functionally, City A's Yik Yak feed reflected the temporal rhythms of the city. As soon as the students returned, college life became vibrant again and so did the Yik Yak feed. Likewise, when the students left for break, the city and feed emptied out (see Figure 5).



Figure 5: A post-final exam week post.

In some cases, posts became both temporally and spatially self-referential. Many posts resonated with the sentiment of the screenshot below, expressing a connection to City A's Yik Yak community while also complaining about the period in which the user would be out of touch (see Figure 6). The majority of these posts also link to earlier categories and featured complaints about the Yik Yak feed "back home," contrasting City A to whatever city the user will be heading to for break.

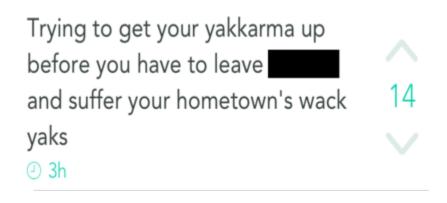


Figure 6: A post about leaving for holiday break.

For the participants who stayed behind, the Yik Yak feed became representative of the overall slowdown in the city's social life and the outward flow of students. Those who continued to use the application often posted complaints about how the feed was dead and that no one was throwing parties or heading to the bar. As the quote below suggests, the feed became a representation of City A as a place, with many posters explicitly linking the dearth of Yik Yak posts with the lack of students wandering the campus:

"Honestly, I couldn't wait for the Yakkers to start posting again. I knew I was going straight to the bar as soon as I saw Yik Yak pick up. I knew it won't be dead."

4.5. Location-based exploration

Location-based services are well documented as enabling people to explore their surrounding environment. In a similar vein, for many of our participants Yik Yak functioned as a tool of spatial exploration. In these instance, participants explained that they had gone to a campus event or a new restaurant because they saw people posting about it on Yik Yak. The feed in those cases became a way of discovering new places, of connecting with parts of the city or university life that likely would have remained hidden without the application.

Unsurprisingly, the types of exploration that frequently occurred focused on parties. Indeed, a significant number of people posted information about parties, either letting people know about the parties they were throwing or identifying parties they were attending (see <u>Figure 7</u>).



Figure 7: Sharing the location of a party.

While these posts focused on connecting with places in the city and impacting the mobility choices of users, they also often intended to foster interpersonal connections. In fact, a number of the Yik Yak posts we observed were written specifically to facilitate meeting up with new people (see Figure 8).

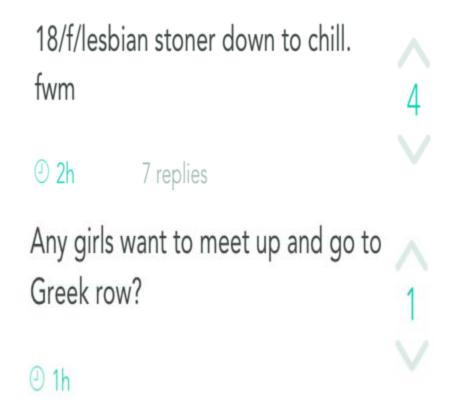


Figure 8: Posts seeking interpersonal connection.

The reasons for meeting up varied. Late at night on the weekend, people posted looking for sex (these rarely got positive responses), people posted looking to buy or sell drugs, and people posted explicitly looking to meet new people in social situations. For example, individuals would share party information and ask other users if anyone wanted to show up together. Likewise, people would offer to buy someone a drink at the bar. If successful, people would then share their Kik usernames and proceed from there.

Multiple interview participants used Yik Yak to discover both new people and new places. One woman organized an informal "finals stress" bar meet up through Yik Yak during finals week. She noted that she was encouraged by how the application burgeoned her sense of connection to City A, and she made at

least one lasting friend through the experience. Another participant explained that he and his friends had engaged in a social experiment in which they posted that they were throwing a party and then shared address information through Kik. He told us that more than 30 Yik Yak users showed up and that the party was an opportunity to connect with people they would likely have never met without the application.

Ultimately, participants' use of Yik Yak extended past engaging with a representation of their surrounding space; the Yik Yak feed also encouraged them to go out into the city and make mobility choices to explore new places or make new social connections through the application. As we discuss in the next section, this type of exploration is an exemplar of how location-based mobile applications can contribute to the formation of hybrid spaces.

5. Discussion

Yik Yak was a popular anonymous sharing application that had historical antecedents in the various anonymous "college message board" sites like College ACB or Juicy Campus (Press and Tripodi, 2014). Beyond the anonymity, however, what makes Yik Yak unique is its embrace of locative media and more specifically its use of proximity. Indeed, the feed people engage with literally changes as they move through physical space. Different physical locations deliver significantly different social content.

