

## ABSTRACT

FRITH, JORDAN HARRIS. *Constructing Location, One Check-in at a Time: Examining the Practices of Foursquare Users.* (Under the direction of Dr. Adriana de Souza e Silva.)

This dissertation focuses on the mobile application Foursquare. Foursquare is an example of a location-based social network (LBSN) and currently has 20 million users and is growing quickly. LBSNs are social networking applications that allow people to share their physical location with members of their social network. In addition, Foursquare also features gaming elements and enables people to leave geotagged messages attached to locations. Through an examination of Foursquare that draws from a multidisciplinary body of academic research and interviews performed with Foursquare users, this dissertation sheds light on how location-aware mobile applications can play a significant role in how users navigate spaces and interact with others. Existing research on LBSNs have contributed valuable perspectives on the potential impacts of these applications; however, few of these studies specifically examine Foursquare and even fewer feature qualitative work with users. The few that do feature qualitative examinations of LBSNs typically operate from a Human-Computer Interaction perspective and do not situate their analyses inside the conceptual literature on location-based mobile technologies. This dissertation takes a unique perspective, showing how theory drawn from multiple disciplines can be deployed to understand how people use Foursquare. This work also serves as one of the first large-scale examinations of Foursquare and contributes to the gap in the literature left by the lack of detailed studies of this popular application.

The analysis that drove this work is based on three overarching research questions that are drawn from a gap in existing literature: 1. How does the use of mobile applications like Foursquare impact how people relate to the locations they move through and how do individual design elements become a “lens” through which people view their surrounding space? 2. What are the social practices of Foursquare use and how do people use location to present themselves to others? 3. How do people manage the privacy issues that come with sharing their location and what are the micro-practices they use to exert control over their information?

Location-based services have been studied from different perspectives in multiple disciplines, and they are an increasingly important object of analysis in academic research. Through the multidisciplinary body of research deployed in this dissertation and empirical work with users, this dissertation contributes to multiple academic fields, including mobilities studies, communication, sociology, human-computer interaction, and computer science. These disciplines are all concerned with the issues of location, sociability, and privacy explored throughout this work, and the findings are reported in way to make them accessible for researchers from diverse backgrounds.

The major findings of this study include a detailed analysis of how gaming and social networking elements of Foursquare can affect people’s personal mobility, how the ways people present themselves to others through location shift as people share information with multiple social networks, how the varied understanding of Foursquare as a technological artifact affects how people use it to coordinate with others, and how people adjust to design elements to manage their privacy in newly networked environments. The ultimate conclusion

of this work is that Foursquare can impact how people relate to their surrounding space and others in those spaces and that design plays a crucial role in how people manage their privacy when interacting with ubiquitous computing technologies. As more and more people adopt smartphones with location-aware capabilities that run third-party applications like Foursquare, it becomes increasingly important to understand the impact of these applications. This dissertation is an important early step in combining existing theory with qualitative work to fully conceptualize one of the fastest growing mobile applications.

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Constructing Location, One Check-in at a Time: Examining the Practices of Foursquare Users

by  
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**BIOGRAPHY**

Jordan Frith is a faculty member at the University of North-Texas, and his research focuses on social and mobile media. He received his Ph.D in Communication, Rhetoric, and Digital Media from North Carolina State University. He is particularly interested in how people use location-based social networks to coordinate behavior and alter the way they relate to surrounding space. He recently coauthored the book *Mobile Interfaces in Public Spaces* with Adriana de Souza e Silva, and his publications include articles in *Mobilities and Communication, Culture, and Critique*.

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## Chapter 1: Introduction

The South by Southwest (SxSW) festival has become a Mecca for engineers, startup entrepreneurs, and people who just like technology. Once a year, thousands of people make their pilgrimage to Austin, Texas to listen to music, hang out with friends, and learn about what is new in the tech world. It was on March 11 at the 2009 SxSW festival that Dennis Crowley and Naveen Selvadurai debuted a small startup called Foursquare.<sup>1</sup> The mobile application immediately gained attention as a “the breakout mobile app at SxSW” (Van Grove, 2009). Over the next three years, the application grew at impressive rates, hitting 1 million users in a shorter time period than Twitter (Yarow, 2010) and surpassing 10 million users by June, 2011 (Tsotsis, 2011). As of May 2012, Foursquare has over 20 million users (Shontell, 2012) and over 2 billion individual check-ins (“About Foursquare,” 2012).

The check-in was key to how Foursquare was sold to the tech-savvy crowds at SxSW. Foursquare is a mobile social networking application with gaming elements that is built around people’s check-ins. When using Foursquare, people go to locations<sup>2</sup> and share those locations with their Foursquare social network through the check-in process, similarly to how people share photos and status updates with friends on social networking sites (SNS) like

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<sup>1</sup> Salvadurai left the company in 2012, though he will remain as an advisor for the foreseeable future (Shontell, 2012).

<sup>2</sup> Drawing from the definition used in de Souza e Silva (2012) and my book on mobile technologies, I use the term “location” to refer to a site that has specific, mappable geographic coordinates. In other words, a location as I use the term is an actual physical place people can physically visit. Not everywhere people check in on Foursquare is a location. People also make up places to check in to, such as “phd hell” or “earthquake 2011”. Just as in our book, I differentiate location from “place” because location is a less amorphous term that refers to a specific mappable point, in contrast to “place”, which can refer to both imagined and real places. See the introduction of de Souza e Silva and Frith (2012) for more detail on the word “location” and the complicated theoretical history of the terms “space” and “place”.

Facebook. They also get points and badges for checking in and can become the “mayor” of a location if they have checked in there the most times. In other words, people can both share their location with friends in a social way and compete with themselves and others over who can earn the most points and mayorships. In this way, as Dennis Crowley has argued, Foursquare is designed to turn life into a game (Sutter, 2010).

Foursquare is not a totally novel service. It is an example of a location-based social network (LBSN), a term for mobile applications that people use to share their location with friends.<sup>3</sup> Dennis Crowley had explored location sharing in an earlier service he designed (with Alex Rainert) called Dodgeball.<sup>4</sup> Unlike Foursquare, Dodgeball used SMS to enable people to share location, but the core elements are similar and Crowley learned a great deal from his Dodgeball experience.<sup>5</sup> Dodgeball also spawned other imitators, and Foursquare was far from the only LBSN when it was released in 2009; it faced competition from existing LBSNs such as Whrrl, Gowalla, Loopt, and Brightkite, and by early 2012 only Loopt was still in business. Foursquare’s success is also surprising because it has faced competition from two Internet giants: Google and Facebook. Google entered the LBSN market a month before Foursquare in 2009 with the release of Latitude, which runs in the background of mobile phones and constantly shares one’s location with friends, in contrast to Foursquare’s check-in model (Cramer, Rost, & Holmquist, 2011). Then in August, 2010 Facebook

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<sup>3</sup> LBSNs are examples of location-based services, an umbrella term that encompasses all mobile applications that use people’s location to provide information. Examples of popular location-based services include Google Maps, Yelp, Where, and Urban Spoon.

<sup>4</sup> Dodgeball was Crowley and Rainert’s graduate thesis for NYU’s Interactive Telecommunications Program.

<sup>5</sup> Dodgeball was eventually bought by Google in 2005, and after spending 2 years at Google that he later reported were “incredibly frustrating” (Crowley, 2007), Crowley went on to found Foursquare with Naveen Selvadurai. Dodgeball was eventually discontinued by Google and replaced with Latitude in 2009.

announced Facebook Places, which allowed people to check in to locations in a similar fashion to Foursquare. Because Facebook has hundreds of millions of users already, the release of Facebook Places led some to predict that Places was going to kill Foursquare and take over the LBSN market (Gaudin, 2010). Those predictions failed to come true, however, and Foursquare kept adding users and Facebook discontinued Places in August, 2011 (though people can still check in to locations using the regular Facebook app).

The growth of LBSNs has been documented most thoroughly by two extensive national surveys by the PEW Internet and American Life Project.<sup>6</sup> The first survey took place in May 2011 and found that only 4% of adults who go online in the United States had used a geosocial service (a synonym for LBSN) to check in on their phone. That study also found that only 36% of Americans owned smartphones (Zickuhr & Smith, 2010). In February 2012, researchers conducted a similar study, asking participants if they use a service such as Foursquare or Gowalla to check in to locations or share their location with friends (Zickuhr, 2012). That study found that smartphone ownership had increased and 46% of all American adults now owned smartphones, and LBSN usage had increased as well, with 18% of all smartphone owners reporting that they had used a service to check in to a location. That 18% represents 10% of all adults as compared to the earlier study that found that only 4% of all adults had used a geosocial service to check in. The 2012 study also found that the

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<sup>6</sup> There are a number of fairly recent studies of Foursquare user demographics published by social media marketing firms like Rooster and IgniteSocial Media (Chappel, 2012; Rogers, 2010). These studies have been used by some sources as evidence of Foursquare's demographic makeup. However, both of these studies only research Foursquare's web traffic and use Alexa statistics, so what they actually show are the demographics of people who search for Foursquare online, not who actually uses the application.

demographic differences among people who use geosocial services had begun to lessen in the nine months between studies. The 2011 study found that the majority of users were male, aged 18-29, and made over \$50,000 a year. The 2012 study, on the other hand, found that more women use the applications than men, the dominant age group was still 18-29 but other age groups were catching up, and that “smartphone owners with lower household incomes are somewhat *more* likely to use these services than those in higher-income houses” (p. 11). While it is important to note that Foursquare and other LBSN users only represent 18% of people who own smartphones, they do represent a growing segment of the population.<sup>7</sup>

These LBSNs all owe design debts to earlier locative media art projects that used GPS-enabled devices to broadcast the location of things and people,<sup>8</sup> and some of these locative media pieces that I explore in chapter three included elements that were later adopted in the design of Foursquare. In addition, the gaming elements in Foursquare are loosely based on the gaming elements present in earlier location-based mobile games

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<sup>7</sup> Note that the PEW studies only cover the United States. The international statistics on Foursquare usage are murky. According to Erin Gleason, one of Foursquare’s top public relations people, about 40% of Foursquare users in 2011 were located outside the United States (Gleason, 2011). There are no reliable statistics on international users, but preliminary research suggests that Foursquare has expanded significantly in Europe and research has suggested that Indonesia also has a surprisingly high number of Foursquare users (Halegoua, Leavitt, & Gray, 2012)., Foursquare has also begun to release city-specific badges for nations in Africa, Asia, and South America (for a preliminary list, see <http://blog.foursquare.com/2012/03/29/global-city-badge-winners-announced-4sqcities/>).

<sup>8</sup> Art projects that used locative technologies gained in popularity after the Clinton administration stopped the degradation of the GPS signal for commercial purposes in 2000. The new technological capabilities opened up new avenues for artists, possibly elucidated most poignantly in Russel’s (2001) “Headmap manifesto.” Locative media art projects have tracked the location of milk to illustrate the infrastructure of contemporary capitalism (Polak & Auzina, 2004), tracked the flows of trash in the United States (Offenhuber et al., 2011), mapped the travel of people in cities such as Amsterdam (“Amsterdam real time,” 2004), used algorithms and wearable sensors to match sounds to movement (“Sonic city,” 2004), and mapped water spots for immigrants attempting to cross the U.S.-Mexico border (Cardenas, Carroll, Dominguez, & Stalbaum, 2009). These are only a few of the many examples of the vibrant field of locative media.

(LBMGs) such as Botfighters, Mogi, and It's Alive (de Souza e Silva & Frith, 2012). These earlier explorations of the potential of location awareness are all important predecessors to today's commercial LBSNs, and they show that technological explorations of location existed long before LBSNs began gaining in popularity (de Souza e Silva, 2008; de Souza e Silva & Delacruz, 2006; de Souza e Silva & Sutko, 2008; Licoppe & Guillot, 2006; Licoppe & Inada, 2006, 2009; Sotamaa, 2002).

Now that LBSNs, especially Foursquare, have become popular, it is important to understand both the current practices of users and how those practices fit with existing theory. My dissertation draws from interviews I did with 36 Foursquare users as well as a multidisciplinary body of academic research to situate Foursquare in existing theory and examine how people actually use the application. While my interview work and the bulk of the theory I engage with examines these applications from users' perspective, I also discuss Foursquare from the server-side perspective in chapter five by examining how the data Foursquare collects is aggregated and put to use for the commercial interests of the application. I chose to take an exploratory qualitative approach to my research as a way to begin thinking through the potential impacts of the widespread adoption of location-aware technologies. Because I chose to examine the practices of the users of one specific location-based service—Foursquare—I am able to see how existing theories play out in practice and examine the micropractices of Foursquare users, similar to how Humphreys' (2007, 2010) exploratory work with Dodgeball users exposed the unique ways people took advantage of the service. In the next section of this chapter, I explain the bodies of literature my research contributes to, explain how my work differs from existing studies, establish a gap in the

literature I seek to fill, state my research questions, and broadly sketch the argument I lay out in the following chapters. I then describe the approach I took to my research before moving on to a description the structure of my dissertation and how my chapters develop the framework I use to answer my research questions.

## **The Contribution of My Work**

Foursquare and other LBSNs represent the popularization of location-aware experiences that have been explored extensively in locative media art (Benford et al., 2004; Benford & Giannachi, 2011; Russel, 2001; Silverstone & Sujon, 2005; Tuters & Varnellis, 2006), theoretical and experimental examinations of ubiquitous computing (Consolvo et al., 2005; Küpper, 2005; Myles, Friday, & Davies, 2003), and social theory (de Souza e Silva, 2004, 2006; Manovich, 2007). Location awareness refers to the ability of mobile devices to locate themselves through GPS and other means to provide information about surrounding space. Foursquare's design relies on location awareness, and in the ways it allows people to search nearby space and locate others and be located, it is a prime example of what de Souza e Silva (2006) calls "hybrid spaces," which are spaces that represent the merging of the digital, physical, and social. Hybrid space has been a key concept in multiple explorations of mobile technologies (de Souza e Silva & Frith, 2012; Farman, 2012; Gordon & de Souza e Silva, 2011; Sutko & de Souza e Silva, 2011), and by examining the practices of Foursquare users and framing part of my data analysis within the concept of hybrid spaces, I am able to contribute to the understanding of how the merging of physical space and digital information

can impact how mobile applications become a “lens through which the spatialities of urban space can be viewed” (Dourish & Bell, 2011, p. 120).

That Foursquare offers a popular object through which to examine how digital information merges with physical space also suggests its importance for both mobile technology scholars and mobilities scholars. Foursquare is an example of mobile communication most commonly accessed through smartphones. Other mobile technologies, such as the book, the Walkman, the iPod, and the mobile phone have been areas of focus for multiple researchers (Bull, 2000, 2007; du Gay, Hall, Janes, Mackay, & Negus, 1997; Katz & Aakhus, 2002; Ling, 2004, 2008; Manguel, 1997). Much of this research focuses on how mobile technologies distract people from the spaces they move through (de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011), a criticism that is especially notable in examinations of mobile telephony (De Gournay, 2002; Gergen, 2002, 2008; Hoflich, 2005). Foursquare represents a newer type of mobile application, a type that rather than distracting from physical space draws from the surrounding space to provide location-based information (de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011). By examining how my participants use Foursquare, I contribute to studies of mobile communication by showing how location-based services can complicate traditional understandings of mobile technologies while also showing that the research exploring how this occurs has significant gaps that my exploratory work begins to fill. That location-based mobile applications can work to bolster connections to physical space was a key argument in work by Gordon and de Souza e Silva (2011) and de Souza e Silva and me (2012), and I contribute evidence in

support of this argument by detailing myriad ways by which my participants use Foursquare to connect with their surrounding space and people in that surrounding space.

While they have traditionally been separate fields, analyses of mobile technologies have a great deal in common with the relatively new field of mobilities studies (Hannam, Sheller, & Urry, 2006; Mimi Sheller & John Urry, 2006; J. Urry, 2000; John Urry, 2007). Mobilities studies focus on movements of objects, capital, and most importantly for my contribution through my work with Foursquare users, people. Unlike many traditional sociological approaches that view the sedentary and emplaced as the most important part of social life (Cresswell, 2010), the mobilities research agenda recognizes the formative nature of personal mobility in the enactment and maintenance of social life (Law & Urry, 2004). The recognition of the importance of mobility, and especially the study of how people use different mobile technologies to alter their experience of mobility (de Souza e Silva & Frith, 2010b; Licoppe, 2004; Mimi Sheller & J. Urry, 2006), is important for studying Foursquare because Foursquare is an application people use to communicate with others and maintain connections while they move between locations. People use Foursquare while moving through the city, and as I show with both my discussion of existing literature and my data analysis, the different elements of Foursquare can affect where people choose to go and how they view the spaces they move through. In addition, mobilities research has begun focusing more and more on location-based services, with a variety of recent research on the topic being published in the field's flagship journal *Mobilities* (de Souza e Silva & Frith, 2010b; Frith, 2012; Licoppe & Inada, 2006; Richardson, 2010; Wilken, 2010). My dissertation contributes to the growing interest in location-aware mobile applications within the field of

mobilities by showing through my data how Foursquare can affect individuals' mobility patterns and impact the way they see the city.

Of course, Foursquare is not just a location-based application, it is a location-based *social networking* application, representing the merging of mobile communication and mobility with elements of online social networking sites (SNS) like Facebook and Twitter. The growth of SNS has been an important shift in the communication landscape over the last decade, and sites such as Facebook and Twitter now have hundreds of millions of users. These sites enable new ways for people to connect with others (Donath & boyd, 2011), maintain existing relationships (Lampe, Ellison, & Steinfield, 2006), present themselves to others (boyd, 2008c), engage in participatory surveillance (Albrechtson, 2008), and provide companies with massive amounts of information (Andrejevic, 2007; Turow, 2012). Consequently, SNS have gained significant attention from the academic community (Acquisti & Gross, 2006; boyd, 2006, 2008a, 2008c; boyd & Ellison, 2008; Donath & boyd, 2011; Ellison, Steinfield, & Lampe, 2007; Gross & Acquisti, 2005; Hargittai & boyd, 2010; Marwick & boyd, 2010). Foursquare represents a relatively new type of SNS that focuses on physical location as the locus of sociability. Just as people share status updates and pictures with others on Facebook, they share their location with others on Foursquare (de Souza e Silva & Frith, 2012), and LBSNs have begun to gain attention from researchers (de Souza e Silva & Frith, 2010b; Frith, 2012; Gordon & de Souza e Silva, 2011; Sutko & de Souza e Silva, 2011). Many of the practices researchers have found in explorations of Facebook and other SNS are similar to how people manage their network on Foursquare, but my dissertation contributes to the theoretical understanding of how the practices of SNS users

shift when these social networks become mobile and location-aware by analyzing how my participants use Foursquare to coordinate with others as well as present themselves through location on multiple social networking platforms.

The focus on location and context has been key to the development of the mobile applications and technologies that fall inside what has been called the ubiquitous computing paradigm (Dourish & Bell, 2011; Weiser, Gold, & Brown, 1999). The focus on people's location, however, has also led to serious privacy concerns that have shaped the development of location-aware technologies (Dourish & Bell, 2011; Shklovski, Vertesi, Troshynski, & Dourish, 2009). Consequently, researchers have focused extensively on privacy and location awareness (Boesen, Rode, & Mancini, 2010; Consolvo, et al., 2005; de Souza e Silva & Frith, 2010a; Dourish & Bell, 2011; Palen & Dourish, 2003; Shklovski, et al., 2009; Smith et al., 2005). Privacy has also been a central concern in research on SNS because SNS enable people to share large amounts of information with others, information that can sometimes be sensitive (Acquisti & Gross, 2006; boyd, 2011a; Debatin, Lovejoy, Horn, & Hughes, 2009; Gross & Acquisti, 2005; Hargittai & boyd, 2010). The research on privacy and information sharing in both locational contexts and on SNS provides a valuable starting point for understanding how people navigate the new location-sharing social landscape of applications like Foursquare, and my research contributes to these areas by providing a grounded, empirical examination of how Foursquare users feel about and manage their privacy while using the application. In chapters five and nine, I draw from existing literature on privacy while also showing the importance of understanding how an application's design and the micro-practices of users is key to understanding how people "practice" privacy. In this way,

my study is the one of the first to empirically examine how Foursquare users manage their privacy and will contribute to understandings of both locational privacy and SNS privacy.