What was appealing about Yik Yak for the participants in this study was its unique combination of anonymity and proximity. Participants were well aware of other anonymous sites they could use online, but they chose Yik Yak because of the place-based connections it facilitated. Participants were cognizant that other posters likely lived nearby, went to the same university and experienced the same traffic, the same bars and so on. Saker's (2016) study of Foursquare and a process he terms "localisation" is useful here. "Localisation" occurs when individuals engage with embedded locative information to momentarily assume a "local" subjectivity within an unfamiliar environment. Our participants similarly found value in the knowledge that available Yik Yak posts pertained to a locality that they too deemed "local," just as this practice deepened their connection to a specific place. The effect of the Yik Yak feed on localisation was then governed by the content of the feeds. The mention of a known traffic incident, for instance, could serve as bonding experience, just as the implicit proximity of a racist post could make it feel more personal and jarring.

The affordance of proximity also contributed to a relational understanding of what Yik Yak represents as a social media artifact. To the people we observed and the participants we interviewed, Yik Yak is neither monolithic nor static. The application is different back home visiting parents than it is when accessed from a college town. As multiple participants explained, they only liked using Yik Yak in City A when the population consisted of mostly more liberal college students. In this vein, Yik Yak functions as barometer of place. Even a trip 20 minutes away may lead to a feed filled with high school students, fraternity posts, or racist content. For the participants we interviewed, their feed was a proxy for their physical environment. Participants did not simply feel Yik Yak was filled with those people; more importantly they felt their physical space was filled with those people.

These types of perceived differences in content are prime examples of what Farman (2014) refers to as the "site specificity" of locative media. He defines site specificity as "the emphasis on the unique qualities of a particular location that cannot be transferred onto another place" [8]. While Farman's work examines storytelling and historical sites, we argue here that the concept of site specificity can be productively extended to applications like Yik Yak. The feed one accesses in a particular environment is germane to that milieu, just as the site-specificity of the application delivers posts based on location. Put differently, mobilities in content correlate with mobilities in space. For someone to analyze Yik Yak, they must understand not only available posts but also the place in which the posts are accessed. In other words, what must be acknowledged is the importance of the specificity of location in the context of the application. In addition, our findings regarding the importance of physical location were also present in Black, et al. 's (2016) quantitative study of Yik Yak content, which found that the largest category of post focused on local features of a place.

The site-specificity explored by Farman is one part of a larger push towards what Silva (2006) calls hybrid space. As explained earlier, hybrid space has been a key concept for the subfield of locative media studies, and crucial to the concept is the argument that the digital, social, and physical have merged in new ways. Describing hybrid space, Frith (2015) writes that

Hybrid space conceptualizes what happens as the Internet leaves the desktop and moves out into the physical world. Importantly, however, hybrid spaces are not just places affected by the location-based information of the mobile Internet; hybrid space are also spaces that show how physical place shapes the meaning of the mobile Internet. [9]

Hybrid space, alongside related concepts like Code/Space (Kitchin and Dodge, 2011) and Augmented Reality (Manovich, 2006), explores the idea that the digital and physical are no longer conceptually separate. The information one accesses through a location-based application essentially becomes a marker of a physical space, a new way of learning about and engaging with that space. Different digital and locative affordances accordingly have the potential to mobilize different hybrid spaces that can then constellate different physical, social and spatial possibilities.

As our data suggest, Yik Yak functions as a sort of hybridized "pulse" of the city. The application's socially and spatially generated feed is akin to what Dourish and Bell (2011) describe as a "lens" through which to view surrounding spatiality. In alignment with studies that have examined other locative mobile media, Yik Yak serves as 'an exploratory tool for discovering new places to experience' [10]. Echoing Humphreys' (Humphreys, 2010; Humphreys and Liao, 2013) notion of "parochialization", this practice made a place mentioned or a party discussed seem more inviting, just as it extended this concept beyond physicality to people. In the same way mobile social networks can make unfamiliar environments feel more familiar (Humphreys, 2010), it is our contention that by establishing a communal point of connection Yik Yak can equally make "unknown others" feel in some way known. This was especially the case for participants who went out of their way to organize meet ups with other users that they had not met before.

Additionally, our research demonstrates that the hybrid space of Yik Yak can influence how participants cohesively comprehend their surroundings. For many of our participants, their feed came to represent the type of place they felt City A was. It became a way to aggregately communicate about place. More than the interpersonal communication of location-sharing applications or the review-based nature of locationbased search applications, Yik Yak represented a more total representation of a place. The "rhythm" of the feed followed the temporality of college life: parties on the weekends, sexual posts late at night, complaints about midterms, stress over finals, and posts about leaving for break. Once again, our qualitative finding was echoed in Black, et al. 's (2016) quantitative analysis, which found common categoires of posts to include fairly typical university topics such as sex and dating, drugs and alcohol, and partying. The mundanity of posts, however, enabled some people to form a sense of connection to place built through the Yik Yak feed. They were able to tap into their local community by viewing the scroll of posts made by those collocated within a few miles of their location. The space, in that sense, became hybrid: the digital information impacted one's sense of connection to place, just as one's place impacted the value of the digital information. This type of hybridity, the ability to connect to and communicate about place through location-based social applications, represents a significant shift in how people use their mobile devices to both communicate with others and engage differently with the physical world.