Now that I have examined the research areas to which my dissertation contributes, I want to explain how my study differs from existing research and examine the gaps my research fills. Most obviously, my dissertation is one of the first exploratory qualitative studies of Foursquare, which as I mentioned earlier is one of the fastest growing social networking applications. There are existing studies that qualitatively examine impacts of location awareness in applications that are somewhat similar to Foursquare. For example, Humphreys' (2007; 2010) interviews with Dodgeball users and Licoppe and colleague's (Licoppe & Guillot, 2006; Licoppe & Inada, 2006, 2009) work with Mogi (a Japanese LBMG) users provides valuable insight that I draw from throughout my dissertation. However, Foursquare is different from Dodgeball and Mogi, and my findings about how people use Foursquare are significantly different from the findings reported in this earlier work. One major difference between these applications is the number of users. Dodgeball had roughly 30,000 users when Humphreys began studying it, and Mogi had around 1,000 users at the time of Licoppe's case study (Licoppe & Inada, 2006). Foursquare now has 20 million users. In addition, Foursquare is a more diverse application than Dodgeball or Mogi. Dodgeball did not use GPS and focused almost entirely on social networking and did not include gaming elements. Mogi, on the other hand, was primarily a game, and people did not form social networks through the game. Foursquare combines both the social networking aspects with gaming elements, which leads to more diverse ways people use the application, and through my work with Foursquare users I am able to show how the practices of

Foursquare users differ from the practices of Dodgeball and Mogi users. Revealing these differences is important because it can show how different design elements can affect usage practices and how people adapt to new mobile applications and establish sets of social norms when adopting new types of information-sharing applications.

In addition to these earlier empirical studies published in social science journals, there has also been a recent focus on LBSNs in published conference proceedings in the disciplines of Human-Computer Interaction and Computer Science. Some of these conference proceedings feature empirical research with LBSN users, including quantitative analyses of mobility patterns using public APIs (Cho, Myers, & Leskovec, 2011; Noulas, Scellato, Mascolo, & Pontil, 2011; Scellato, Noulas, Lambiotte, & Mascolo, 2011) and ethnographic work with Google Latitude users to determine why they began using the service (Page & Kobsa, 2009). Most germane to my work, Cramer, Rost, and Homquist (2011) and Lindqvist et al. (2011) combined directed, non-random surveys and interviews with Foursquare users in their research. Cramer, Rost, and Holmquist reported on twenty interviews to show how people “perform” check-ins to their audience. Lindqvist et al. surveyed people and interviewed six Foursquare users to examine why people begin using Foursquare. The Cramer piece is closest to my research and I also frame my participants’ check-ins as a sort of performance in chapter seven. However, my research differs significantly from these two qualitative studies of Foursquare for a number of reasons. For one, I draw from a multidisciplinary body of literature that shaped my research questions, my interview approach, and the framework in which I situate my data. I also addressed a variety of issues in my interviews and focus more on building understanding and relating to existing theory

than using my empirical work to focus on design suggestions, which is the more common approach in HCI and Computer Science studies.

There are also three specific gaps in existing literature I seek to fill. These three gaps are (a) how location-based mobile technologies impact how people relate to their surrounding space, (b) how they impact sociability, and (c) how people adjust to specific location-aware technology designs to maintain a sense of their privacy. That is not to say that existing research has not addressed these topics. There are a number of locative media art pieces that examine how location-awareness can impact people's experience of space (Angus, 2003; Blast Theory + The Mixed Reality Lab, 2004; Galloway, 2006, 2009; Silverstone & Sujon, 2005). There are also theoretical examinations that use phenomenology to discuss issues of embodiment and legibility to understand the impacts of location-aware technologies (Brewer & Dourish, 2008; Dourish, 2001; Dourish & Bell, 2011; Farman, 2012). Finally, there is a growing body of work that combines theory and examples drawn from both art and commercial applications to examine how location-awareness has the potential to impact how people relate to their surrounding space (de Souza e Silva & Frith, 2012, forthcoming; de Souza e Silva & Sutko, 2011; Frith, 2012; Gordon & de Souza e Silva, 2011). These studies often focus on location-aware technologies in general, but there are also studies that specifically examine LBSNs such as Loopt, CitySense, and Foursquare (de Souza e Silva & Frith, 2010b; Sutko & de Souza e Silva, 2011). However, there is a lack of empirical work that examines concrete empirical examples of these theoretical explorations of the links between location-based mobile applications and users' relation to their surrounding space. There are the empirical studies I detailed in the previous paragraphs, but these studies do not

draw from literature on hybrid spaces or concepts of legibility to understand how Dodgeball or Mogi impacted how people see the city. In addition, Dodgeball was not location-aware in the strictest sense because it involved an SMS system rather than GPS and the mobile Internet. My dissertation bridges the gap between theory and practice by giving detailed empirical examples of how concepts of legibility (Dourish & Bell, 2011) and hybrid spaces (de Souza e Silva, 2006) play out in the practices of Foursquare users while also using my work to build the theoretical understanding of the impacts of Foursquare usage.

Another gap I seek to fill is the gap in our knowledge about how location-aware technologies can impact sociability. I identify this gap by showing the areas of convergence between research on SNS, urban sociability, and location-aware social applications. The literature on online SNS is growing quickly and includes work on the presentation of self (Donath, 2007; Donath & boyd, 2011; Turkle, 2010), SNS as a new public space (boyd, 2008c), audience and “context collapse” (Marwick & boyd, 2010), relational maintenance and social browsing (Ellison, et al., 2007; Lampe, et al., 2006), and self-documentation (Stern, 2008). However, existing literature on SNS needs to be combined with other examinations of sociability to fully conceptualize how LBSNs relate to issues of sociability because LBSNs are mobile applications tied to surrounding space and can consequently impact how people find others in those spaces. For this reason, I combine SNS literature with seminal urban theorists such as Sennett (1977, 1992), Jacobs (1961), Goffman (1963, 1990), and Simmel (1950), as well as more recent work by Gordon and de Souza e Silva (2011) on the constitution of urban publics. By putting these bodies of literature into conversation I am able to show how LBSNs represent the merging of the sociability found in physical public

spaces and online sociability, identifying the important shifts when location information becomes a key way people both coordinate with and present themselves to others.

By putting this literature into conversation, I fill the gap that has already begun to be filled by other published studies that have explored how LBSNs may impact sociability. These works include Humphreys (2007, 2010) work with Dodgeball users and other explorations of how mobile social software may impact homophily (Crawford, 2007; Farman, 2012; Frith, 2012), coordination and networking (de Souza e Silva & Frith, 2010b; Sutko & de Souza e Silva, 2011), and public sociability (de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011). This existing research provides a valuable framework I draw from, but it also leaves gaps that I seek to fill through my research. The main gap is one of specificity. By examining the specific design elements of Foursquare and the practices of Foursquare users, I am able to show how the design of a mobile social networking application can influence how people use it to socialize. For example, I found that the addition of gaming elements and self-documentation features complicated how people used Foursquare to coordinate in ways that were different from Humphreys' findings on Dodgeball. I am also able to concretely examine the links between existing theory and user practices and give detailed examples of how Foursquare can encourage certain types of public sociability. By combining my qualitative work with existing work on SNS, urban sociability, and location-aware sociability, I develop a detailed understanding of how location awareness can impact sociability while also exploring how individual design elements can significantly influence practices.

The final gap in the literature I seek to fill has to do with privacy. As I mentioned earlier, both issues of locational privacy and SNS privacy have been prominent areas of academic research (Acquisti & Gross, 2006; Beresford & Stajano, 2003; Blumberg & Eckersley, 2009; Boesen, et al., 2010; boyd, 2008a, 2011a; Consolvo, et al., 2005; de Souza e Silva & Frith, 2010a, 2012; Debatin, et al., 2009; Dourish & Anderson, 2006; Dourish & Bell, 2011; Gross & Acquisti, 2005; Hargittai & boyd, 2010; Licoppe & Inada, 2009; Myles, et al., 2003; Palen & Dourish, 2003; Perusco & Michael, 2007; Shklovski, et al., 2009; Smith, et al., 2005; Strandburg & Raicu, 2006). However, despite the large number of articles on locational and SNS privacy, we still have a great deal to learn about how people navigate the new informational architectures of location-based services. For example, the literature on SNS and privacy rarely discusses issues of location, and by combining literature on locational privacy with findings from SNS studies, I am able to examine the impacts of social location sharing. The locational privacy literature also has gaps that need to be filled. Many of the existing studies of locational privacy focus on technological fixes to locational privacy (Gruteser & Grunwald, 2003; Myles, et al., 2003), experimentally designed services (Consolvo, et al., 2005; Lederer, Mankoff, & Dey, 2003), theories of privacy (de Souza e Silva & Frith, 2012; Dourish & Anderson, 2006; Dourish & Bell, 2011; Minch, 2011; Palen & Dourish, 2003), and non-voluntary instances of location-tracking software such as parolee tracking and child tracking (Boesen, et al., 2010; Shklovski, et al., 2009). There is little work on how people manage the privacy dynamics of commercial LBSNs, and as I argue in chapters five and nine, the specific design of location-sharing applications has significant impacts on how people manage their privacy. My dissertation sheds light on privacy

practices by qualitatively examining the specific practices of Foursquare users and how design elements alleviate some of the serious privacy concerns identified in other ubiquitous computing technologies. By doing so, I will fill the gap in the literature left by the lack of empirical examinations of the micro-practices of Foursquare users.

The three gaps in the research identified above shaped the research questions I set out to answer. While my empirical work was partially inductive, the interview questions I asked, the people I targeted, and the multidisciplinary literature I draw from were shaped by my overarching research questions. Those questions are

1. How does the use of mobile applications like Foursquare impact how people relate to the locations they move through? How do individual design elements become a “lens” (Dourish & Bell, 2011) through which people view their surrounding space?
2. What are the social practices of Foursquare use? How do people use location to present themselves to others, and does being able to track the location of friends impact behaviors?
3. How do people manage the privacy issues that come with sharing their location? How do they feel about location as a private or public piece of information, and what are the micro-practices they use to exert control over their information?

These three research questions drove my argument in the first section of my dissertation and how I frame my findings in the second section. Focusing on the issues of how people relate to space while using mobile technologies, how they coordinate and present themselves to others, and how they manage privacy concerns, I argue in my discussion of existing literature that location-aware mobile applications like LBSNs raise new questions

about mobile communication that need to be addressed through explorations of how people actually use these applications. In each of the chapters in section one, I examine these questions. In chapter two I draw from the concepts of hybrid spaces (de Souza e Silva, 2006) and spatial legibility (Brewer & Dourish, 2008; Dourish & Bell, 2011) to show how location-aware technologies can have a different impact on how people experience physical space than earlier mobile technologies, but I also show that there is a lack of work examining how these concepts affect user practices through analyses of specific applications and qualitative work with actual users. I then introduce the concept of collective mobile communication in chapter three, which I define as the ability to send broadcast the same information to multiple parties while mobile. I discuss how innovative forms of collective mobile communication and the merging of mobile communication and social networking sites requires us to rethink traditional views of mobile communication because of the ways newer applications enable people to stay connected with a larger social network as compared to the typical one-to-one form of traditional text messaging and voice calls. In chapter four, I discuss how this shift from dyadic to collective mobile communication has been theorized to possibly increase the homophily in public space, but I also show there is some debate in existing literature about how serious of an impact LBSNs will have on social practices. Finally, I show that the convergence of location awareness and social networking also raises new social locational privacy issues because people can actively broadcast their physical location to a large social network in ways that were difficult, if not impossible, with more dyadic forms of mobile communication. The basic argument that links these chapters together is that applications like Foursquare contribute to new ways to mediate experiences of space and communicate with

others while mobile through the ways they merge digital information and physical space. By detailing the social annotation, spatial search, gaming elements, and mapping of friends, I show how LBSNs can contribute to new ways people see their surrounding space and coordinate behaviors. In this first section of my dissertation, I both discuss location-aware applications in general while also detailing specific elements of Foursquare. My argument is not that Foursquare is the only application to have these impacts; rather, I use my focus on the specific elements of Foursquare, such as location-based messages, spatial search, gaming elements, and the mapping of friends, as a way to show concrete examples of my argument that location-aware mobile communication raises new questions about how people use mobile technologies to mediate their experiences of physical space and communicate with others while mobile.

After setting forth the arguments I make in section one, I then use my exploratory data to address my research questions in section two. In my data analysis chapters, I return to the conceptual framework I develop throughout the first part of my dissertation to examine how Foursquare usage can affect how people relate to place, how they socialize with others, and how they manage their locational privacy.

### **My Approach to Answering My Research Questions**

I took an interpretive grounded theory approach to my research that combined both inductive analysis of data and the a priori research questions that shaped my interviews. I approached my interviews with both the goal of revealing data to help me answer my research questions and letting new data that suggested different concepts to emerge from my participants'

responses. While I discuss my method in detail in chapter six, here I want to briefly discuss how my approach shaped the structure of my dissertation to explain why I made the choices I did in the following chapters.

My dissertation is broken into two sections. The first section develops the concepts that form the conceptual framework I use to answer my research questions and the second section details my data and situates my findings inside the literature discussed in section one. In most quantitative research, researchers review literature to justify hypotheses they then test through their research. The goal of the constructivist grounded theory I draw from, on the other hand, is not to develop hypotheses to confirm or disconfirm (Charmaz, 2000, 2006).<sup>9</sup> Instead, my goal in section one is to give background on the concepts that form my framework, explain how those concepts apply to understanding Foursquare and other LBSNs by detailing specific elements of the application I later return to in my data analysis, and critically examine the literature I draw from to explain the gaps in knowledge that my research begins to fill. In section two, I outline how my data relates to these concepts, but I do not attempt to confirm or disconfirm existing theory or research. As an interpretive, qualitative research project, my research is exploratory in nature and seeks to shed light on the phenomenon of Foursquare use rather than make definitive claims that can prove or disprove existing theory or findings. However, I do note when my findings are significantly different from other exploratory studies of mobile social networking applications. I also do

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<sup>9</sup> As I discuss in more detail in chapter six, Charmaz's work on Grounded Theory is different from the traditional forms detailed by Glaser and Strauss (Glaser & Strauss, 1967; Strauss, 1987). Charmaz's (2006) work, along with other grounded theory researchers such as Dey (1999) and Clarke (2005), moves away from some of the more post-positivist epistemology of traditional grounded theory, a move that affected my work and that I explain later in my methods chapter.

not seek to make generalizable claims from my data. Instead, I relate my findings to the concepts I discuss in section one as a way to shed light on the practices of Foursquare users and generate findings that can possibly be used to influence later research projects.

Another reason I do not develop hypotheses is because the relationship between existing literature and my data analysis is more iterative than in hypothesis driven research. As Smagorinsky (2008) and other qualitative researchers suggest (Charmaz, 2006; Clarke, 2005; Glaser, 1978; Glaser & Strauss, 1967; Strauss, 1987), I did not take a linear approach to my research that started with an extensive review of the literature and moved on to field work and data analysis to test or verify existing theory. Instead, I took a recursive approach encouraged in grounded theory and other qualitative approaches. I certainly drew from existing theory that shaped my research questions, the questions I asked in interviews, and my data analysis, but I also had issues arise in my data that required me to go back and add sections to the literature I discuss in section one. For example, after finding that the gaming elements in Foursquare played a more significant role than I expected in how people used the application, I went back and read more about LBMGs and expanded upon that discussion in my examination of existing literature. I also found that the behaviors of many of my research participants closely resembled Dourish and Bell's (2011) discussion of spatial legibility, so I chose to extensively address that concept in section one.

The ultimate goal of my exploratory grounded theory approach was to put my data into conversation with existing research and build theory by generating a new understanding of the usage practices of people who adopt LBSNs. I do so by both returning to existing literature in the discussion sections of my data analysis chapters and using my data to

generate a new understanding of this phenomenon that differs from what has already been said by other researchers.

## **The Structure of My Dissertation**

I organized my chapters so that each chapter relates back to one of my research questions. Chapters two and seven focus on how location-aware applications like Foursquare can impact how people relate to their surrounding space (question 1); chapters three, four, and eight focus on the social practices of Foursquare users (question 2); and chapters five and nine focus on the privacy dynamics of Foursquare (question 3). Each of the chapters in section one introduces concepts that make up the conceptual framework I draw from to frame my data in the later analysis chapters and relate back to each research question. Chapter two examines the two concepts that make up the conceptual framework I use to address my first research question: hybrid spaces and spatial legibility. Chapters three and four explore the concepts I draw from to address my second research question: collective mobile communication, the presentation of self, net locality, and homophily. And chapter five introduces my conceptual framework for my third research question: privacy as “the control over social situations” (boyd, 2011a) and adjustments to new informational environments. In the following paragraphs, I explain the topics covered in each of my chapters in more detail.

Chapter two focuses on how location-aware mobile applications can impact the ways people relate to surrounding space. The main concept I draw from in this chapter is the concept of hybrid space (de Souza e Silva, 2006). Hybrid space refers to the merging of the digital, the social, and the physical via mobile technologies, impacting the way spaces are

perceived and read by end users. In these ways, the formation of hybrid spaces can also impact the legibility of physical space, a concept explored by Dourish and his colleagues (Brewer & Dourish, 2008; Dourish & Bell, 2011). This chapter explains these concepts and then shows how the specific elements in Foursquare suggest how the merging of digital information, physical space and mobility can impact the ways people “read” and “write” the spaces they move through. After specifically looking at Foursquare tips and the Foursquare Explore feature, I then show how literature on LBMGs also shows how hybrid space can impact the ways people read and experience space. I also address the gap in the literature left by lack of empirical examinations of the concepts of hybrid space and spatial legibility to explain how my research adds to the academic knowledge about how people use location-aware mobile technologies to mediate their experience of physical space.

LBSNs are mobile applications that share some commonality with other mobile technologies; however, they also share a great deal with online social networking sites like Facebook and Myspace and represent the merging of mobile communication and online social networking sites (SNS). The convergence of two distinct developments—mobile communication and online social networking—is the focus of chapter three. In this chapter I examine literature on mobile communication and SNS to discuss two concepts in existing literature that form part of the framework I use to address my second research question: collective mobile communication and the presentation of self. The first section of this chapter focuses on forms of collective mobile communication that show how mobile devices can be used to move past the typical dyadic connections enabled by voice calls and text messaging. I show how these forms of collective mobile communication contrast with the common

criticism of mobile communication that argues that people use their mobile phones to stay in touch with strong ties and promote social insularity (Gergen, 2002, 2008; Habuchi, 2005; Ling, 2008). I use these examples of collective mobile communication to develop a further understanding of Foursquare as a mobile application and show how existing research has begun to address how communication and coordination occurs in LBSNs, but I also show that this research leaves gaps in our knowledge of how people actually use check-in services to coordinate behaviors. In addition, I show how the design of Foursquare includes elements that possibly complicate some of the existing research on LBSNs and social coordination. I also show that the forms of collective mobile communication enacted through LBSNs are related to the literature on earlier SNS, particularly through how people shape the presentation of self while engaging on these sites. The presentation of self is a key concept that helps me address my second research question and forms an important section of my data analysis in chapter eight. By showing how LBSNs combine mobile communication and SNS, I address the concepts of collective mobile communication and Goffman's (1990) presentation of self to show how location-based applications mediate sociability in different ways than traditional, dyadic mobile communication.

While LBSNs do have much in common with online SNS, they also are significantly different because they are used in public spaces as compared to most SNS that are typically accessed from desktop and laptop computers. Chapter four examines public sociability, beginning with a discussion of some of the seminal work on public sociability that views heterogeneity as one of the most important aspects of public space (Haas, 2008; J. Jacobs, 1961; Sennett, 1977, 1989). I then move on to networked publics as a new type of public

space, but show how these publics are more homogeneous than idealized urban public spaces. I then introduce Gordon and de Souza e Silva's (2011) concept of net locality as a way to bridge the gap between literature on physical public space and networked publics. I use the concept of net locality to approach existing literature on mobile social networks and public sociability. I show that discussions about homophily are common in literature on mobile social networking (Crawford, 2007; Farman, 2012; Gordon & de Souza e Silva, 2011; Humphreys, 2007, 2010; Sutko & de Souza e Silva, 2011), but that there is some debate in the literature about how significant an impact LBSNs will have on the homophilous tendencies of people in public space. My research addresses the gap in the literature left by the differing views of scholars regarding homophily and the lack of qualitative research on the social impacts of LBSNs by examining the practices of my research participants to discuss whether or not they feel their Foursquare usage leads to a more homophilous experience of the city. I address the concepts of net locality and homophily to develop part of the conceptual framework I use to address my second research question in chapter eight.

Chapter five takes a slightly different approach to understanding LBSNs than the earlier chapters, focusing on the privacy issues that are raised when people begin sharing their location with others through mobile applications. Privacy has been one of the key factors that has shaped the development of location-aware and context-aware applications since their early development in the 1990's (Dourish & Bell, 2011) and is the focus on my third research question. Now that these applications have become more popular and more widely used, privacy issues have become even more important. This is particularly true for LBSNs, which allow people to share their location both with an application and the members

of their social network. This chapter addresses those concerns by examining the literature on social networking privacy and locational privacy (Acquisti & Gross, 2006; Boesen, et al., 2010; boyd, 2011a; boyd & Hargittai, 2010; Consolvo, et al., 2005; Debatin, et al., 2009; Gross & Acquisti, 2005; Lederer, et al., 2003; Licoppe & Inada, 2009; Shklovski, et al., 2009). I address concerns about both institutional privacy—how companies handle people’s data—and social privacy—how individuals handle sharing data with the members of their network. I then specifically analyze the design of Foursquare and how it impacts information sharing, allowing me to build an understanding of privacy I return to in chapter nine. I also use this chapter to develop the definition of privacy that shapes the framework I use to address my third research question and add to that framework by discussing the importance of understanding of how people adjust to sharing information in both social networking and location-sharing environments.

After addressing privacy in chapter five, I move on to the second section of my dissertation. The second section differs from the first because it focuses on the exploratory qualitative work I did. My qualitative work centered on 36 interviews I did with Foursquare users and sources of ancillary data. I begin the section with a methods chapter that explains my approach before moving on to my specific data analysis.

In chapter six, I explicitly detail how I used grounded theory, discussing how grounded theory shaped every step of my research process and explaining that process in detail. I also detail my coding procedure and how I grouped my categories into themes based on the thematic similarities of different behaviors described by my research participants.

Grounded theory not only shaped my data collection and coding, it also shaped how I present my data in chapters seven, eight, and nine. Chapter seven focuses on my first research question, which concerns how Foursquare usage can impact mobility and how it can become a “lens” through which people view their surrounding space. The chapter includes two thematic groupings of distinct categories: (a) Spatial legibility and exploration, and (b) The digital, ludic layer of the city. After detailing how my data applies to these issues, I finish the chapter with a discussion section that returns to the literature I examine in chapter two. I frame my data inside the conceptual framework I developed, showing how the user practices I describe relate to the concepts of hybrid spaces and spatial legibility and also how my findings relate to existing research on earlier LBMGs. However, not all of my findings were foregrounded by existing research, so I also discuss findings that were different from what was suggested by the literature I reviewed as a way to contribute to the understanding of location-aware technologies.

Chapter eight focuses on sociability and Foursquare use, particularly on how (and if) people use Foursquare to coordinate with others and how they present themselves to others through Foursquare usage. This chapter also includes two thematic groupings of categories: (a) The dynamics of location-based sociability, and (b) Linking platforms and the presentation of self through location. Both of these themes focus on addressing my second research question, which concerned the social practices of Foursquare users. In the discussion section, I relate my findings back to the conceptual framework I developed based on my discussion of collective mobile communication, the presentation of self, net localities, and homophily. I use this framework to both show how my data fits with these earlier discussions

while suggesting ways that the design of Foursquare and the practices of my research participants are different from this earlier research.

Chapter nine focuses specifically on privacy, examining my participants' different understandings of locational privacy and the tactics my participants develop to negotiate the privacy landscape of Foursquare in two themes: (a) Managing the network, and (b) Privacy practices in a new locational environment. As I establish in chapter five, privacy is a central issue in studies of location-aware technology. By drawing from the literature I discuss in chapter five and combining the conceptual understandings of privacy I establish with my analysis of the practices of Foursquare users, I show how the design of Foursquare impacts privacy and how my participants adjust to sharing their location with others.

The conclusion of my dissertation serves as a reflection on my research process and a suggestion for future research and the future trajectory of LBSNs. I reflect on some of the limitations of my research while also focusing on areas that should be pursued in the future. I also use my findings to make a condensed list of major findings from my field work that will be important for understanding the implications of LBSNs. While my field work focused on Foursquare, I extend my suggestions to the design of LBSNs in general. I then return to Foursquare to discuss some of the possible futures of the applications and use its present trajectory to suggest where it may be heading in the next few years.

## **Section 1: Conceptualizing Foursquare**

## **Chapter 2: Moving through the City, One Check-in at a Time: LBSNs and Hybrid Spaces**

The study of personal mobility has often focused on two different types of movement: physical mobility and virtual mobility. Physical mobility refers to the actual movement of bodies across space, and research on physical mobility includes studies of migration (Massey, 1994), walking (De Certeau, 1988; Myers, 2011), cycling (Spinney, 2009, 2011), automobility (Packer, 2008), and other transportation options (Jiron, 2011; Watts & Lyons, 2011). Virtual mobility, on the other hand, “refers to the substitutions of electronic transfers and exchanges for physical transport activities” (Janelle, 2004, p. 86; Kellerman, 2006).

Virtual mobility is basically the ability to travel online, whether to buy a product online or engage in virtual tourism, rather than make a physical journey (Hannam, et al., 2006). While this dichotomy between the virtual and the physical makes sense in some situation, too often it separates virtual and physical mobility in ways that are inaccurate, especially as much online information is now based around physical location (Gordon, 2008; Gordon & de Souza e Silva, 2011). More and more, the “virtual mobility” we engage in when we go online does not replace physical travel; rather, it enhances it by providing more information about our physical location. LBSNs are a clear example of that merging because of the way they combine “virtual travel” through online spaces with physical movement, impacting the experience of that movement and surrounding space.

Technologies like the book, the car, and the horse carriage have often played a major role in how people relate to their surrounding space when mobile (Bull, 2000; Bull, 2001;

Bull, 2007; de Souza e Silva & Frith, 2012; du Gay, et al., 1997; Manguel, 1997; Schivelbusch, 1986; R. Williams, 1983). LBSNs like Foursquare do as well, but they also raise interesting new conceptual issues about how people relate to the spaces they move through (de Souza e Silva & Frith, 2009, 2010b, 2012; Farman, 2012; Gordon & de Souza e Silva, 2011). LBSNs do so in the way they layer digital information over physical space. When someone logs into Foursquare, the location-based information pulled from various databases becomes an additional informational layer that augments the experience of surrounding space (de Souza e Silva & Frith, 2010b, 2012), just as earlier informational layers like street signs, placards, and storefronts tell people additional things about a physical space. Unlike with this other information found in surrounding space, however, the informational layer enabled by LBSNs (and other location-based services) are actually stored in various databases rather than present in the actual physical space, and that information is only available to people equipped with the right technologies and using the right applications.<sup>10</sup> The people using mobile applications like Foursquare occupy a hybrid space (de Souza e Silva, 2006) that combines the digital, social, and physical, meaning they move through a space augmented with different types of information.

That Foursquare users occupy and move through hybrid spaces has implications for where people choose to go and how they view surrounding space, and in the rest of this chapter I draw from the concept of hybrid space and a related concept—spatial legibility—to show how location-aware technologies can impact how people relate to and “read”

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<sup>10</sup> That is not to say that previous information layers were truly available to everyone. To read certain signs, someone has to be able to read in that specific language.

surrounding space. While hybrid spaces are an important concept for understanding many different types of location-aware mobile communication, I mostly focus on how the concept relates to the design elements of Foursquare as a way to detail specific uses of Foursquare that I return to in my data analysis in chapter seven. I also show that there is a lack of qualitative research that draws from the framework of hybrid spaces. By drawing from the concept of hybrid space as part of my conceptual framework, I am able to examine how the merging of digital information and physical space affects how people mediate their experiences of the spaces they move through.

First, however, it is important to briefly outline earlier research on how people use mobile technologies to mediate their experience of movement. In the next section, I examine existing literature on earlier mobile technologies and physical space before moving on to a detailed discussion of hybrid space as a way to establish the conceptual framework I use to address my first research question. I then turn to concrete examples of how the hybrid spaces of Foursquare can impact how people relate to their surrounding space through a discussion of tips, the Explore feature, and check-ins and conclude the chapter by examining existing literature on LBMGs to frame the potential impact of Foursquare's gaming elements on how people view and experience their surrounding space.

## Earlier Mobile Technologies and Physical Space

One of the central arguments de Souza e Silva and I (2012) set forth in our recent book is that mobile technologies work as interfaces to public space.<sup>11</sup> They are tools people use to negotiate their experiences of the public, and they are important for understanding how people relate to the spaces they move through. Take the book as an early example. With the growth of railway travel in the early 19<sup>th</sup> century, people began using the railway to travel from place to place. This brought the distant closer and made space seem more manageable, but it also led to the new social situation of the first-class railway compartment.

Before railway compartments, people rarely spent much time traveling in the company of strangers (Schivelbusch, 1986). The railway shifted that dynamic, and people were forced to sit across from strangers for long periods for what was likely the first time. As Simmel writes “Before the development of buses, trains, and streetcars in the nineteenth century, people were quite unable to look at each other for hours at a time, or to be forced to do so, without talking to each other” (quoted in Schivelbusch, 1986, p. 75). Public transportation—a new form of mobility in the 19<sup>th</sup> century—required new ways to deal with these new experiences of movement and the social situations caused by these new forms of transportation. People responded by hiding behind books and newspapers, and as Manguel (1997) argues, the popularity of the paperback novel is closely related to the new social situation of the railway. In other words, by turning to books and newspapers, people were

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<sup>11</sup> See chapters 1-2 of de Souza e Silva and Frith (2012) for a more detailed discussion of the book, the Walkman, and the iPod as mobile interfaces to public space.

able to partially disengage from their surrounding space and the people in that space (Schivelbusch, 1986). They could engage with the narrative of a novel rather than fully engage with other information present in the physical space.<sup>12</sup>

People obviously still read while mobile, but there are now more options available to manage their experience of physical space. One of the most important mobile technologies of the last 30 years was the Sony Walkman.<sup>13</sup> The Walkman was the first personal mobile auditory device, and it was wildly popular in the 1980s and 90s (du Gay, et al., 1997). The Walkman allowed people to personalize their experience of space by imparting the soundtrack of their choosing over the spaces people moved through (Hosokawa, 1984). As Bull (2000; 2001, 2004a, 2004b) has noted in his extensive work on the Walkman, people used this technology as a direct way to make personal mobility more pleasant and exert control over space. He writes that “It appears that as consumers become immersed in their mobile media sound bubbles, so those spaces habitually passed through in daily life increasingly lose significance and turn progressively into the ‘nonspaces’ of daily life that users try, through those self-same technologies, to transcend” (Bull, 2004b, p. 189).

The picture Bull paints of Walkman users is one of people disappearing into personal soundworlds while moving through the city, ignoring the spaces they move through, much as people may do when traveling in cars. The experience of space while listening to music is

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<sup>12</sup> In chapter one and two of de Souza e Silva and Frith (2012), we develop this argument more fully than is appropriate for this chapter. We argue that people do use mobile technologies to interface with public spaces, but that mobile technologies never lead to a full “disconnection” from public space. People still must maintain at least some attachment to the physical space and remain a part of the larger social situation.

<sup>13</sup> For an expanded discussion of these arguments, please see chapters 1 and 2 in de Souza e Silva and Frith (2012).

different than the experience of physical space without music; the movement is embodied differently, experienced differently (Hosokawa, 1984). As some have argued, this even leads to the privatization of public space because people engage more with the auditory layer they impart on the space than the actual physical space (du Gay, et al., 1997). The same arguments can also be applied to the iPod, which became the dominant form of personal, auditory mobile media in the 2000s (Gunn & Hall, 2008; Kahney, 2005). The iPod works similarly to the Walkman, but it gives people even more control over their experience while mobile because people can carry “their auditory identity in the palm of their hand” (Bull, 2006, p. 131) and use the shuffle options and create personal playlists. Just like with the Walkman, people could use iPods to avoid having to engage with information in their physical space. Some have even labeled iPod users as “zombies” who are so lost in their music that they have no idea what is going on in the space around them (A. Williams, 2006).

Mobile phones have faced similar, though slightly different, criticisms. With mobile phones, people are able to stay in constant contact with distant others in ways that were not previously possible. Because of the ways they allow people to engage with the remote rather than the physically near, mobile phones have often been criticized for distracting people and detracting from their experience of physical space. For example, Gergen (2002) argues that mobile phone users enact a sort of “absent presence” in which they negate their experience of the physical space at the expense of remote communication. Others have made similar points, arguing that mobile phone use leads to the “privatization” of public space (De Gournay, 2002; Hoflich, 2005) and that people on mobile phones enact “telecocoon” in which they

ignore everything around them while staying in contact with a close circle of friends (Habuchi, 2005).

The first gap in the research I seek to fill with my dissertation concerns how location-aware mobile technologies like Foursquare can affect how people relate to physical spaces. As this section has shown, that has been a significant area of focus in studies of earlier mobile technologies. Many researchers have argued that the use of earlier mobile technologies led people to ignore surrounding space, and in our book, de Souza e Silva and I (2012) used these examples to argue against the commonly held view that mobile technologies necessarily negate the importance of the proximal at the expense of the remote. Location-based mobile applications are an exemplar of our argument because they work by focusing attention on surrounding physical space and by making these spaces more legible (de Souza e Silva, 2006; de Souza e Silva & Frith, 2010b), in contrast to the earlier mobile technologies discussed above. They do so because they contribute to the formation of hybrid spaces (de Souza e Silva, 2006), a concept that provides the framework through which I address my first research question in both this chapter and chapter seven, and as I discuss below, there is a lack of empirical research examining the impact of location-aware mobile applications on how people perceive their surrounding space. In the next section I discuss hybrid spaces in detail to show how LBSNs can have a different impact on how people relate to physical space than the mobile technologies discussed above.

## The Hybrid Spaces of the City

LBSNs and other location-based services work by enabling people to access certain information about physical locations, mediated through a mobile device. They work through the combination of location-aware capabilities, mobile data connections, and physical space, and the combination of these three elements contributes to new forms of spatialities that allow people to map different types of information and read space in new ways, in contrast to the Walkman and the iPod that people use to avoid having to engage with nearby information (de Souza e Silva & Frith, 2012). As Dourish and Bell (2011) write, “Information technologies, particularly those of mobile networking and positioning, become a new lens through which the spatialities of urban space can be viewed” (p. 120). One of the major concerns that shaped my first research question is how Foursquare operates as one of these “lenses” through which space is viewed. To begin to address that question, it is necessary to understand how digital information and physical space merge through the use of location-aware applications like Foursquare.

The increasing prevalence of location-based digital information has helped contribute to the proliferation of what de Souza e Silva (2006) calls “hybrid spaces.” A hybrid space is a space that merges social connections, digital information, and physical space. As de Souza e Silva (2006) writes, “The possibility of an ‘always-on’ connection when one moves through a city transforms our experience of space by enfolding remote contexts inside the present context. This connection is related both to social interactions and to connections to the

information space, that is, the Internet” (de Souza e Silva, 2006, p. 262).<sup>14</sup> The use of location-aware mobile applications like Foursquare shows a concrete example of hybrid space because they enfold the context of the digital with the context of the physical and a person’s physical location determines the information one is able to access (de Souza e Silva & Sutko, 2011). This shows that in hybrid spaces, physical location is key, which is a marked difference between hybrid spaces and the ways people related to space with earlier mobile technologies. With an iPod, the song one plays does not depend on where one is located physically; the same applies to a text message or a voice call.<sup>15</sup>

Hybrid space was not the first concept that addressed how the merging of digital and physical information can affect how people relate to space. de Souza e Silva differentiates her concept from Manovich’s (2007) concept of “augmented space” and Milgram and Colquinn’s (1999) concept of “mixed reality.” Both of these concepts represent the merging of physical space and digital information, but unlike hybrid spaces, they do not feature the social as an important factor and so are not as pertinent to an analysis of Foursquare, which is built around the social, an element that has implications for how Foursquare users relate to their surrounding space.<sup>16</sup> In hybrid spaces, people connect with one another by coordinating

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<sup>14</sup> Hybrid spaces do not necessarily have to involve a mobile data connection and location-based information; they can also be formed through SMS as de Souza e Silva (2006) shows through the examples of Smart and Flash Mobs. Smart and Flash Mobs still involve people “simultaneously moving through physical space while connected in real time to other users via digital technology depending on their relative positions in physical space” (p. 270).

<sup>15</sup> There are, of course, some exceptions to this point. If someone is listening to an iPod in an exceptionally loud space, the space may drown out the music played through the iPod. In addition, physical location does matter with mobile phones in the sense that certain areas have better network coverage.

<sup>16</sup> There are other differences as well. Augmented reality has traditionally been enacted through head mounted displays and works as an add-on to physical space, which is different from conceptualizing the digital and physical as merged. Ishii’s work on mixed reality also differs from hybrid spaces because it focuses on

action or producing their own content. Consequently, a museum tour that lets people access digital information about paintings depending on their location would be a form of augmented reality. However, if that same museum tour allowed people to leave messages about their own impressions of the paintings that can be accessed by others or compete with others to see who can visit the most pieces of art, it becomes a hybrid space because of the combination of physical location, digital information, and social elements.

The social is key here because it signals a shift in how people use mobile interfaces to negotiate space by partially democratizing both consumption and production. Through popular mobile applications like Yelp, Foursquare, and Urban Spoon people are able to contribute to the information that makes up hybrid spaces, and they are able to access socially produced location-based information, an issue I explore in more detail in chapters seven. For the person using the application the information is part of the experience of that space, refuting the imagined cyberspace/physical space dichotomy (Lemos, 2010).

These hybrid spaces also contribute to new ways in which surrounding space can be made legible, an important point for understanding the impact of location-aware mobile applications like Foursquare on how people relate to their surrounding space. Writing about legibility and urban design, Montgomery (1998) defines legibility as “the degree to which the different elements of the city (defined as paths, edges, districts, nodes and landmarks) are organized into a coherent and recognizable pattern” (p. 100). This recognizable pattern is important for all spaces, and one of the uses of location-aware mobile technologies is to

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experimental, wearable technologies and tangible interfaces rather than the mobile technologies people use in everyday life.

make those patterns more visible and easier to navigate. In other words, the “relevance of legibility lies primarily in the way that digital technologies can render the everyday world legible in new ways” by “making the invisible visible” (Dourish & Bell, 2011, pp. 193, 195). The making the invisible visible is key to how issues of legibility relate to hybrid spaces.

In hybrid spaces, the addition of digital information means that spaces can be revealed to people in new ways. Brewer and Dourish (2008) note that the legibility of spaces concerns how they “can be read and understood as conveying particular sorts of messages” (p. 971), and they argue that mobile technologies can increase the legibility of spaces because they can reveal new messages, patterns, and types of knowledge about a space. For example, Foursquare users can draw from the check-in function to explore the locations around them, locations that often times would not have been visible from their physical position. Tips left through Foursquare or other mobile annotation applications like Yelp also increase legibility by providing a new way in which information about a location can be revealed. The ability to filter and sort space through spatial search engines like Foursquare’s Explore feature (discussed later in this chapter) enables new ways to read spaces (Frith, 2012). Even the location of one’s social network contributes to a collective legibility in which information about physical space can reveal itself to others in social, hybrid ways (Dourish, 2008).

These are all examples of ways in which the physical can be made more visible through the addition of the digital. If we take seriously that mobile technologies “become a new lens through which the spatialities of urban space can be viewed” (Dourish & Bell, 2011, p. 120), then the searching out and sorting of the information present in physical spaces

is a significant way in which applications like Foursquare can affect people's behaviors and become a lens through which people sort the city. This contributes to new ways in which the legibility of space can increase through novel ways in which spatial information is revealed to people, an issue I explore in detail in my data analysis in chapter seven. To show how this occurs, I now want to turn to two concrete examples of how Foursquare can impact legibility: Foursquare tips and the Foursquare Explore feature.

### **Foursquare tips, the Explore feature, and the presentation of location.**

Foursquare users can leave tips about locations that appear when other people click on that location's Foursquare listing. These tips contribute to the information others can read about a physical space, leading to new ways people can read the legibility of spaces and contribute to that legibility by writing the information that becomes part of the experience of that space.

The ideas of reading and writing space were explored in recent work by de Souza e Silva and me (2012, forthcoming), and we argue that "the act of embedding location-based information leads to a new way of narrating urban spaces" (forthcoming, n. p.). Before the development of social locative media art projects and location-based services, the ways spaces were narrated through mobile technologies often used top-down narratives determined by artists. This can be seen most notably in "audio walks" popularized by Terri Rueb in which she gave people guided narratives of the locations they moved through. This would be a form of

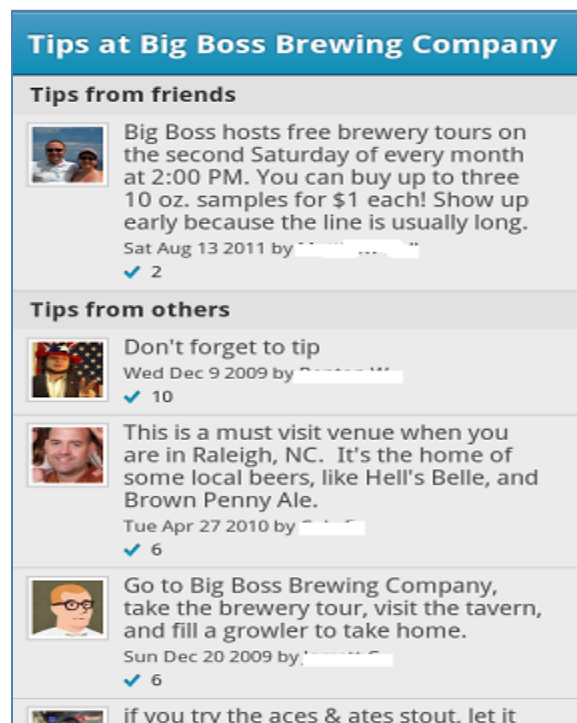
“reading” space in which people follow the narratives of others in a similar way one may follow a location-based guidebook.<sup>17</sup>

However, we also note that “when people start contributing to create the information that is attached to locations, they actively create the links among these locations... people are then transformed from readers into writers of urban spaces” (forthcoming, n.p). They can write space most obviously through the tips they leave about locations (see Figure 1), a design feature drawn from earlier mobile annotation projects like Urban Tapestries and Rider Spoke in which people told stories and attached messages to locations. In these projects, people uploaded stories and experiences of a location and others would walk by and access the stories, enabling new ways to access socially produced location-based information. Describing the location-based messages left in Urban Tapestries, Silverstone (2005) writes that “Here it might be said that the ordinary sense of interactivity, that between persons, is being supplemented by a connectivity between person and space. Location is of its very essence” (p. 49). Here we see that just as in these projects, the role of the Foursquare user can be two-fold: they can read space, following the experiences of others, but they can also contribute to those narratives about locations, becoming writers that play a role in how these narratives and the legibility of spaces are constructed (de Souza e Silva & Frith, 2012, forthcoming). It is in the dual role as producer and consumer of these pieces of information that the importance of the social in hybrid space is highlighted. The tips left through

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<sup>17</sup> See chapter six in de Souza e Silva and my recent book or our chapter in Farman’s upcoming collection *Digital Storytelling with Mobile Media* for more detail on the concept of narrating the city and a fuller analysis of artworks that explore these issues. We also explore the concept of “spatial trajectories” in more detail.