In addition, the location-based nature of Yik Yak also played a role in shaping issues of racism and cyber bullying. As participants told us, when racism was present in the feed, it felt more personal because the viewer knew it was expressed by nearby people. Our findings suggest the impact of antisocial content combined with locative media is an important area of study, but we also found that content was fairly infrequent, once again echoing the quantitative findings of Black, et al. (2016). We did find negative, offensive content, but in our study at least, Yik Yak was not the "fertile ground" for vitriol Li and Literat (2017) predicted. For one thing, the voting function actually worked to get rid of the majority of inflammatory posts, which contradicts Li and Literat's (2017) prediction that voting would make antisocial content worse. We did find that, in a few instances, the voting function (combined with anonymity and hyperlocalism) made negative content more personal, but at least in our site of study, the voting worked as a community enforcement tool to prohibit the majority of antisocial posts. We also did not find posts that mentioned people by name, possibly because of the downvoting function combined with Yik Yak's automatic filters. Of course, even one example of racist, sexist, homophobic, or bullying content — and we found more than one example — is one too many. We mention our data in the context of Black, et al.'s (2016) analysis merely as a counterpoint that something unique about Yik Yak turned it into a site defined mainly by antisociality.

As a final note, while this study looked at what is a now defunct mobile application, the theory of localization and site specificity built upon in this paper remains just as relevant to other location-based social applications. After all, while Yik Yak has folded, there are a variety of apps that offer similar functionality and combine anonymity with locative media (Gangwar, 2017). We have shown how Yik Yak represents a digitally mediated "lens" through which people can tap into the various social trajectories that make up a place. Massey (2005) defined space as a collection of trajectories, some more permanent, some ephemeral. Real-time, location-based social feeds are a way to gain insight into some of those trajectories, to track the temporal rhythms of flows as the feed slows or speeds up depending upon the assemblages of identities within a space at a give time. As location information becomes even more inextricably tied into the digital information accessed while mobile, we will likely see an explosion of platforms used to tap into the shifting trajectories of place.

6. Limitations and future research

This study explored one city's Yik Yak community through ethnographic and interview work. The focus on qualitative research and a single place means the results found in this study are not generalizable to other areas in which Yik Yak was used. In fact, the lack of generalizability was one of the main points of our argument: what Yik Yak is as a social tool depends greatly on where it is used. Consequently, future qualitative studies should expand upon this research by performing comparative analyses of different cities to analyze how different groups use the application. In addition, quantitative research can build off this study by using survey work or discourse analysis to examine different Yik Yak feeds and explore how Yik Yak fosters spatial connections in more generalizable terms. Quantitative work that analyzes a much larger corpus of Yik Yak data in separate locations will be particularly useful for further exploring the issues addressed in this article.

Finally, the design of the application has changed somewhat since the data was collected and analyzed. The application now contains slightly more persistent pseudonymous identities and further capabilities, such as photo sharing. Ideally, however, the analysis provided in this paper extends past individual design features to capture a deeper pictures of the potential intersections of anonymity and location-based sociability.

7. Conclusion

Yik Yak was a mobile application that combined one of the oldest strands of Internet research: (1) the social effects of anonymity, with one of the newer strands; and, (2) the social shifts of locative media. The key argument of this paper is that Yik Yak was a mobile application people used to *communicate and comprehend place*, among other things. The application therefore had the potential to impact how users engaged with their surroundings, doing so in some more literal ways by encouraging people to find new places or make new social connections within the local community. But equally importantly, applications like Yik Yak encourage spatial connection in more abstract ways as well, functioning as a "lens" through which people felt they could understand the "pulse" of the city. Of course, the same proximity that in some cases made people feel more connected could also exacerbate the negative content found on the application. The posts, whether good or bad, whether social or antisocial, had a more significant impact on the people we interviewed because they were location-based, because they came specifically from people collocated within a certain radius. In this sense, the physical space and digital information merged into a hybrid space in which the location influenced the Yik Yak feed, but the digital content also impacted how one felt about the location.

As this article has shown, how we understand future social, mobile applications will increasingly have to take into account physical location. Location-based services are growing and will continue to develop in new directions. The growth underlines why applications like Yik Yak are important for understanding the ways people's physical location and mobility increasingly shape the digital, social information they receive. These types of locative applications provide both opportunity for novel types of computer-mediated sociability and raise concerns Internet studies scholars are uniquely suited to address.

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Notes

- 1. Heim, 1993, p. 93.
- 2. Wilken, 2008, p. 39.
- 3. Negroponte, 1995, p. 6.
- 4. Humphreys, 2010, pp. 763-764.

- 5. Saker and Evans, 2016b, p. 1,170.
- 6. Dourish and Bell, 2011, p. 120.
- 7. Bernstein, et al., 2011, p. 50.
- 8. Farman, 2014, p. 3.
- 9. Frith, 2015, p. 23.
- 10. Saker and Evans, 2016a, p. [10]; see also Cramer, et al., 2011; Frith, 2013.

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