Foursquare become an important part of these spaces, increasing their legibility and the ways they reveal themselves to others. The digital information does not overwhelm the narratives already present in these locations, but it does become an important source of information that is part of the other information present in the physical space.



**Figure 1: A list of tips at a brewery**

A second example of how the use of Foursquare can impact spatial legibility in hybrid spaces is the Explore feature, which mediates the relationship between people and locations. Foursquare added the Explore feature in early 2011, and it is based on an algorithm that recommends new locations to go based on where “people like you” go (Moore, 2011). Explore is basically a personalized recommendation feature that draws from the large data set

of Foursquare check-ins to show people where members of their social network and other people who check in to the locations they like also check in.<sup>18</sup> Explore also shows people where their friends tend to check in to recommend new locations (see Figure 2). This is important because, as the Foursquare engineers explained in a presentation on Explore, over 60% of people's check-ins are to locations that someone in their Foursquare social circle has already been (Moore, 2011).

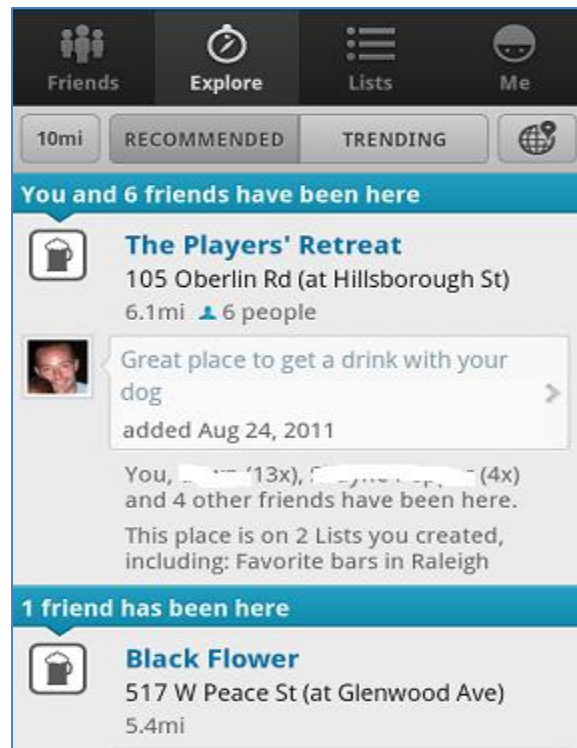


Figure 2: Foursquare's Explore feature

<sup>18</sup> Foursquare's blog features a detailed explanation of the process Foursquare's Engineers used to build Explore and the data and algorithms behind the feature. The blog post is worth reading because the process behind Explore is interesting: <http://engineering.Foursquare.com/2011/03/22/building-a-recommendation-engine-Foursquare-style/>

To use Explore, the Foursquare user goes to the Explore tab and chooses a distance to filter recommendations (ranging from a ½ mile to 10 mile radius). The feature then tells them where to go, but even more importantly, it tells them why they should go there. So if I click on the Explore tab from my house and search “bars” within a 10 mile radius, I receive recommendations and explanations that say things like “people who go to the Big Boss Taproom and Landmark Tavern [bars I have checked in to] also go here.” The feature also tells people which locations they have checked in to are similar to that bar based on check-ins (for example, “Busy Bee is similar to Raleigh Times and Foundation”). Explore is basically a social, spatial search engine that can reveal information about surrounding space in new ways. While it does work through a top-down search algorithm, it also includes the social elements that are necessary for the formation of hybrid spaces because the algorithm makes suggestions based on the movements of one’s social network and other similar users. By not only identifying physical locations but also revealing why the locations are of interest, Explore becomes a new way Foursquare users can “read” hybrid spaces.

An interesting question raised by the Explore feature is how the commercialization of location-based applications like Foursquare may affect the “reading” of space, an issue de Souza e Silva and I (2012) address in chapter five of our book. This issue is particularly pertinent to Foursquare because of the way the Explore algorithm highlights certain locations over others when someone performs a spatial search. A venue that has more check-ins is more likely to be featured higher in search results, and venues that offer check-in specials through Foursquare’s merchant platform are also featured depending on the type of search performed. To date, Foursquare does not have deals in place with merchants that allow

people to pay to have their venues highlighted in the ways merchants pay for sponsored search results on Google. However, that scenario or something similar is a possibility as Foursquare continues to search for monetization opportunities and serves as a reminder that there are business interests that can drive the ways that hybrid spaces are experienced and constructed.

Building on the idea of the commercialization of hybrid spaces (de Souza e Silva & Frith, 2012), it is also important to note that the new ways individuals can “read” and “write” space through digital technologies may also lead to new forms of exclusion from the experience of urban spaces (de Souza e Silva & Frith, 2010b; Frith, 2012). While much of the research on the peer-production of hybrid spaces views the phenomenon positively (Farman, 2012; Silverstone & Sujon, 2005), these positive benefits will be unevenly distributed because the additional information is only present for people with the right technologies using the right applications (de Souza e Silva & Frith, 2012; Dourish, Anderson, & Nafus, 2007; Frith, 2012). For people who do not have the correct applications or simply do not care to use them, the space remains in its unaugmented form even as others are able to access additional information that may add to the legibility of the physical space. This can contribute to what de Souza e Silva and I (2010b) call “differential space” in which experiences of space become affected by a new digital regime of information that is only relevant to those who are aware of it, presenting issues of exclusion and segregation at the digital level than differ from physical markers of space that are more widely accessible as long as people have the literacy levels to read that information (Frith, 2012).

The issues raised above are important because existing research suggests that the

“reading” and “writing” of hybrid space can have significant impact on how people relate to the spaces they move through. As de Souza e Silva and I (2012) argue, the addition of location information in these hybrid spaces contributes to new forms of the “presentation of location”<sup>19</sup> that can affect how people view their surrounding space. We draw from Goffman’s (1990) “presentation of self” to conceptualize how the addition of location information changes the way locations are presented. As we note, all locations give off impressions, but in the hybrid spaces of LBSNs, there are more agents than ever before who can contribute to those impressions in a multitude of ways. For example, the simple act of checking in to a location can present a location as somewhere that is desirable and worth visiting, and the knowledge that there are multiple Foursquare users who are similar to the user at a location may make someone more comfortable. Interviews with users of the LBMG Botfighters show that people are willing to go to new parts of the city if they know other players are there (“Mobile killers,” 2001, July 15). In this way, check-ins work as a way of “writing” space and the type of people who check in to a location helps shape how it is presented to other Foursquare users and how they relate to it (de Souza e Silva & Frith, 2012). This also relates back to the Explore feature which makes suggestions based on the check-in patterns of the members of one’s social network. The reading and writing of location-based spatial information enabled through features like tips and Explore shows how Foursquare contributes to the formation of hybrid space. Another, equally, important way it does so is through its gaming elements, which I detail in the next section.

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<sup>19</sup> Sutko and de Souza e Silva (2011) make a similar argument about “presentation of place.”

**Location-based mobile gaming.** As I discussed in the previous chapter, Foursquare includes multiple gaming elements that are similar to earlier LBMGS, which are a form of mobile application that has been researched far more extensively than LBSNs. LBMGS are games that take place in physical spaces and are accessed through location-aware mobile devices. The first LBMGS was Botfighters, which worked through SMS (Sotamaa, 2002), but most later LBMGS combined GPS capabilities and mobile Internet connections; consequently, research on LBMGS fits with the discussion throughout this chapter because these games take place in hybrid spaces in which physical space is merged with digital gaming elements housed in various databases. Research on LBMGS is fairly extensive, containing analyses of specific games like Mogi (Licoppe & Guillot, 2006; Licoppe & Inada, 2006, 2009) and Alien Revolt (de Souza e Silva, 2008), educational uses of LBMGS (de Souza e Silva & Delacruz, 2006; de Souza e Silva & Sutko, 2009b; Delacruz, Chung, & Baker, 2009; Sarenmaa, 2009), and theoretical and historical approaches to understanding LBMGS (de Souza e Silva, 2009; de Souza e Silva & Hjorth, 2009; de Souza e Silva & Sutko, 2008; Gazzard, 2011; Richardson, 2010).

Much of this research suggests that the gaming elements of LBMGS can affect how people relate to physical space and can alter players' mobility decisions. Writing about LBMGS, de Souza e Silva and Hjorth (2009) argue that they impart a digital ludic layer over physical space, turning physical spaces into playful spaces. Gazzard (2011) argues that LBMGS and augmented reality are "reworking our understanding of the spaces and places around us" through the ways they encourage players to map information and engage with maps of physical spaces (p. 417), and Hjorth (2011) discusses "the possibilities for mobile

gaming to teach us new ways of experiencing place upon various levels” (p. 357). Finally, in an analysis that closely echoes de Souza e Silva’s (2006) discussion of hybrid spaces, Richardson (2011) argues that the ontology of LBMGs complicate the physical/virtual dichotomy in the ways they merge the online with the physical, an argument that suggests their relationship to the concept of hybrid spaces.

Not all the research on LBMGs approaches them from a theoretical perspective. In a series of articles, Licoppe and colleagues (Licoppe & Guillot, 2006; Licoppe & Inada, 2006, 2009) report on a case study of the LBMG Mogi and one of these articles shows how the gaming elements can affect the ways players make decisions about their personal mobility (Licoppe & Inada, 2006). In Mogi, players sought out digital objects that were layered throughout Tokyo and competed with other players who also attempted to collect the objects. Licoppe and Inada (2006) report that some players chose not to take public transportation because it would interfere with their Internet connection and take them out of the game, choosing alternate paths through the city instead. In addition, a newspaper article discussing the early LBMG Botfighters featured interviews with players who reported going to new parts of the city to hunt down other players (“Mobile killers,” 2001, July 15). The act of traveling to new locations specifically because of gameplay closely resembles the behaviors encouraged in Geocaching, popularized in the early 2000s (Gordon, 2009). With Geocaching, people are provided with the GPS coordinates of physical objects and use GPS transmitters to hunt down the objects to add to their collection, causing them to explore new locations in the pursuit of objects.

The examples of players exploring the city while participating in activities such as Botfighters, Mogi, and Geocaching show how the hybrid spaces of LBMGs can affect how players relate to the spaces they move through and can even encourage players to travel to new places. These findings are important for my study of Foursquare because Foursquare also features hybrid gaming elements based around physical location. Foursquare's creator—Dennis Crowley—has argued that the gaming elements of the application encourage positive behavior in the real world and can encourage people to travel to new locations (Crowley, 2010b). Through the creation of a “game that's built on the real world,” Foursquare encourages people to base their physical mobility around the game mechanics built into the application. The entire idea of “a game that's built on the real world” is a prime example of a hybrid space and closely resembles the LBMGs discussed above. The gaming elements are digital, but they are so closely tied to the physical locations people check in to that the act of movement is turned into gameplay. Because people get more points for going to new locations, they are encouraged to alter the ways they experience their surrounding space and go out and explore to collect points. In addition, much of the initial attention Foursquare received in the popular press was because it rewarded badges for certain types of activities, encouraging users to explore locations and do certain things to collect these badges in a way that is similar to how Mogi users explored new places to collect virtual objects. As I discuss in chapter seven, people can move through the city on a “badge hunt,” basing where they go on where they can collect the most badges. Conversely, Foursquare elements like mayorships, which are rewarded to the person with the most check-ins at a location, encourage people to repeatedly check in to the same location to protect that mayorship.

These gaming elements are all designed to alter the legibility of the city by turning it into a game space and adding additional elements that influence the paths people choose to take and potentially alter the ways they relate to the spaces they move through.

The merging of the digital and the physical through location-based tips, the Explore feature, check-ins, and gaming elements are all examples of how hybrid spaces can potentially impact how people relate to physical spaces. However, as I discussed in the introduction, there is a lack of qualitative work that examines the impact of the merging of digital information and physical space. Earlier art works like *Urban Tapestries* and *Rider Spoke* addressed mobile annotation, but these were art projects as compared to commercial applications, and there is no exploratory qualitative research examining how these projects impacted user practices. In addition, in the academic literature, the concepts of hybrid space and spatial legibility have mostly been approached theoretically (de Souza e Silva & Delacruz, 2006; de Souza e Silva & Frith, 2012, forthcoming; Dourish & Bell, 2011; Farman, 2012; Lemos, 2010), with little research qualitatively examining how the merging of physical space and digital information impacts how people relate to their surrounding space. Research on LBMGs partially does so, but most of this research is also theoretical in nature, focusing on how the addition of gaming elements to physical space may impact how people relate to spaces and developing frameworks through which to understand LBMGs (de Souza e Silva & Hjorth, 2009; Gazzard, 2011; Hjorth, 2011; Richardson, 2011). Licoppe and colleagues do report on a case study of Mogi users, but only one of these articles addresses how the application affected how players related to their surrounding space (Licoppe & Inada, 2006), and Mogi only included one of the elements—gaming—that I described in this chapter.

Most importantly, the Licoppe and Inada study and most of the theoretical studies of LBMGs cited above do not draw from the concepts of hybrid space or spatial legibility to frame their results. As I discussed earlier, these two theoretical concepts have been influential in shaping the ways academics understand the impacts of location-based mobile technologies. However, they have not been adequately addressed as conceptual frameworks used to understand qualitative data detailing actual users practices, and Foursquare can serve as an exemplar of how location-based mobile applications can impact the ways people relate to physical spaces and increase the legibility of physical spaces. Foursquare does so in interesting ways because it features multiple location-based elements, including mobile annotations, spatial search, and the mapping of friends that all mediate relationships to physical space. By examining how my participants draw from this digital information to mediate their experiences of surrounding space, I am able to qualitatively detail through interview data how these hybrid spaces can impact where people go, the information they access, and the ways they “read” the information present in their surrounding space. I am also able to show through my qualitative work how these hybrid spaces can impact the “presentation of location” detailed by de Souza e Silva and me (2012). By drawing from a conceptual framework that does not view the interaction with digital information as something separate from the physical, but rather as an integral information layer that affects the legibility of physical space, I examine how, for many of my research participants, Foursquare does becomes a “lens” through which they can view physical space and significantly alter their experience of that space.

## Conclusion

This chapter used the literature on hybrid spaces to examine how Foursquare usage can affect the ways people relate to physical space. Research on earlier mobile technologies such as the Walkman, iPod, and mobile phone has examined how these mobile technologies can impact the ways people negotiate their experience of physical space (Bull, 2000; Bull, 2001; Bull, 2007; De Gournay, 2002; du Gay, et al., 1997; Gergen, 2002). However, because Foursquare users occupy hybrid spaces that merge digital information and physical space, the potential impacts of location-aware applications like Foursquare are different from these earlier mobile technologies. As Brewer and Dourish (2008) describe, mobile networked technologies can help create new spatialities, and Foursquare is a concrete example of how this occurs. By adding this extra informational layer on top of physical space, people can “read” the spaces they move through in different ways. In chapter seven, I return to the concepts explored in this chapter to examine through my data analysis how this reading and writing of space can affect how people relate to the spaces they move through.

## Chapter 3: Collective Mobile Communication and Social Networking Sites

Research on mobile communication has often focused on the ways mobile phones facilitate dyadic connections through voice calls and text messages (De Gournay, 2002; Gergen, 2008; Habuchi, 2005; Hoflich, 2005; Ling, 2004, 2008; Matsuda, 2005). These forms of one-to-one communication have been criticized as individualizing because they allow people to stay in constant contact with a few strong ties at the expense of connections with a more diverse set of weak ties (Gergen, 2008; Habuchi, 2005; Ling, 2008; Matsuda, 2005). However, as I detail through multiple examples later in this chapter (Humphreys, 2007, 2010; Licoppe & Inada, 2006; Silverstone & Sujon, 2005), there have been explorations of mobile communication that move past the typically dyadic nature of text messaging and voice calls to show how mobile communication can enable a larger set of connections people can use to coordinate behaviors and connect with others (de Souza e Silva, 2008; Humphreys, 2007, 2010; Licoppe & Guillot, 2006). I group these examples together under the concept of *collective mobile communication*, which I define as examples of mobile communication that enable people to broadcast the same piece of information to multiple people at once, in contrast to the dyadic nature of typical one-to-one text messages and voice calls. As I discuss below, some of these examples of collective mobile communication rely on newer smartphone technology, but not all. The research on these forms of collective mobile communication I discuss in the next section is important for understanding how applications like Foursquare complicate traditional conceptions of mobile communication.

Collective mobile communication is an important concept for my research because Foursquare and other mobile social networking applications represent the convergence of two important shifts in communication that have occurred in the last two decades: the rise of mobile communication technologies and the rise of social networking sites (SNS) like Facebook and Myspace. Unlike with typical mobile communication, SNS enable new ways for people to communicate with a wider number of people. For example, when someone updates a status on Facebook, that status goes out to possibly hundreds of Facebook friends. With LBSNs, when someone broadcasts location, that location information goes out to the entirety of their LBSN network, showing that LBSNs are a new form of collective mobile communication. In addition, because information shared on LBSNs like Foursquare is shared with the members of one's social network in the application, the collective mobile communication facilitated through Foursquare allows for new ways people can present themselves to others, a topic addressed in the existing research on online SNS I discuss in the final section of this chapter (boyd, 2008c; Donath, 2007; Donath & boyd, 2011; Ellison, Heino, & Gibbs, 2006; Turkle, 2010).

In this chapter, I discuss how LBSNs like Foursquare represents the convergence of earlier forms of collective mobile communication and SNS and how understanding that convergence allows us to better conceptualize the social practices of Foursquare users. I use this chapter to establish part of the framework I use to answer my second research question, a framework that centers on the literature on collective mobile communication and coordination and the presentation of self in online spaces. I draw from this framework in my analysis and discussion of the social practices of Foursquare users in chapter eight. I also

show that existing research on location-based mobile communication and SNS does not adequately address what happens when location-based mobile communication and social networking sites merge, a gap I begin to fill in chapter eight.

## **Mobile Communication and Foursquare**

There is a striking passage in Agar's (2005) history of the mobile phone in which he describes walking into an American airport and being struck that not a single person was using a mobile phone. It was the early 1990's, and mobile phone adoption had begun to take off in Europe but was still slow in the United States. Twenty years later, it is difficult to imagine a crowded public place like an airport terminal without a single person talking on or looking down at a mobile phone. They have become nearly ubiquitous, and in the United States, far from the leader in mobile phone adoption, there were 90 mobile subscriptions per 100 inhabitants in 2009. In other countries, including the United Arab Emirates, Brazil, and all the Scandinavian countries, there are more than 100 subscriptions per 100 inhabitants (ITU, 2010).

Mobile phones, however, are devices in need of some definitional work. Until the widespread adoption of smartphones, which did not truly begin until the release of the iPhone in 2007,<sup>20</sup> mobile phones were used almost exclusively for two purposes: making voice calls and sending text messages. Some earlier mobile phones, such as the Nokia Communicator series, Palm phones, and early Blackberrys had additional features like calendars and email

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<sup>20</sup> The iPhone was far from the first smartphone. Smartphones were developed in the 1990's, most notably through the Nokia Communicator series. However, it is only in recent years that they began to see widespread adoption.

connections, but for the most part, the affordances of mobile phones were fairly limited. That has changed with the widespread adoption of smartphone technology that features a constant mobile broadband connection, the ability to run third-party applications, and location-aware capabilities.

The widespread adoption of smartphones complicates academic theorizations on earlier mobile phones, especially the criticisms of how mobile phones affect the way people relate to their surrounding that I discussed in the previous chapter and the ways they relate to others. As de Souza e Silva and I (2012) discuss in chapter three of our book, a common criticism in academic literature is that mobile phones promote social insularity through the ways they let people stay connected with their strong ties through the dyadic communication of voice and text messages. Licoppe (2004) calls this ability to stay constantly connected to strong ties “connected presence”, and because of these constant connections, scholars have often viewed mobile phones as individualizing technologies (De Gournay, 2002; Nie, 2001; Wellman, 2002). Some scholars view those individualizing tendencies negatively, arguing that mobile communication often contributes to social insularity. For example, Gergen (2008) labels these forms of dyadic connection “monadic clusters” and expresses fear that they could hurt the democratic process because people stay constantly connected to select others at the expense of a larger number of connections. Habuchi (2005) argues that people enact “telecocoon” in which they ignore weak ties and others in their surrounding space while strengthening a few connections. Matsuda (2005) identifies similar behaviors, claiming that the dyadic connections enabled through mobile phones lead to new forms of “selective sociality,” and Geser (2005) argues that mobile phones offer “easy escape route from

unfamiliar public encounters and from more complex multilateral situations” (p. 31). As I addressed in the previous chapter, many of these criticisms also focus on how the dyadic communication encouraged by mobile phones allows people to maintain connections to distant others at the expense of those in their surrounding space.

It is important to note that these criticisms all analyze mobile phones as devices used for text messages and voice calls used primarily to connect sets of strong ties. These analyses are still important and pertinent, and even with the increasing popularization of mobile data connections, people still often communicate with others through smartphones by sending text messages and making voice calls. Indeed, the number of text messages sent worldwide has continued to increase, and 6.1 trillion text messages were sent in 2010 ("The world in 2010: The rise of 3G,"). By discussing examples of how mobile phones have been used to enable collective communication, I do not mean to point to them as an evolution of mobile telephony. For many people, mobile phones are still primarily dyadic communication devices, which is an important point to keep in mind. However, newer developments in mobile communication do complicate assessments of the mobile phone through the ways they enable a more diverse set of connections and may promote forms of face-to-face interaction. These capabilities suggest that while people still use smartphones to call and text people, newer mobile phones should no longer be viewed as purely dyadic communication technologies (de Souza e Silva, 2006, 2008; de Souza e Silva & Frith, 2012), which has significant consequences for my second research question concerning the social practices of Foursquare users.

One example of the collective mobile communication enabled through Foursquare usage involves check-ins that are then communicated to the other members of one's Foursquare network, but Foursquare's collective mobile communication also includes different forms of mobile annotation discussed in the previous chapter that enable collective mobile communication through the ability to leave location-based messages that are then accessed by anyone else using that application in that location. This type of communication is far from dyadic, instead communicating information to the entirety of one's Foursquare network. The same is true of a Facebook status update or a tweet sent from a smartphone. These examples all contrast with the idea that mobile communication necessarily promotes insularity because it involves the connection between two people at the expense of connections among a wider number of people (Habuchi, 2005; Ling, 2008).

An important point to make, however, is that the adoption of smartphones does not cause any of these behaviors. Smartphones are important in complicating how we view mobile communication because of their technological affordances, but long before iPhones and various Android phones, people had already developed innovative forms of collective mobile communication that are important for understanding the social practices of Foursquare through a focus on location and a more diverse set of connections. These innovative forms were found most notably in various mobile social networks, location-based mobile games (LBMGs), and locative media projects. My goal in the next section is not to give a full history of these examples of collective mobile communication, but rather to discuss how these forms of collective mobile communication complicate traditional understandings of mobile phones and relate to LBSNs like Foursquare. In addition, in the

next section I also identify differences between these examples and Foursquare to show how my analysis of social practices extends our knowledge about collective coordination and communication through location-aware mobile interfaces.

**Collective mobile communication.** The last decade has seen multiple examples of how people have used mobile devices to enact collective mobile communication. This has occurred most famously in Smart and Flash Mobs, which de Souza e Silva (2010b) and I call “mobile social networks.” In Smart and Flash mobs, a large number of people coordinate through various means, most often through SMS (though also other channels like Facebook) and use their networked coordination to arrange a location in which to converge (Rheingold, 2002). These SMS are designed to spread amongst a large group of people in a form of collective mobile communication designed to coordinate mobility. The most notable example of Smart Mob coordination came in the Philippines when people used SMS to coordinate protests against their president at the time (Rafael, 2003). Smart and Flash mobs are also used for more mundane purposes, such as arranging meet-ups to do things like worship a statue or engage in a large-scale pillow fight.

The collective coordination that occurs through SMS in many Smart and Flash Mobs closely resembles how Dodgeball—one of the most important predecessors to Foursquare—operates. Dodgeball is a mobile social network in which people shared their location with friends through an SMS system (de Souza e Silva & Frith, 2010b; Humphreys, 2007, 2010). Dodgeball focuses on location in much the same way as contemporary LBSNs, but people who used the service had less powerful mobile phones that did not have GPS and often did

not have Internet connections. Rather than checking-in to locations or tracking location through GPS, people instead texted their location to a central number that then sent the text message out to friends with the goal of coordinating social behavior. In her ethnographic work with Dodgeball users, Humphreys (2007) found that the collective sharing of location among friends through SMS often lead to a type of social molecularization, “whereby informants both experience and move about through the city in a collective manner” (n.p.). The collective manner of their movement more closely resembles Flash Mobs than the dyadic nature of typical text and voice-based mobile communication, and both these examples show how mobile communication can move past the dyadic nature of typical voice and text messaging.

Dodgeball is obviously an important antecedent to Foursquare and other LBSNs like Loopt, Whrrl, Gowalla, and Latitude, allowing friends to share their location with each other. Another important form of mobile communication for understanding the collective mobile communication of Foursquare and other LBSNs can be found in the location-based mobile games (LBMGs) I discussed in the previous chapter, which also represent innovative ways people used mobile phones and other mobile devices to connect with locations and each other. Likely the first LBMG was Botfighters, which like Dodgeball, relied on an SMS based system (Sotamaa, 2002). When playing Botfighters, people received SMS messages about nearby players who they then “fought” by sending text messages to the system. Later LBMGs, such as Alien Revolt in Brazil and Mogi in Japan (de Souza e Silva, 2008; Licoppe & Inada, 2006, 2009), used location awareness and mobile Internet connections to build on the ideas explored in Botfighters. As de Souza e Silva (2008) argues, these LBMGs show

how mobile phones can be used for location-awareness and collective communication rather than as two-way communication devices. The important point here is the collective communication these LBMGs encourage. Whereas SMS and voice calls are typically used to connect to a group of strong ties, LBMG players communicate location to a large number of other players, and these forms of semi-mass communication of location affect others' behaviors through the ways players transmit location to other players to coordinate gameplay and accomplish tasks (Licoppe & Inada, 2006). Even when they are not coordinating behavior, when a Botfighter or Mogi player receives an alert that other players are nearby (Licoppe & Inada, 2006; Sotamaa, 2002), that is a form of what Sutko and de Souza e Silva (2011) call passive mobile communication. Passive mobile communication involves the transmission of location to a wide number of people rather than the more active forms of directed SMS and voice calls.

Finally, there are locative media art pieces that also explored how mobile communication could move past the dyadic and affect how people could collectively communicate about locations (Hemment, 2006; Tuters & Varnellis, 2006). These art projects approached mobility and location from a number of different perspectives (de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011). For example, *Urban Tapestries* and *Rider Spoke* explored location-based, collective mobile annotation practices and *I Like Frank* examined issues of interpersonal trust in relation to location information. As I discussed in the previous chapter, in *Urban Tapestries* participants were given mobile devices with specially designed software and then told to upload stories or experiences they had in specific parts of London. This is not only important for how people relate to physical space; it also

enabled forms of collective spatial annotation in which people used mobile devices to connect to the messages left by a diverse set of other users. I Like Frank, on the other hand, was a mixed reality exploration into issues of trust in the city (Benford & Giannachi, 2011; de Souza e Silva & Sutko, 2008). This project involved both online players and players moving through the streets. The street players had to share their location with online players and then coordinate physical movement to find a final destination. For the physical player relying on the advice of unknown others, participating in I Like Frank requires “considerable trust in the online player” and demonstrates “one of the ways in which location-based games can interweave the fictional world of a game with the reality of the physical world” (Flintham et al., 2004n.p.).

LBMGs, locative media art, and mobile social networks like Smart Mobs and Dodgeball were all important to the development and commercialization of LBSNs. These examples all show the potential to move mobile communication away from the dyadic model that defined the vast majority of mobile phone use. They also feature many of the elements that were later found in LBSNs like Loopt, Foursquare, Brightkite, and Gowalla. Importantly, however, LBMGs, mobile annotation projects, and mobile social networks were not *just* about physical space; they were also about interpersonal communication. They did not just give people information about the locations they moved through; they communicated things about their location to others, making them social in different ways from two-way voice and SMS mobile communication.

These earlier studies of collective forms of mobile communication all suggest that the social practices of Foursquare and other LBSNs and LBMGs are significantly different from

traditional, dyadic mobile communication. However, these earlier projects and studies also leave gaps that need to be addressed. Most notably, of the applications discussed above, only Dodgeball focused on using the application primarily to meet up with others and allowed people to actively cultivate social networks with which they would then share their location information. On Mogi, people could form teams, but the main focus was gameplay and players had to share their location with all other game players even after forming teams (Licoppe & Inada, 2006). Unlike Dodgeball, the other examples discussed above were typically either projects controlled by artists or mobile games that focused more on gameplay than meeting up with other players (de Souza e Silva & Hjorth, 2009; Sutko & de Souza e Silva, 2011). LBMGs such as Mogi were certainly still social, and game players engaged in a social relationship with other players that was mediated by the design choices of the game designers. However, the types of social relationships mediated by the designs of these LBMGs and art projects are different than the types of relationships mediated through Foursquare usage. In both the art projects and the mobile games, the types of collective communication encouraged involved a mix of strangers rather than known others, and participants had little control over with whom they communicated.

Dodgeball is the exception, allowing people to choose who they communicated with through the application. But Dodgeball mediated social relationships differently from Foursquare because it relied on SMS and did not use the location-aware capabilities of newer phones (de Souza e Silva & Frith, 2010b). Dodgeball was also built almost solely around the idea of coordinating behavior, whereas Foursquare features social elements but also features search and gaming elements as well that may complicate how people use it to communicate

location and coordinate behavior. Writing about LBSNs and coordination, Sutko and de Souza e Silva (2011) differentiate LBSNs like Loopt and Brightkite that “encourage users to communicate and coordinate with other people as the end goal of using the application” from LBMGs that may facilitate coordination but mostly focus instead on gameplay (p. 11). On Foursquare, both social coordination and gameplay are key elements of the application, and there is no existing research on how these elements may conflict and affect the way people use an LBSN like Foursquare. By focusing both on the social and the gaming elements, Foursquare is different from Dodgeball—which mainly focused on the social—and different from LBMGs that mainly focused on gaming. In my data analysis in chapter eight, I discuss how the multiple elements of Foursquare contribute to coordination practices different from what Humphreys (2007, 2010) found in her earlier study of Dodgeball.

These issues are all key to the second research question I seek to answer, and to do so it is important to also note that the ways people share information with others on Foursquare actually more closely resembles the information sharing practices of SNS like Facebook or Myspace than many other forms of mobile communication. Foursquare basically takes the affordances of other SNS and adds an additional informational layer of location that, as we will see in the next section, allows people to partially construct their identity through their collective mobile communication. This section has examined the development of collective mobile communication practices through a discussion of research on innovative forms of mobile communication like LBMGs, locative media, and Flash Mobs. In the next section, I look more specifically at SNS, first establishing their importance and then pointing to areas

in which the mobility of social networking applications like Foursquare both fit with and complicate existing research on SNS.

## Social Networking Sites

People used the Internet to communicate with one another long before the growth of what we now think of as social media. The 1990's featured the development of text-based virtual worlds, such as Multi-User Dungeons (MUDs) and LambdaMOO (Dibbel, 1999; Rheingold, 1993; Turkle, 1995), that allowed people to construct identity and build online community. There were also other channels like online Bulletin Board Systems (BBS) and Internet Relay Chat (IRC) that were designed for social elements. However, the way most people use the Internet began to change significantly in the early 2000s with the development of Social Networking Sites (SNS) and other social media applications, shaping the Internet into the entity we know today. SNS like Facebook and Myspace represent a shift in how people socialize online because they let users create profiles, create lists of friends, share information only with friends, and see who their friends associate with online. boyd and Ellison (2008) define SNS as

web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site (p. 211).

The three major elements boyd and Ellison identify as necessary for SNS were all found in the first SNS—Sixdegrees.com—released in 1997. Sixdegrees.com was mildly successful before folding in 2001. In 2002, Friendster—an SNS that more

closely represents contemporary SNS like Facebook and Myspace—was released and allowed people to post pictures, build profiles, and develop a list of their Friendster “friends.”<sup>21</sup> Friendster included practically all the basic elements now featured on the current dominant SNS in the United States: Facebook. Facebook is now, along with Google and Amazon, one of the most powerful Internet companies in the world. It has over 600 million unique users who spend a remarkable amount of time on average on the site. An extensive research study on SNS published by the PEW Internet and American Life Project found that in the United States 49% of the population uses SNS, and of that 49%, 92% have a Facebook profile (Hampton, Goulet, Rainie, & Purcell, 2011). The study also found that the majority of Facebook users in the United States are female (56%), and they range across age groups, with older individuals joining Facebook at a faster rate than other age groups.<sup>22</sup>

Facebook may be the dominant SNS, but it certainly is not the only one. There are many SNS that are popular in different countries or among different niche groups.<sup>23</sup> These sites have major differences, but they feature the three elements outlined by boyd and Ellison and represent the shifting online social landscape of the 21<sup>st</sup> century. Foursquare also features these elements. Foursquare users have a “semi-public profile within a bounded system,” an articulated list of friends, and Foursquare

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<sup>21</sup> Friendster lasted until folding its social networking functions in 2011. At one point in the early 2000s, Friendster seemed like it may be the dominant SNS for years to come, but it became “one of the biggest disappointments in Internet history” (Chafkin, 2007, p. 1).” For more info on Friendster, see (boyd, 2006).

<sup>22</sup> For the best history of the early days of SNS, see boyd and Ellison (2008)

<sup>23</sup> For example, Orkut is popular in Brazil and Cyworld is popular in Korea.

users can “traverse their list of connections and those made by others within the system” (boyd & Ellison, 2008, p. 211). By allowing people to compile lists of friends and build profiles, Foursquare and other SNS enable people to communicate information to social networks using online connections and present themselves to others through the information they share. In the following two sections, I explore existing literature on how SNS impact relational maintenance and the presentation of self and discuss how these two elements relate to Foursquare and mobile communication.<sup>24</sup>

**Maintaining social networks.** As I addressed earlier, the dyadic nature of most mobile phone communication has been theorized to contribute to social insularity and strengthen strong ties at the expense of weak ties (Habuchi, 2005; Ling, 2008; Wellman, 2002). SNS, on the other hand, involve both strong and weak ties, often blurring the line between the two (boyd & Ellison, 2008).<sup>25</sup> The average Facebook user in September 2011 had 130 Facebook friends (“Facebook | statistics,” 2011). These friends often include a wide range of people, ranging from one’s significant other and family to someone the person may have met once at a bar or a conference. As boyd (2006) and others argue (Fono & Raynes-

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<sup>24</sup> Of course, SNS also have major implications for privacy, which have been a major focus in the academic literature. I am not discounting these discussions, but I will wait to discuss them in more detail until chapter five.

<sup>25</sup> On Facebook, people do have the options to create different groups, meaning posts can be directed at different sets of friends. However, everyone someone accepts is still listed as a “friend”, ranging from one’s best friend to someone the person may have met one time.

Goldie, 2006), SNS require us to rethink what we mean by the term “friend” because friends on SNS include varied types of relationships.

The liberal definition of friends on SNS like Facebook contribute to their worth for maintaining social relationships. With personal relationships, we all perform a quasi “cost-benefit” analysis in which we decide if the effort expended is worth the benefit of staying in contact with a weak (or occasionally strong) tie. For example, when 18 year-olds go away to college, there will be certain friends with whom they do not maintain active contact, but SNS can reduce the cost of relational maintenance. Accepting a friend request requires little effort, meaning that weak ties can stay connected through the rather passive process of following someone’s updates without ever engaging in active communication. This lowers the cost of friendship and allows people to maintain relationships with a larger number of weak ties than were previously possible. This is a far less time consuming process than actually talking to people and allows people to passively monitor a larger number of people than more active types of communication like text messaging and voice calls.

The combination of weak and strong ties that make up one’s “friends” on an SNS are maybe the most important part of an SNS as compared to earlier Internet sites like MUD’s or chat rooms. With SNS, people come together through the merging of egocentric social networks rather than through a shared interest in a specific topic. For example, chat rooms often formed around niche subjects such as fan groups for specific bands or academic areas.

SNS, on the other hand, are most often centered on each person's (mostly) offline network.<sup>26</sup> People still do sometimes come together through shared interests on SNS, especially on niche SNS like Last.FM (a site designed for music fans) and even through things like Facebook groups (Baym, 2007; Park, Kee, & Valenzuela, 2009). But, for the most part, SNS networks are based more on offline life, though as Hogan (2008) has shown, the networks formed through SNS are far from a full approximation of people's offline social networks, which include a range of people who are either not on SNS or simply are not part of their SNS friend network. Despite the fact that SNS networks are not complete representations of offline networks, the focus on offline relationships in SNS is important because it contrasts with arguments about earlier online Internet interaction in which critics feared people would stop interacting in physical space and instead find people who share their interests from all over the world and go associate with them (Nie, 2001; Townsend, 2004). SNS typically do not work this way, which is shown in repeated findings that the majority of friends one has on SNS like Facebook were already offline contacts (Ellison, et al., 2007; Lampe, et al., 2006).

Conversely, SNS have also been hypothesized to possibly be used as tools for meeting new people. This has often been approached through the concept of latent ties. Latent ties, as defined by Haythornthwaite (2005), "indicate ties that are *technically possible but not yet activated socially*" (emphasis in the original, p. 137). On SNS, because friends

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<sup>26</sup> This points to another important point to make about SNS: they are often geographically organized. With MUDs and chat rooms, people often formed relationships with people who were geographically distant because relationships were formed around topics. In a sense, geographical distance mattered less. The majority of friends on an SNS are offline contacts, meaning that geographical proximity plays a more significant role.

display their social networks and people list interests in their profile, it is possible for people to use the sites to find new people. Lampe, Ellison, and Steinfeld (2006) labeled this “social browsing” as compared to “social searching.” Social browsers “use the site to find people or groups online with whom they would want to connect offline”, whereas social searchers “use the site to investigate specific people with whom they share an offline connection to learn more about them” (p. 1). While it is certainly possible to engage in social browsing on SNS, quantitative studies of U.S. college students have repeatedly shown that social browsing is a fairly uncommon practice for SNS users, and the majority of people use SNS to investigate people they already know (Joinson, 2008; Lampe, et al., 2006).<sup>27</sup>

This literature on social networking sites and social maintenance provides valuable knowledge for understanding Foursquare. As I discussed, because they include a large numbers of connections, SNS allow people to passively monitor the behaviors of others by viewing their status updates and other information they post. In Foursquare, this passive monitoring of updates becomes a form of collective mobile communication because the updates come in the forms of check-ins, updating a social network about a user’s mobility. This passive monitoring of friends’ locations can also contribute to the forms of coordination discussed in the previous section. Just as with Humphreys’ (2007, 2010) study of Dodgeball, the mass sharing of location can lead to coordinated serendipity, and people can use Foursquare check-ins to communicate their location to their network to coordinate behavior rather than relying on voice calls or text messages. In addition, the social browsing and social

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<sup>27</sup> The popularity of social browsing as compared to social searching depends on the SNS being studied. Some SNS, such as Twitter, make it easy for users to connect with new people.

search on Foursquare are also forms of collective mobile communication. The ways someone would engage in social searching to learn more about a person would be to access the information they communicate to their networks while mobile, information that focuses on the locations they go to and the tips they might leave about those locations. In addition, social browsing behaviors on Foursquare would also center around collective mobile communication because when one person checks in to a location, they can see the other people who are checked in, allowing them to click on their Foursquare profiles. In this way, the check-in becomes a piece of information collectively shared with other people present in a physical location and can lead to social browsing behaviors based on physical location and collective mobile communication.

While the literature in this section foregrounds issues that are important to understanding Foursquare, there are still gaps in this literature addressing the social practices of LBSN users that my research fills. For example, there is no qualitative research that examines how the passive monitoring of friends' check-ins can encourage people to change their behavior and go to new locations because of the locations of their friends. In chapter eight, I begin to fill those gaps by examining the ways my participants used passive monitoring to "set the scene" before heading out and choose where to go and what to do based on the check-ins of their social network. In addition, as I mention above the concepts of social browsing and social searching are important for understanding the social dynamics of Foursquare use, but there is no existing research on how these two concepts play out when location information is added to the social networking mix, a gap that I address in chapter eight by detailing how people engage in social browsing on Foursquare to activate latent ties.

On Foursquare, the ways that people decide who to friend may shift because of the nature of information they are sharing and the design of the application also enables new ways users can find new people and engage in “social browsing” to activate their latent ties. In chapter eight, I draw from the concept of social browsing to examine how people can use Foursquare to activate latent ties and meet new people through their involvement with the application.

These forms of mobile communication, however, do more than allow people to keep tabs on others or meet new people. They also become an integral way people present themselves to their social network (de Souza e Silva & Frith, 2012), just as people use status updates and pictures to present themselves to others on SNS like Myspace and Facebook. In the next section, I discuss the presentation of self through location in more detail, once again drawing from literature on SNS to help develop the framework I use to address my second research question.

**The presentation of self.** SNS are not passive tools only used to maintain social connections or establish new connections; they also represent an important way people present themselves to others. In her book *Alone Together*, Turkle (2010) details the great lengths teenagers go to present themselves to friends on SNS like Facebook and Myspace. Some of the people she interviewed reported taking 30 minutes to craft the perfect two-sentence status updates. Others told Turkle that they spent an inordinate amount of time choosing which of their favorite books, movies, music, and quotes to display to others on

their profile.<sup>28</sup> Turkle's examples show that, for many SNS users, profiles are an important piece in what Goffman (1990) calls the presentation of self. This becomes even more important when one considers that many "friends" on SNS are weak ties who know little about each other. For these ties, the SNS profile may be the most important piece in how one person views another.

People crafted online personas long before the growth of SNS in the mid-2000s. In forums such as chat rooms and MUDs, people created avatars that allowed them to present themselves as different characters. Much of that is still present in online worlds like Second Life and MMORPGS like World of War Craft. In early MUDs, people constructed their ethos almost purely through text, and as boyd (2006) writes, "in order to exist online, we must write ourselves into being" (n.p). The construction of identity in these earlier instantiations of the social Web were important and should not be disregarded. Even though people could construct identities that were not as easily tied back to their identities in the offline world, they still often took their online identities seriously (Dibbel, 1999; Rheingold, 1993; Turkle, 1995). The importance of identity construction online has carried over into SNS, but SNS change the way identity is constructed and the self is presented in some important ways.

The most obvious difference is that SNS profiles are typically directly connected to people's offline identities, and as the previous section discussed, the majority of people's ties

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<sup>28</sup> Users can also include other categories like religion, political persuasion, profession, and general interests. Lanier (2010) argues that by forcing people to address these categories, SNS turn people into "multiple choice identities" and make them conform and reduce themselves to preexisting categories. While Lanier's critique seems forceful, he basically ignores fifty years of social research from researchers such as Goffman that shows people already had to fit themselves into preexisting social categories.

on SNS are made up of offline connections. On MUDS and in chat rooms, people's actions through their avatar did not necessarily have consequences for the way they were perceived offline. Some people did end up meeting people offline through MUDs, but it is also possible to remain either anonymous or pseudonymous. With SNS like Facebook, people create online representations of who they are in the offline world, and these representations are often crafted to show an idealized self (Ellison, et al., 2006; Turkle, 2010). This is not always true, as can be seen in parody Twitter accounts like AcademicTitles, "Fakester" Friendster accounts (boyd, 2008b), and some fake Myspace accounts.<sup>29</sup> For the most part though, people's SNS profiles are tied back to their offline identities through the use of real names, the public display of offline friend networks, and the posting of photos of their corporeal self. Because they are tied back to offline identities, these profiles cannot be abandoned as easily as anonymous or pseudonymous online accounts. If something horrible happens on Facebook or Foursquare, for example, people cannot just delete their accounts and start over from scratch. The events will carry over to other SNS and into their offline worlds.

The presentation of self in the offline world involves many cues, including clothing, social context, and nonverbal gestures (Goffman, 1990). In fully text-based online spaces, many of those cues are lost, making it difficult to place someone in a defined social context. SNS partly change this by giving the viewer more cues than earlier online social spaces. For one, most people post pictures of themselves, linking their profiles to a physical body.

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<sup>29</sup> Other SNS, such as Facebook, require that accounts are associated with real people. Facebook and Google+ both frequently shut down accounts that are not linked to people's offline identities. Some people do still create fake accounts, however.

Equally importantly according to Donath and boyd (2011), people display their list of friends in SNS, linking themselves to the profiles of the other people to whom they are connected.

As Donath (2007) argues,

SNSs can provide a richer social context for people one knows only superficially. Seeing who other people know and how they treat and are treated by others provides important cues for understanding them (Holland & Skinner, 1987). A person one meets in isolation can make difficult-to-verify claims in an effort at impression management (Goffman, 1959). A person one meets in the social context of friends or colleagues, however, is tethered to the identity developed among them (n.p.).

Because of this, the friends people have on SNS play an important role in their presentation of self. Just as an acquaintance would be evaluated by who accompanies her to a bar, she can be evaluated by whom she aligns herself with on an SNS.

Key to the concept of presentation of self, both online and offline, is the issue of audience. As Goffman (1990) details, self-presentation is an intersubjective process in which people only present parts of themselves at any given time, depending on the social situation and the audience. For example, I may present myself differently to my high school friends as compared to my friends and colleagues in my PhD program. The same is true on SNS in which people must craft a self that is appropriate to the audience (i.e. the network) on the SNS. This can be a complicated thing to do, especially as SNS like Facebook have become more popular. In the early days of Facebook, most users were college students; now a Facebook user likely has work colleagues and family members as Facebook friends as well, and the behaviors the individual presents are often mediated by the entirety of that network (boyd, 2008c). The issues of audience and the presentation of self become even more complicated on asymmetrical SNS like Twitter in which anyone can follow anyone else.

Marwick and boyd (2010) write that like with other SNS, “Twitter flattens multiple audiences into one – a phenomenon known as ‘context collapse’” (p. 122). This flattening of audiences makes the presentation of self difficult because people have to speak to multiple audiences at once and shape their self-presentation based on expectations that can be difficult to determine.

As an SNS, albeit an SNS that combines mobile communication with some of the information present in online SNS, Foursquare also has implications for how people present themselves to their social network. With Foursquare and other LBSNs, a new element is added to the presentation of self: location (Cramer, et al., 2011; de Souza e Silva & Frith, 2012). As de Souza e Silva and I (2012) have argued, people can use LBSNs to share locations with friends as a way to present certain parts of themselves, and these check-ins are performative acts for the audience of one’s Foursquare network (Cramer, et al., 2011). In other words, the choice of where to check in can potentially become as conscious as the favorite bands one chooses to list on Facebook. Just as a list of favorite books and music can say a great deal about a person (Turkle, 2010), so can a history of where they tend to check in on Saturday nights. So, for example, someone who has a reputation as a foodie may be less likely to check-in to a location like McDonald’s because that check-in conflicts with the ethos he has built with his friends. Conversely, one can expect that people are more likely to check in to locations that will impress members of their social network as a way to present an idealized self to others.

While de Souza e Silva and I (2012) wrote about the presentation of self through location and Cramer et al. (2011) also discussed the concept in a conference presentation, there are still gaps in the research that need to be filled to address my second research question concerning how Foursquare users use location to present themselves to others. One gap is that the empirical research on how people present themselves through location is limited to Cramer et al.'s study. An additional gap is that Cramer et al. only examined how people present themselves to their Foursquare audience. In my interviews with Foursquare users, I found that all of my participants actually shared their location with both Twitter and Facebook, and the ways they present themselves through location shifted as their information spread to multiple audiences, suggesting the importance of audience and the concept of “context collapse” when analyzing how people negotiate the presentation of self through location. The focus on how people share information with only one SNS audience is not unique to Cramer et al.'s study. Almost all research on the presentation of self through SNS focuses on only one specific site, likely because the linking of multiple sites (e.g. sharing an update with both Facebook and Twitter) is a relatively recent addition to SNS. The shift to multiple linked SNS is an important one because it forces users to negotiate multiple social networking audiences and consciously decide how to present themselves differently to each audience, an issue I address in detail in chapter eight.

It is important to note, however, that not all check-ins on mobile social networks are necessarily meant to for others. In some situations, people use their check-ins to log their own mobility as a way to catalog their experiences, much as a Facebook user may maintain multiple photo albums as a way to remember experiences through images. In her work with

Dodgeball users, Humphreys (2007) found that some people used Dodgeball “as a social diary” (n.p.). She reported that some of her participants basically catalogued their lives through their check-ins and used those catalogs to go back and map their experiences using Google maps. For these people, their main reason for using Dodgeball was as a memory tool, and rather than using their location to present themselves to others, they used their location to record their personal experiences. As de Souza e Silva (2012) and I argue, this form of location cataloguing can also contribute to new ways individuals link together locations in their mind when they consult their history and see that they traveled to multiple locations on a given night. In my data I found that some of my participants used Foursquare the same way, and interestingly, many of these cataloguing behaviors closely resembled the issues of presentation of self discussed above. As I detail in chapter eight, many of my research participants made decisions about where and when to check-in based not on how they presented themselves to others, but rather on how they present their present self to their future self, choosing not to check-in to certain locations because they do not want to remember them. While Humphreys (2007) did mention this behavior in her study of Dodgeball, it was not a major part of her analysis that she developed fully. In chapter eight, I address Foursquare as a memory tool to also show how it can shape the social practices of users.

## **Conclusion**

The growth of mobile communication represents one of the most important shifts in the communication landscape over the past two decades. Thirty years ago, most people would

have been highly skeptical if somebody told them they could stay in near constant contact with friends and loved one while mobile. In fact, the growth of mobile telephony came as such a surprise that when people like Mark Weiser began writing about ubiquitous computing environments in the late 1980's, the mobile phone is notably absent (de Souza e Silva & Frith, 2012). However, even as a relatively new technology, the affordance and uses of mobile phones have shifted significantly in the last decade. This chapter has outlined some of those shifts, particularly the exploration of collective mobile communication practices.

As my discussion of collective mobile communication suggests, literature on mobile communication can only tell us so much about how people share information on Foursquare. As a social networking application, Foursquare also has a great deal in common with earlier SNS like Friendster, Facebook, and Myspace. People using Foursquare build social networks that are displayed to friends with whom they share their location information. The communication of location information to larger social networks is a form of the mobile collective communication I detailed above, and as I explained, it not only has implications for social coordination but also for the presentation of self. The presentation of self is the second key part of the framework I developed in this chapter to help address my second research question concerning the social practices of Foursquare users. As I explain in chapter eight, because Foursquare allows people to link their check-ins to other SNS such as Twitter and Facebook, it is important to understand how people choose what information to share with multiple audiences, an issue that is not adequately addressed in existing literature on social networking.

In this chapter, I explained how research on Foursquare and other LBSNs can add to our existing knowledge about both mobile communication and social networking sites. There is still a lack of existing literature on how the practices of mobile coordination and the presentation of self shift when location-aware mobile communication and social networking merge in mobile applications. I address this gap in chapter eight by empirically examining Foursquare user practices and drawing from the framework developed in this chapter to ground my findings in existing research.

## Chapter 4: Mapping Social Networks: LBSNs, Sociability, and Public Space

Mobile technologies are important pieces of public space. They work by untethering previously fixed practices and making them mobile (de Souza e Silva & Frith, 2012). LBSNs are no different. They work by helping people bring their online social networks into public space and mapping friends and receiving tips from other users of the services. In chapter two, I examined how LBSNs contribute to the formation of hybrid spaces and may affect how individuals relate to the spaces they move through. Here I will focus instead on some of the seminal literature that addresses public space and urban sociability in the contemporary city, drawing from scholars such as Simmel (1950), Sennett (1977, 1992), Whyte (1980), and Jacobs (1961). To understand how and why people use LBSNs, it is important to address different views of what makes up vibrant public spaces because LBSNs such as Foursquare can be thought of both positively and negatively when put in conversation with existing literature on urban spaces. As we will see later in this chapter, this existing literature on urban sociability provides a valuable point from which to theorize the kinds of sociability LBSNs encourage. Many of the theorists I address throughout this chapter view ideal public spaces as spaces in which people engage difference, and as I show later, LBSNs have been criticized for potentially lessening individuals' engagement with difference (Crawford, 2007; Farman, 2012; Humphreys, 2007, 2010).

As social applications, LBSNs have implications for public sociability because they are built on the idea that it is worth connecting with others in face-to-face, co-present

interactions while in public space (de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011; Sutko & de Souza e Silva, 2011). This stands in partial contrast to earlier mobile phones, books, and mobile auditory media that help people engage in remote connections but often work more as “do not disturb signs” to co-present others (Bull, 2000; Scollon, 2001), telling other people in a public space that one does not want to be bothered. LBSNs can do that as well, especially in the way they require people to engage with the screen of the mobile device rather with others, but paradoxically, they can also be thought of as a partial response to some of the criticisms of earlier mobile media in the way they focus on the importance of co-present interaction and surrounding space. They encourage people to find friends and go meet up with them in public spaces. This is especially important when put in the greater context of some of the sweeping pronouncements about the death of public sociability that are present in both academic and popular literature (de Souza e Silva & Frith, 2012).

However, as we will see in the next section, one of the aspects of public space that has been valued by prominent urban theorists is heterogeneity and difference (J. Jacobs, 1961; Sennett, 1977). According to thinkers such as Jacobs (1961) and Sennett (1977), public spaces are ideally where we engage with others who are not like us. LBSNs encourage people to interact in a co-present manner, but the people they find through the LBSNs are often people who are like them, in a way negating the value of heterogeneity found in public spaces, a criticism that I address in this chapter because it is common in the literature on mobile social software (Crawford, 2007; Farman, 2012; Gordon & de Souza e Silva, 2011; Humphreys, 2007, 2010;

Sutko & de Souza e Silva, 2011). However, despite criticisms of mobile social software's relationship to homophily,<sup>30</sup> others such as de Sutko and de Souza e Silva (2011) have argued that homophily is a prominent social trait with or without mobile technologies and LBSNs' impact on public sociability should not be overstated. In the final section of this chapter, I review this literature and identify gaps in our knowledge that my research fills.

Ultimately, this chapter is about how LBSNs may affect public space and public sociability in the contemporary city. I use this chapter to introduce concepts such as net locality (Gordon & de Souza e Silva, 2011) and homophily (McPherson, et al., 2001) that form part of the conceptual framework I drew from when analyzing my data in chapter eight and addressing my second research question concerning the social practices of Foursquare users.

## Public Spaces

In 1938, Wirth wrote that “the growth of cities and the urbanization of the world is one of the most impressive facts of modern times” (p. 2). More than 70 years later, Wirth's words still ring true and cities have continued to grow in remarkable ways with consequences for public sociability. Indeed, as scholars such as Goffman (1963, 1990) and Simmel (1950) have argued, the shift to an urban lifestyle requires a shift in both mental processes and social

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<sup>30</sup> Mcpherson, Smith-Lovin, and Cook (2001) found over 100 sociological studies that identified some kind of homophily. These include findings that people group together along gender, socio-economic, religious, and ethnic lines. As Mcpherson, Smith-Lovin, and Cook write, “Homophily limits people's social worlds in a way that has powerful implications for the information they receive, the attitudes they form, and the interactions they experience” (p. 415). By interacting with people who are already like us, we miss the opportunity to engage with different opinions and “anything that we experience as a result of our position gets reinforced. It comes to typify ‘people like us’” (Mcpherson et al., 2001, p. 415-416).

skills. Goffman described this well and in straightforward terms with his formulation of the “nod line”:

In Anglo-American society there exists a kind of “nod line” that can be drawn at a particular point through a rank order of communities according to size. Any community below the line, and hence below a certain size, will subject its adults, whether acquainted or not, to mutual greetings; any community above the line will free all pairs of unacquainted persons from this obligation (Goffman, 1963, pp. 132-133).

The nod line is a productive way of getting at what are two of the most consistent things identified about the shift to urban life: coexistence with strangers and co-present interaction.

Wirth (1938) defined the urban as “a relatively large, dense, and permanent settlement of socially heterogeneous individuals” (p. 8). There are obvious questions left unanswered by that definition (what is dense?), but it functions as a working definition of the urban by pointing towards the coexistence of heterogeneous individuals. In basic terms, the public spaces of the city are “a milieu in which strangers are likely to meet” (Sennett, 1977). Urban life is a life shared with others we do not know, others who are not like us. Jacobs (1961) says something similar in the way she differentiates the urban from the rural:

Great cities are not like towns, only larger. They are not like suburbs, only denser. They differ from towns and suburbs in basic ways, and one of these is that cities are, by definition, full of strangers. To any one person, strangers are far more common in big cities than acquaintances (p. 30)

Identifying the urban as a site of heterogeneity is a first step in getting at the importance of the public spaces of cities, but it is also necessary to identify why that is important. The coexistence of strangers is important because “A city isn’t just a place to live, to shop, to go out and have kids play. It’s a place that implicates how one derives one’s ethics, how one

develops a sense of justice, how one learns to talk with and learn from people who are unlike oneself, which is how a human being becomes human” (Sennett, 1989, p. 84). As Sennett argues here and elsewhere, the meeting of strangers is crucial to the public realm.

The view of the public spaces of the city as spaces of heterogeneous coexistence is espoused by prominent urban theorists like Sennett (1977, 1992, 1994), Jacobs (1961), Whyte (1980), and a host of New Urbanist theorists (Alexander, 2008; Duany & Plater-Zybeck, 2008; Grant, 2008; Haas, 2008). A related argument made by these scholars is that vibrant public spaces are spaces in which people interact with each other, in contrast to spaces people move through or occupy without talking to other people. This can be seen notably in Whyte’s prescriptions for how to design vibrant public spaces, which focus on how to encourage people to interact with one another through the influence of architecture. Equally importantly, Jacobs has been a major force in viewing the public interactions in the city as something that should be valued and embraced. For Jacobs, the public spaces of city streets are key to the interactions that make up city life, and she directly contrasts her view with other prominent urbanist designs like Le Corbusier’s *Modern City* and Ebenezer Howard’s *Garden Cities* that attempted to remove the importance of street life, in effect allowing individuals to avoid having to interact with others while in public. They did so by focusing on large skyscraper apartment buildings, massive road infrastructure, and beautiful parks. While the parks would serve as public space, the streets would become arteries into and out of the city, negating the importance or possibility of pedestrian travel and public street life.

The key point to take from this discussion is that ideal public spaces have often been viewed as containing two major components: co-present interaction and heterogeneity. LBSNs fit interestingly with these two components, possibly bolstering one while possibly working to the detriment of the other. In contrast to older mobile technologies like the mobile phone and the Walkman, Foursquare and other LBSNs encourage people to find friends and interact with others while in public, fitting with the idea that healthy public spaces are spaces in which people interact. However, while LBSNs do encourage co-present interaction, that does not mean they should necessarily be viewed as beneficial to the formation of an idealized public space. LBSNs mostly encourage people to find others they already know rather than engage with people who are not like them, partially contrasting with the embrace of heterogeneity and showing that they may be as similar to online SNS like Facebook as they are to the vibrant publics idealized by Jacobs (1961), Sennett (1977) and Whyte (1980) .

In the ways they encourage the egocentric mapping of social networks, LBSNs represent the tenuous merging of physical public spaces and online SNS. To understand how this works, it helps to turn to the concept of “networked publics” (boyd, 2008c), which are an increasingly important type of public related to the growth of SNS.

**Networked publics.** While the previous section was about the growth of the city and urban public spaces, it is a mistake to conceive of physical space as the only “publics” that are important for social life (Sheller, 2004). Increasingly, individuals use the Internet to connect with others in what boyd (2008c) calls networked publics. Networked publics are a “linked set of social, cultural, and technological developments that have accompanied the

growing engagement with digitally networked media” (Ito, 2008, p. 2). Social Networking Sites (SNS) are a prime example of networked publics, and as I discussed in the previous chapter, they include networking aspects in which people form visible social networks and interact with their friends in the view of other members of their network. As boyd (2008c) writes, “what makes these three practices significant for consideration is that they take place in public: Friends are publicly articulated, profiles are publicly viewed, and comments are publicly visible” (p. 124).

As I discussed in the previous section, public spaces are often where people learn to engage difference and interact with others to learn the social skills necessary to function in society. The networked publics of SNS work in much the same way, though they lose some of the heterogeneity valued in public spaces because one’s social network is often of one’s choosing. These networked publics are more controlled types of publics than urban public spaces, allowing people to avoid engaging difference by letting them construct their own networks. Despite these important differences, however, SNS do function as spaces where people (especially youth) practice and learn social skills by engaging in a public manner with their peers.

For many youth, their access to physical public space<sup>31</sup> has become more and more limited over the years. Many parents are hesitant to let their children hang out alone, and

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<sup>31</sup> “Public” is a term used frequently in academic texts and popular discourse, but it is a term that has multiple meanings depending on context and intellectual tradition (de Souza e Silva & Frith, 2012). In an article examining the different uses of “public”, Weintraub (1997) identifies four models that utilize the concept of the public: the feminist model, the citizenship model, the economic model, and the sociability model (for more detail on these different models see Weintraub, 1997 and de Souza e Silva and Frith, chapter 3). My use of “public space” follows the sociability model that is closely associated with thinkers such as Sennett (1977) and

malls and other public spaces often have rules targeted at youth that limit how many can gather in one place and include surveillance cameras that limit possible expression (boyd, 2008). In an argument similar to Jenkins' (2006) writings on how video games provide youth with a space to learn how to play, boyd argues that SNS function as a relatively unregulated public space for many people in which they can interact with others without constant supervision. As boyd (2008) writes, "Yet, putting aside the question of risk, what teens are doing with this networked public is akin to what they have done in every other type of public they have access to: they hang out, jockey for social status, work through how to present themselves, and take risks that will help them to assess the boundaries of the social world" (p. 137). In this way, the social spaces of networked publics do encourage the types of interaction valued by scholars of urban public space. These interactions are obviously not co-present, but they do take place in a different type of public that mediates behaviors in similar ways to audiences in physical public space.

That being said, the social world of networked publics is less heterogeneous than the social world of many urban publics. People choose who to be friends with, and for the most part, only those people can see what one posts, in contrast to a public square or a café in which one's behavior is on display to strangers that occupy those places. This is a more controlled form of public that can be filtered through the choices one makes about one's

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Jacobs (1961). In this model, public spaces are spaces in which strangers coexist and people interact in the view of others. This view of the public is different from the feminist model that focuses mostly on the opposition of the domestic sphere to everything else, the economic model that views public space as space that is publicly owned, or the citizenship model that views the public as the site of political action. As we I discuss in more detail in chapter four, the public spaces I discuss do not even have to be physical spaces. They just need to be spaces in which people interact with others in a way that other can see, learn from others, and test out social norms.

network, but just as in any other public, behavior is mediated by the audience (in this case the social network) (boyd, 2008c). These networked publics do encourage interactions—even though they are not typically co-present interactions—through wall posts and other messages, but they are not necessarily about engaging difference. They instead let people form their own networks that mediate behavior rather than have behavior mediated by the heterogeneous elements present in physical public spaces. In the ways people form their own networks, networked publics operate similarly to LBSNs, except that when people use LBSNs they are present both in the social situation of their LBSN network and the social situation of the physical space. With LBSNs, people are encouraged to interact with others just like in networked publics, and because they form egocentric networks through the application and those networks mediate the information they access (friends' location, friends' tips) they are able to bring some of the controlled sociability of networked publics into physical space.

The first section of this chapter addressed literature on the public spaces of the city. This section discussed the concept of networked publics, which operate in digitally mediated spaces. LBSNs are a combination of the two because of the way people use them to write about and check in to physical spaces, even as the tips and check-ins exist in the online space of the application. To better conceptually ground the idea of public spaces as comprised of both the digital and the physical, I now turn to Gordon and de Souza e Silva's (2011) concept of net localities before moving on to an explicit discussion of literature focusing on LBSNs and public space.

**Net locality.** The view of the public spaces of the city I am drawing from focuses on the co-present and the physical. The concept of networked publics focuses on the digital and the remote. But what we are increasingly seeing is the merging of the co-present and the remote in the public spaces of the city. This is the main argument Gordon and de Souza e Silva (2011) set forth in their book *Net Locality: Why location matters in a networked world*. Through an analysis of mobile technologies, especially location-aware mobile technologies, they argue that it is no longer possible to conceive of public spaces as only constituted by the co-present interactions in those spaces. Net locality urges us to view public spaces as spaces that are comprised of both co-presence and digitally-mediated, remote presence.

As I discussed in chapters two and three, mobile technologies have often been viewed by scholars as distracting people and negating the importance of nearby people. These arguments are linked closely to the writings of prominent urban theorists such as Jacobs (1961), Sennett (1977, 1992), and Whyte (1980), who view good public spaces as spaces in which people interact in a co-present manner. Mobile technologies supposedly rob places of co-present interaction because individuals can use mobile media as a form of “going away” in Goffman’s terms (Gordon & de Souza e Silva, 2011). Take mobile phone use as an example. As I discussed in chapter three, rather than interact with other people in a shared space, people are able to enact forms of “connected presence” with distant others (Licoppe, 2004), forming telecocoon in which they withdraw from public sociability (Habuchi, 2005). This supposedly detracts from the social capital people can build in public spaces. Describing this criticism, Ling (2004) writes that

As Jane Jacobs noted, the thing that makes the public sphere vibrant is the continual contact with unexpected forms of interactions...there is the possibility that ICTs and mobile communication will take a small bite out of the already minimal sociability that is available in this sphere (p. 161)

While these arguments have merit, Gordon and de Souza e Silva argue that they are based on a normalized, idealized view of a public space that no longer exists. Instead, public spaces are now net localities, in which “the purview of what is near has expanded beyond that which is right next to you, and paying attention to an anonymous user at a neighboring street corner, visualized on a mobile map, is just as likely as paying attention to the stranger across the street” (p. 86). Through mobile phone use, and especially location-aware mobile phone use, we can no longer understand a public space by only looking at what is happening in the physical setting of the place. Instead, we must look at both the co-present and remote connections to fully analyze a public space. As the authors write, “Co-presence is not mutually opposed to networked interaction—and as emerging practices of technology develop, drawing that line in the sand becomes increasingly difficult” (p. 87).

While net localities are formed in part through mobile technology use, they are not just enabled by new technologies. In other words, adding location-aware technologies to a public space does not make it a net locality. Instead, net localities are “practiced spaces—they develop over time, through social practices with technology” (Gordon & de Souza e Silva, 2011, p. 86). People must adapt their routines to incorporate all the remote connections and digital information present in net localities, and at this stage, those social practices are still developing. One of those practices has to do with self-selection and control exerted over the spaces of the city (de Souza e Silva & Frith, 2012; Frith, 2012). As the authors discuss,

net localities can be thought of as bringing the worst of the self-sorting of online spaces (for example, the ability to interact only with one's network in networked publics) into the streets of the city. As I discussed in the previous section, in networked publics, people are able to control the information they access through their cultivation of a social network they control. This is far from the idealized urban form pointed to by Jacobs and Sennett, but Gordon and de Souza e Silva note that self-selection was possible in the city long before net locality. People often hung around places with similar people and sought out people they already knew. However, the difference now is that "The rise of net localities makes this kind of selectivity the prominent characteristic of city space" (p. 89). In a way, net localities make urban publics much more like networked publics. People can choose the information they want to access through a constant connection to a mobile broadband network, whether that information contains nearby tweets about certain topics, certain types of information about nearby locations (Wikipedia articles, local deals), or the location of nearby friends through the use of LBSNs like Foursquare. As we will see in the next section, this filtering of information in net localities is important for the criticisms in existing literature about how LBSNs promote homophilous social practices.

However, it is important to note that in net localities, this selectivity, while a prominent characteristic of city space, can never be as complete as in online networked publics. As Gordon and de Souza e Silva (2011) argue, net localities are made up of multiple contexts. One context may be a phone call to a remote other or an engagement with a smartphone screen to track the locations of friends on Foursquare. That engagement with the digital is only one context enfolded inside the larger context of the physical space. While

people can sort the information they access based on the networks they form through LBSNs or the connections they maintain with others through SMS or voice calls, they are still present in the larger social situation of the physical space. The context of the digital connection becomes part of the larger context of the physical space; it does not overcome or overwhelm the physical. People may be able to self-select, but their power to do so is less than in online networked publics in which the online network is the primary context.

I discuss net locality here because of the way the concept bridges the previous two sections. Net locality combines the co-presence of physical public spaces with the controlled sociability of networked publics in which individuals use digital means to interact with and present themselves to others. In the final section of this chapter, I examine how the existing literature on LBSNs approaches the issue of social filtering through a discussion of LBSNs and homophily. I show that there is some conflict in the literature on the potential social impacts of LBSNs, and I relate this conflict back to the concept of net locality while identifying gaps in existing knowledge about the social practices of LBSN users.

## **Homophily and Mobile Interfaces**

As Sutko and de Souza e Silva (2011) have argued, LBSNs like Foursquare encourage people to connect with others. If vibrant public spaces are spaces that promote co-present interaction, then LBSNs like Foursquare that map friends and encourage people to meet up fit much better within idealized publics than older mobile technologies people used to avoid engaging with nearby others. However, the people LBSNs encourage connections with are not random. Instead, as Gordon and de Souza e Silva (2011) discussed through the idea of

“sortability” in net locality, Foursquare allows people to map their own social networks on to physical space, allowing them to identify friends and find other people who are like them. This sortability is often not a direct example of sorting people based on preferences in the same way someone may search for income level, educational level, or race on a dating site like Match.com. Instead, LBSNs like Foursquare often represent a more indirect form of homophily that is based on preexisting social dynamics rather than explicit sorting. For example, a Foursquare user cannot search specifically for locations that tend to be frequented by people of a certain income level, nor can they sort other users through specific terms. Rather, the types of homophily promoted by LBSNs like Foursquare are more indirect. For example, the Explore feature will recommend bars that are frequented by other people who enjoy the bars to which one already goes. The assumption built into the algorithm is that if people find a certain type of person at one bar, then they will find similar people at bars that show up as similar using the Explore algorithm. People may be engaging with others, but just how different they are is debatable.

As I mentioned in the introduction to my dissertation, Foursquare is far from the first mobile social application. Possibly the first was LoveGetty, introduced in 1998 in Japan. LoveGetty was a standalone mobile device people carried around with them that alerted them if anyone in their vicinity matched their interests. While LoveGetty went out of business a decade ago, we can now see “that its successors are proliferating, as the intersection of mobile and Internet technology has enabled the migration of ‘social software’ from the desktop computer to the streets” (Crawford, 2007, p. 80). In LoveGetty we see an example of the homophily that is encouraged by many LBSN applications, a homophily that could be

seen as helping people find sameness at the expense of engaging with difference. People used the service to get alerts whenever anyone matching their interests was within a certain distance. Later applications, such as Loopt's Mix feature worked the same way (de Souza e Silva & Frith, 2010b). These services do encourage co-present interaction, but they also may discourage the engagement with heterogeneity valued by Jacobs, Sennett, and others by enabling new, technologically-assisted forms of homophily (Farman, 2012; Frith, 2012; Gordon & de Souza e Silva, 2011; Humphreys, 2010; Sutko & de Souza e Silva, 2011).

These technologically-assisted forms of homophily enabled through mobile devices were present long before the popularization of LBSNs. In fact, as I detailed in the previous chapter, one of the consistent criticisms of older mobile telephony is that people use mobile phones to stay in contact with strong ties at the expense of engaging with the difference present in their surrounding space (Ling, 2008). Licoppe calls this "connected presence," and these forms of connected presence have been viewed as promoting homophily because people enact "telecocoon" (Habuchi, 2005) or "monadic clusters" (Gergen, 2008) rather than engaging with the heterogeneous difference present in a physical space. The basic tenets of this criticism can be seen in the Ling (2004) quote I mentioned earlier in which he fears that "mobile communication will take a small bite out of the already minimal sociability that is available in this [the public] sphere" (p. 161). As I mentioned earlier, Gergen (2008) even goes so far as to express concern that mobile phone use will damage the democratic process because people can avoid confronting the differing opinions of strangers in a public space.

These criticisms of mobile communication all point to a technologically assisted form of homophily, and similar criticisms have also been made by scholars about LBSNs. The

most scathing criticism comes from Crawford's (2007) analysis of Lovegetty and Dodgeball, in which she criticizes these services for encouraging people to find "sameness in a sea of otherness and connecting like with like—or the friend of like with like" (Crawford, 2007, p. 89). Basically, through the ability to map friends and strangers who meet certain criteria, Crawford argues that people use these mobile services to negate difference. Humphreys (2007; 2010) argued a similar, though more measured, point in her study of Dodgeball, writing that the application may contribute to the "illusion of 'looser' sociality despite reinforcing homophilous tendencies" (Humphreys, 2007, n.p) and that while "Dodgeball informants did meet new people when using the service, the kinds of people they met were friends of friends and tended to be similar to themselves in terms of demographics such as age and education" (Humphreys, 2010, p. 776). Later studies of location-sharing applications drew from her point to show how the ability to map friends could encourage people to seek out those they already know, leading to easier ways to make diverse environments feel more homophilic (de Souza e Silva & Frith, 2010b, 2012; Sutko & de Souza e Silva, 2011), and Farman (2012) writes that some uses of LBSNs demonstrate "a desire to engage with an other that fits within the self's pre-established frame of otherness" (p. 73).

While this seeking out of "an other that fits within the self's pre-established frame of otherness" does sit uneasily with the heterogeneity idealized by urban theorists such as Sennett and Jacobs, it is important to note that there is nothing unique about that desire that is caused by the use of location-aware social applications. Homophilic tendencies have always existed. For example, much of the white flight to the suburbs in the 1950's and later also

represented a desire for homophily,<sup>32</sup> and in a meta-analysis of sociological literature, McPherson, Smith-Lovin, and Cook (2001) identified over 100 types of homophily. As Sutko and de Souza e Silva (2011) correctly point out, “homophilious connections are not a consequence of cell phone use or LMSNs [LBSNs]” (p. 818). People already seek out “sameness in a sea of otherness” in countless ways that have nothing to do with mobile technologies.

Drawing from this point, Sutko and de Souza e Silva (2011) develop a different take on the homophily promoted by LBSNs. To do so, the authors establish a view of urban homophily that draws from Simmel’s (1950) and Lehtonen and Mäenpää’s (1997) theories of street sociability to show that “people balance out difference with sameness for stability, but pleasure is found in that which is just different enough” (p. 818). In other words, they argue that even people’s explorations and engagements with difference feature elements of homophily. Most of the time, we are not interested in finding something completely novel; we are interested in finding something just novel enough.

Sutko and de Souza e Silva’s view of sociability as seeking out the “just different enough” provides a valuable counterpoint to Crawford’s scathing criticisms of mobile social software and homophily. By pointing out that these tendencies already exist in many forms, they implicitly argue that LBSNs’ impact on public sociability will be significantly less negative than the impact imagined by Crawford. Crawford’s criticism of mobile social

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<sup>32</sup> In an article examining why certain teens left Myspace for Facebook, boyd (2011b) identifies an online “white flight” from Myspace to Facebook, in which white students fled for Facebook in the mid and late 2000s, leaving Myspace as an online space with a disproportionately high African American user population.

software seems to imagine that the mapping of friends will turn physical public spaces into the controlled forms of sociability promoted in the networked publics discussed by boyd (2008c). Sutko and de Souza e Silva's view argues that LBSNs will not have this kind of impact on public sociability. Instead, LBSNs will become one part of the already diverse networked connections present in net localities. Gordon and de Souza e Silva (2011) do argue that in net localities, filtering becomes a "prominent characteristic of city space" (p. 89), but they also remind us that homophily existed long before net locality and even when people are self-selecting, they are still a part of the larger social situation of the public space. They can enfold the context of their networked LBSN connections inside the context of the physical space, but that does not mean they can totally filter out the "sea of otherness" that surrounds them.

What this discussion of mobile technologies and homophily has shown is that homophilious social practices is a key concern for both scholars of older mobile phones and scholars of LBSNs. Despite the focus on this issue present in existing literature, however, there are still gaps that need to be addressed through further empirical work about the social practices of LBSN users, gaps I use the conceptual framework of net locality and urban homophily to address in chapter eight. The first gap is a basic one: much theoretical research has focused on LBSNs' potential impacts on sociability, but there is little exploratory research qualitatively detailing the social practices of LBSN users and how much of an impact LBSN usage actually has on public sociability. As I mentioned in chapter three and earlier in this chapter, Humphreys (2007; 2010) did find that Dodgeball users frequently met up with friends, coordinated behaviors, and engaged in more homophilious types of

sociability. However, there are no existing research studies on if the same types of things happen with Foursquare users, and as I discussed in the first and third chapters of my dissertation, Foursquare is significantly different from Dodgeball. Dodgeball was designed with one goal in mind: use the service to find friends. Foursquare is a social service as well, but it is also a gaming application and a social search engine. Consequently, we do not know just how much of an impact contemporary LBSNs like Foursquare will actually have on people's social practices. By detailing the practices of the users of Foursquare rather than Dodgeball, I am able to add to the theoretical understanding of the homophilous tendencies promoted by LBSNs by examining the specifics of the most popular LBSN and how it affects the social practices of users.

In addition, the literature reviewed above shows differing views on how we should understand the homophily enabled through the social mapping of friends. Crawford fears that people will use these applications to totally negate heterogeneity and difference at the expense of homophily. On the other hand, Gordon and de Souza e Silva (2011) argue through the concept of net locality that these tendencies already existed and are not fully possible in a physical public space in which people still have to deal with the others in that space. The two approaches to understanding how homophily relates to LBSNs leaves fertile ground for exploratory research to examine just how much of an impact contemporary LBSNs have on public sociability. Crawford fears that they will have a major impact, allowing people to basically turn public space into networked publics through the screens of their mobile devices. Gordon and de Souza e Silva argue that LBSNs can only become one of the already numerous networked connections present in contemporary public spaces and that they

reinforce tendencies rather than strongly exacerbate them. By exploring the practices of my research participants, I am able to begin to explore just how much of an impact LBSNs like Foursquare may have on how people relate to others and further contribute to this debate in the existing literature by examining whether or not the homophilious practices of my research participants are significantly different than they would have been had they not been using Foursquare. People may use these applications to negate difference, or the applications may just be another of the remote connections that make up contemporary public spaces and have significantly less of an impact on public sociability than feared by some critics.

## **Conclusion**

Foursquare is an application people use in public, unlike earlier Internet sites that were typically accessed from homes and offices. Because of that, it is important to reflect upon what thinkers have said about the public life of the city when discussing Foursquare and other LBSNs. This chapter did that, beginning with a review of the growth of the city and fears about the death of public sociability. However, it is no longer possible to view public life as only that which occurs in the public spaces of the city. Instead, it is important to also take into accounts newer concepts of public sociability, namely boyd's (2008c) concept of networked publics and Gordon and de Souza e Silva's (2011) concept of net locality. In chapter eight, I return to the issues covered in this chapter to frame my data on the social practices of Foursquare users.

## Chapter 5: They Know Where You Are: Foursquare and Locational Privacy

Privacy is a notoriously slippery term, a term people use every day but few could define if asked (Solove, 2008). The privacy landscape has only become more complicated over the last twenty years as more things move online, producing more data for companies and governments to collect about our lives (Lyon, 2006; Solove, 2004). In the information age, data is valuable, and as companies like Google have shown, personal data are more valuable than most (Halavais, 2009).

Online privacy is an area that has been addressed extensively in academic literature (boyd, 2008a; Fletcher, 2010; Palen & Dourish, 2003; Solove, 2001, 2004, 2007; Solove, Rotenberg, & Schwartz, 2006; Strandburg & Raicu, 2006; Turow, King, Hoofnagle, Bleakley, & Hennessy, 2009; Whitaker, 2000). With the adoption of smartphones and the growth of location-based services, a new element has been added to these discussions about data privacy: location. After all, when people use location-based services, they are providing a company with their location information, leading to new concerns about locational privacy (Blumberg & Eckersley, 2009).

It would not be an overstatement to say that privacy has been the top concern in the academic literature about location-aware mobile applications. There are many Computer Science and Human-Computer Interaction (HCI) papers that deal with designing applications to protect users' locational privacy (Beresford & Stajano, 2003; Chow, Mokbel, & Liu, 2006; Consolvo et al., 2010; Gruteser & Grunwald, 2003; Hong et al., 2003; Myles, et al., 2003), as

well as more theoretical pieces by computer scientists and designers addressing privacy in location-aware computing environments (Dourish & Anderson, 2006; Dourish & Bell, 2011; Greenfield, 2006; Palen & Dourish, 2003; Zhong, Goldberg, & Hengartner, 2007).

Supplementing this research, the HCI and marketing communities have also performed empirical studies about how people feel about different locational privacy issues (Banerjee & Dholakia, 2008; Consolvo, et al., 2005; Nguyen, Kobsa, & Hayes, 2008).

Social scientists and humanities scholars have also dealt explicitly with locational privacy issues, mostly from a theoretical perspective. Many pieces that address location-aware mobile applications deal with potential locational privacy issues (de Souza e Silva & Frith, 2010b, 2012; de Souza e Silva & Sutko, 2008; Gordon & de Souza e Silva, 2011; Monmonier, 2002; Sutko & de Souza e Silva, 2011). There have also been some empirical examinations of the potential interpersonal privacy issues that arise as people share their location with others. Many of these studies perform empirical work on specific applications of location tracking, for example, Boesen, Rode, and Mancini's (2010) study of location-tracking applications in families and Shklovski, Vertesi, Troshynski, and Dourish's (2009) study of parolee location tracking. There have also been empirical examinations of privacy in location-based mobile games (LBMGs). For example, Licoppe and Inada (2009) discuss a case in which a Mogi player felt another player was stalking her because that player had access to her location but refused to let her know his location.

One of the strengths of the more theoretical examinations of locational privacy is the way they contextualize privacy. Privacy, after all, is not an objective entity; how privacy is understood and deployed greatly depends on where one is located (de Souza e Silva & Frith,

2012; Dourish & Bell, 2011; Gordon & de Souza e Silva, 2011). For example, Dourish and Bell (2011) discuss how in some Asian countries it can be perfectly acceptable for a waiter to ask a female about her menstrual cycle, a question that would quickly get a Western waiter fired. Another example can be seen in the European Union's stricter laws regulating the data companies can collect about people online compared to law in the United States (Turow, 2012). These examples show that privacy is constituted differently in different places, and researchers and designers must be careful in making sweeping statements about privacy as if privacy can ever be generalized to everyone.

An implication of the acknowledgment that understandings of privacy vary is that it is important to acknowledge the perspective one assumes when writing about privacy. As an American who interviewed Foursquare users in the United States, I will be working from a Western perspective on privacy. This is important especially in the way it views the individual's role in maintaining the boundaries around information. As Dourish and Bell (2011) argue, in the individualized cultures of the West, individuals are often the locus of privacy. It is their job to control the information they share and bound the social situations in which they share that information. In more collectively oriented cultures such as India and China, privacy revolves less around individual action than it does around group action. There the individual is often subsumed to the group, meaning that their right to privacy is often less important than the group's right to access information.

While the literature cited above contributes valuable information to the study of locational privacy, the focus on this chapter is not on locational privacy in general, nor is my

goal to build a general theory of locational privacy.<sup>33</sup> In the introduction of my dissertation, I explained that I chose to do my field work with Foursquare users rather than users of different types of LBSNs because it allowed me to specifically focus on Foursquare as an application. In no chapter of my dissertation is that more pertinent than this one. To understand how my research addresses my third research question regarding locational privacy, it is important to understand the specific dynamics of how people share information on Foursquare rather than analyze LBSNs in general. Consequentially, I combine a review of existing literature with specific descriptions of how Foursquare works in order to show why existing research is not fully adequate for understanding the privacy dynamics of Foursquare.

The goal of this chapter is to examine existing literature, discuss the specifics of information sharing on Foursquare, and establish the framework I use to analyze my data in chapter nine and address my third research question. The framework I establish in this chapter is shaped by the definition of privacy I draw from: boyd's (2011a) definition of privacy as "the control over social situations." This rather general definition posits that when people are able to control the information they transmit to others, they are able to maintain their privacy (boyd, 2011a; Dourish & Bell, 2011; Solove, 2008). Importantly, privacy within this framework is not simply about the control of information, and the advanced and complex privacy settings on a site like Facebook do not necessarily ensure someone maintains their privacy. Instead, people must be able to exert agency over how they share their information and understand the different contexts in which their information is shared (boyd, 2011),

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<sup>33</sup> For research that does so see chapter four in de Souza e Silva and Frith (2012), chapter six in Gordon and de Souza e Silva (2011), or Minch (2011).

which is true whether the information being shared is a photo on Facebook, a credit card number on Amazon, or a check-in on Foursquare. Because boyd's definition is rather general, I am also able to add to the understanding of how boyd's definition works in practice by showing how these issues of control when using information-sharing technologies are closely related to issues of design. I am able to do so by specifically looking at Foursquare as an application, both in this chapter and in chapter nine, to detail how individual elements of the application enable people to exert certain types of control over their social situations when sharing their locational information.

I also add to the framework I use to understand privacy in the context of Foursquare usage through a discussion of existing research on privacy in social networking sites and location-sharing applications to examine how people seek to control their social situation when using different technologies. This literature provides important knowledge about the ways people adjust to new informational environments I draw from when examining the micro-practices Foursquare users develop to control how their information is shared, a key part of my third research question concerning privacy and location sharing.

## **Locational Privacy**

Locational privacy refers to the ability to control who can access information about one's physical location (Blumberg & Eckersley, 2009). While it has gained recent attention with the adoption of location-aware mobile devices, locational privacy issues and the value of location information are not new. Take a zip code for example. In 1971, Johnathan Robbins founded Claritas, a company that used locational segments to map the demographics and

purchasing preferences of zip codes in a useful way for marketers. Claritas and its Prizm market segmentation system have since been purchased by Nielsen, and its “You are where you live”<sup>34</sup> feature is available for free online. Plugging in my zip code tells me that where I live features a mix of low to middle-income suburbanites with a median household income of \$32,558. Prizm and competing services have incorporated more and more data points over the years and now segment populations down to the zip code +4 level (you have to pay for this service), meaning they can paint a fairly accurate picture of small areas. Already existing systems like Prizm for marketers are often forgotten in alarmist media accounts about the impacts of location-aware mobile technologies on locational privacy.

This earlier example shows that location was a valuable piece of information long before the development of commercial GPS and mobile communication devices. While I focus on newer, GPS-enabled mobile phones in this dissertation, it is also important to note that mobile phones were location-aware before they began incorporating GPS. It was possible in the 1990’s to locate mobile phones by triangulating their position in comparison to nearby cellular towers.<sup>35</sup> The ability to locate phones through cell towers was key to the first major project to use the location awareness of cell phones: the first phase of E911. E911 was implemented by the FCC so that emergency services could locate phones within a roughly 100m radius of where someone placed an emergency call. While most people recognized that E911 was necessary, some critics such as *Wired’s* Chris Oakes still

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<sup>34</sup> <http://www.claritas.com/MyBestSegments/Default.jsp>

<sup>35</sup> For a clear discussion of how the cellular system works, see pages 19-22 in Agar (2005). Ling and Donner (2008) and Farley (2005) also provide histories of cell phones

bemoaned the system's potential detrimental effect on location privacy because they feared the location information would be made available to more than just emergency service response units.

Fifteen years later, debates about E911 seem rather tame. People now walk around with phones that can be located to within 3m on a clear day, and more and more of that information is contributed to multiple databases on a daily basis. Tracing back to the early 2000s, advertisers realized the potential of being able to locate people and provide location-specific advertisements on the interface of the mobile phone. However, many marketers realized that privacy issues needed to be thought through before implementing location-based advertising (Leppaniemi & Karjaluo, 2005). In a different vein, locative media artists and other scholars recognized that the ability to share location information with other people raised a new set of privacy concerns that include issues of interpersonal trust and concern over sharing one's location with other individuals (Blast Theory + The Mixed Reality Lab, 2004; Blumberg & Eckersley, 2009; de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011; Monmonier, 2002; Shklovski, et al., 2009). Some sources conflate targeted marketing and social location sharing concerns under the label of locational privacy (Blumberg & Eckersley, 2009); rather than discuss all locational privacy as if it is the same, I will instead draw from Raynes-Goldie (2010) and divide these concerns into *institutional* and *social* privacy. This divide also fits with a study performed by de Souza e Silva and me

(2010a) on four months of media discourse about location-based services.<sup>36</sup> I relate these issues back to the specific elements that make up Foursquare to show why general approaches can miss the intricacies necessary to analyze a specific application.

## Institutional Privacy

In our society in which so many systems are reliant on databases, the more information institutions have about someone, the more accurate a profile of that person they can build (Garfinkel, 2000; Solove, 2001). A more accurate profile means advertisements can be tailored to the individual, and law enforcement and banks can perform more detailed risk assessments on individuals that include their credit scores, travel habits, home ownership, and many other factors (Andrejevic, 2002, 2007; Haggerty & Ericson, 2000; Packer, 2006; Solove, 2004, 2008; Turow, 2003; Turow, et al., 2009). In a comprehensive account of companies' data practices, Turow's (2012) *The Daily You* goes to great lengths to detail the myriad ways websites collect user data and use that data to provide tailored advertising without users' knowledge. Rather than view locational privacy as a completely distinct privacy concern, it may make more sense to frame locational information as another layer added to our already existing digital dossiers.

It makes sense for institutions to want to be able to access people's locations.

Location information is a valuable commodity for advertisers, and the most common concern

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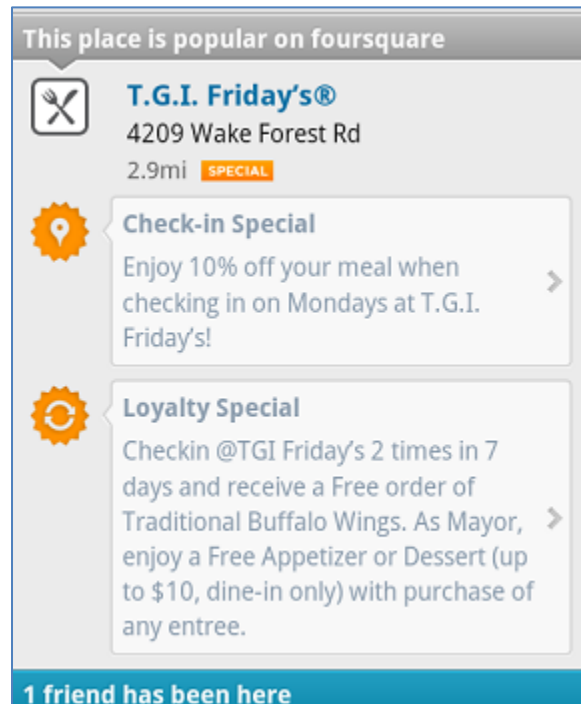
<sup>36</sup> In our study, we found that there were three main constellations of locational privacy concerns: (a) Governmental surveillance, (b) Corporate surveillance, and (c) Co-lateral surveillance. We placed Governmental and Corporate surveillance as "top-down" concerns and co-lateral surveillance as an interpersonal, social privacy concern. In the two sections that follow, I lump governmental and corporate surveillance into institutional privacy, and I discuss co-lateral surveillance in the section on social privacy.

about locational privacy present in the texts de Souza e Silva and I analyzed had to do with location-based advertising. Location-based advertising comes in two forms—push and pull (Kolmel & Alexakis, 2002; Unni & Harmon, 2007). Push-based location-based advertising is represented by the oft repeated Starbucks example. Consumers sign up (or do not sign up in some cases) to receive location-based advertisements then walk by a Starbucks and when they get to within a certain distance of the store, they receive a special offer urging them to walk into the nearby Starbucks (Greenfield, 2006).<sup>37</sup> Foursquare does not use push-based advertising, instead relying what is called the “pull” advertising method.<sup>38</sup> With the pull method, people log in to a service, look up information about their surroundings, and receive a special coupon or advertisement for something nearby. When people check Foursquare, they are informed if there are specials nearby, and these specials are exclusively available to Foursquare users (see Figure 4). For example, a restaurant may offer a free appetizer for every three check-ins, or a retailer may offer a 10% discount for anyone who checks in to Foursquare. Pull based advertising is designed to be less invasive than the push method, and it is one of the models Foursquare currently uses to generate revenue.

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<sup>37</sup> There are also instances where users do not sign up to receive advertisements. Unsolicited location-based advertisements can be thought of as a new form of spam and violate the Mobile Marketing Association’s ethical guidelines to location-based advertising (“Media advertising guidelines,” 2009).

<sup>38</sup> Not all people are comfortable even with the idea of mobile marketing. For example, Gazzard (2011) writes that Foursquare is “linked to potential commercial gain, fixing the map within a rigid structure of the service industry. This removes some of the playful qualities of the platform, and instead embeds it into a global marketing tool, *questioning the concept of Foursquare as a mobile gaming application*” (p. 410, emphasis added). I disagree with Gazzard. For mobile gaming to reach a widespread audience, it must come up with revenue streams. To limit the idea of a game to non-commercial applications is to basically limit the reach of mobile gaming to people who participate in experimental, art-based gaming projects like *Can You See Me Now* that typically only take place in large cities.



**Figure 3: A nearby Foursquare special**

While the pull method is dominant in the LBSN market and less invasive, there are still concerns about how location-based services like Foursquare handle location information. Here it helps to explain in some detail how all this works from a server-side perspective to point out possible concerns about the information Foursquare provides. With Foursquare, both merchants and developers can access Foursquare's API, which presents possible privacy concerns. Merchants access the "Merchant API" and can then see information about the people who check in to their locations, information that includes demographic information (people can choose in settings not to share this information). In an interview with Bloomberg news in which he made Foursquare's case as a viable business model, Dennis Crowley said

Right now we've built a dashboard for local merchants that allows any merchant, whether you're a coffee shop owner, or a café owner, or even like a national chain, you can drill down and see 'who are the people who are checking into my business most often? What are the demographics on them? What are the different times of day that they're coming?' And we're also allowing those merchants to target different specials based on those users ("Foursquare's growth, merchant platform, revenue," 2011).

The merchants who use the Foursquare service are able to connect directly with frequent customers and gain information about them. They are not provided with the entirety of those customers' location history, but they do get their demographic information. In the same Bloomberg interview, Crowley also said that Foursquare has begun analyzing users' data to provide targeted specials to them based on previous check-ins when they use the Explore feature, offering local merchants another way to reach customers, and as I mentioned in chapter two, possibly impacting user experiences of hybrid spaces through the commercial elements of Foursquare's Explore algorithm. These tools are designed to help merchants connect with customers, and as some business writers have suggested, they may represent the best way for Foursquare to monetize its product (S. Jacobs, 2011; "Why the merchant API is key to Foursquare's future," 2011); however, they also represent ways that information is shared through the application that users may have little idea about and suggest that many of the targeted marketing practices so prevalent online have begun to enter the location-based services market.

While the information merchants can access is limited to information about who checks in to their location, third-party developers face no such restrictions.<sup>39</sup> Foursquare

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<sup>39</sup> An interesting example of the dangers of third party access is the Girls Around Me iPhone app. The app aggregated data across venues and provided users with information about which Foursquare users were checked

provides its API to developers who design third-party applications that draw from Foursquare data. In my interviews, I found that many of my participants use third-party applications, which include applications that visualize check-ins, provide detailed information about venues people have visited, and send emails as a reminder of where people previously checked in. These are useful tools that add to the Foursquare experience, but they raise possible privacy concerns. When someone signs up for a third-party application, they are no longer subject to Foursquare's privacy policy. As Foursquare's policy states, "Use of third party apps developed using our API are subject to the terms of use and privacy policies of such third party developers." Foursquare's developer policy<sup>40</sup> does demand that developers act ethically and include privacy policies, but the developer policy does not seem to have a serious oversight mechanism. Users who sign up for these third-party applications must trust those applications to protect their data, which could potentially be serious because the Foursquare API provides a large amount of data about someone's location history, social network, and demographic information (Jones & Wolf, 2011). Even if users do trust the way Foursquare handles their data, each time they sign up for an outside application, they are then entering into a separate privacy policy and placing their trust in another entity, possibly without giving this much consideration.

Finally, many of the possible concerns about third-party application developers and merchant platforms can also be applied to the larger societal trend towards the collection of

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in nearby, leading to a privacy outcry. When they found out, Foursquare employees shut down the app's API access because it violated its terms of service (Fox, 2012). Apple also removed the app from its App store.

<sup>40</sup> The developer policy can be found at <https://developer.Foursquare.com/overview/>

huge amounts of SNS data, a trend in which Foursquare plays a part, albeit a relatively minor one compared to larger SNS like Facebook and Twitter. Because Foursquare's API is publicly available, researchers have aggregated user data for a number of different purposes, representing another way in which people's data can be aggregated at the server-side without their awareness. These projects range from the Carnegie Mellon University project Livehoods ("Livehoods," 2012), which visualizes check-in patterns in New York, San Francisco, and Pittsburgh, to smaller-scale projects like New York City's open data visualizations of check-ins at public parks ("Visualizing NYC parks foursquare check-ins," 2012). In addition, there are large companies such as SAS and Radian6 that specialize in mining the huge amounts of SNS data produced every day, and these companies likely collect public Foursquare data in much the same way they collect data from Twitter and Facebook. The increasing push towards "big data" includes the location information produced through applications like Foursquare and represents another concern about how data is used and aggregated by third parties.

It is important to note that these different ways that Foursquare shares information through its API are acknowledged in its privacy policy, which compared to many location-based services (Thurm & Kane, 2010), is detailed and fairly straightforward. However, judging from literature that examines people's knowledge of how companies share their information online (Turow, 2003; Turow, et al., 2009), Foursquare users still likely have little understanding about how their information is shared with third parties when they use Foursquare. Most people never read Facebook's privacy policy (Debatin, et al., 2009), and

we can expect that the same is true for Foursquare and other LBSNs, an issue I return to in my data analysis in chapter nine.<sup>41</sup>

As de Souza e Silva and I (2010a) showed, the news media are often concerned about the types of institutional privacy discussed in this section. As research on Facebook has suggested (Debatin, et al., 2009; Raynes-Goldie, 2010), however, the majority of my respondents did not care much about how their data was used by Foursquare. As I will discuss when I present my interview data on locational privacy in chapter nine, the social privacy concerns I discuss in the next section were much more significant to my research participants.

## Social Privacy

While there are certainly reasons to be concerned with how companies handle location data, the main concerns expressed in literature about locational privacy center on how people share information with each other. Many of these concerns are similar to concerns about earlier

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<sup>41</sup>You may note that this section on institutional privacy has included little discussion of governmental surveillance, which was one of the three types of surveillance de Souza e Silva and I identified in our examination of media discourses of location-based services. I avoid that discussion for a simple reason: governmental surveillance is a major locational privacy issue (Blumberg & Eckersley, 2009), but I argue that it is not particularly related to LBSNs like Foursquare. Mobile phone carriers record the location of everywhere people go with their mobile phones, as do Apple and Google, depending on the operating system someone is using. To access someone's location history, the government would subpoena one of the major carriers, which security researcher Christopher Soghoian showed occurs more frequently than most would imagine (Zetter, 2009). The government would then be able to access a robust amount of location data that has been passively collected from a phone without the owner of the phone's active participation. On check-in based LBSNs like Foursquare, on the other hand, the government would only be able to collect the location data of locations someone voluntarily checked-in, providing a much more limited data set. However, there could conceivably be some situations in which the government could use a voluntary service like Foursquare to surveil someone, and Foursquare's privacy policy states that it will turn over information when faced with a subpoena. To the best of my knowledge, there have not yet been any instances in which Foursquare was served with a subpoena from the government.

SNS except location is added to the informational mix, leading to new concerns about the information people share with others. While Wake Forest professor Ananda Mitra claims that “Foursquare has redefined privacy” (Swartz, 2011), it makes more sense to look at Foursquare as an extension of existing SNS information sharing rather than a complete redefinition of privacy. For one thing, location was often present in SNS before LBSNs started being used. Acquisti and Gross (2006) found that 24% of people included their home address in their Facebook profiles, and while no research exists, it is likely that people often post updates about where they are going or where they are.<sup>42</sup> Rather than thinking of social locational privacy concerns as revolutionary, it makes more sense to see location as an additional piece of information added to the already significant amount of digital data people produce every day.

Building on that point, location is a complicated piece of information when thinking about privacy and control over information. There is nothing inherently private or public about location (de Souza e Silva & Frith, 2012). If someone is at a café, her location is not private, nor is it truly public. Writing about large cities, Simmel (1950) argued that there is anonymity in large crowds. In other words, people are, to some extent, able to maintain their privacy while in public by blending in, showing that location is not fully public. However, neither is location always private. The other people at a café can see the other people who are there. Even if someone is at home, chances are there is a car parked in front of her house that

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<sup>42</sup> For example, a Tweet (which are mostly public) or a Facebook status update that says something like “heading to Cat’s Cradle to see a show” divulges location information to potentially more people than a Foursquare check-in.

suggests her location. Like with other types of information, it makes little sense to divide personal information into strictly private and public. boyd (2008a) addressed this in her criticism of SNS designers who view privacy in binary terms. In other words, they view information as 0=private and 1=public. In reality, privacy is far more complicated than that and involves the ability to understand the social situation in which one is sharing information. There are few things that we would want to keep completely private and not share with anyone. For most types of information, it is fine to share it in certain situations and not acceptable to share it in other situations, which is the most basic point of boyd's (2011a) definition of privacy as "the control over social situations." Social locational privacy should be thought of in those terms as a constant negotiation of what information is okay to share between individuals.

Privacy is also about more than technological fixes that give people more control over their information through privacy settings. Instead, as boyd (2011a) argues,

Privacy is the ability to assert control over a social situation. This requires that people have agency in their environment and that they are able to understand any given social situation so as to adjust how they present themselves and determine what information they share (n. p.).

The analysis of social situations shows that privacy is contextual (Solove, 2008). Privacy is maintained when people can make the decision about what information they share with others for themselves rather than having those decisions made for them, and they must be able to understand the consequences of their actions. Whether information is private or public depends on the context, which might be a specific social situation or a broader social or cultural context in which information is being shared.

To best understand the contextual nature of social location information sharing, it helps to turn to existing literature on SNS and privacy. As I have noted throughout my dissertation, Foursquare is ultimately an SNS. Consequently, the literature on information sharing within existing SNS such as Facebook is important for understanding privacy in the context of Foursquare. However, Foursquare adds location as an extra piece of information people share, so it is also necessary to discuss existing literature on social locational privacy. In the next section, I discuss SNS privacy and I then move on to an analysis of literature on social locational privacy and how it relates to Foursquare. Especially in the ways these bodies of literature show that people seek to adjust to new informational environments and develop ways to maintain privacy, these two areas are crucial to the conceptual framework I use to address my third research question concerning how my research participants manage privacy concerns.

**SNS and privacy.** SNS allow people to share information in new ways, leading some commentators to argue that the amount of information shared on SNS is baffling or even appalling (Marks, 2006). A fairly common narrative has arisen in the popular press (and occasionally in academic texts)<sup>43</sup> that people often just do not care much about privacy. However, research shows that these are overstatements and that people still often go to great lengths to exert control over how their information is shared. If we view privacy as the ability to control one's social situation (boyd, 2011a; de Souza e Silva & Frith, 2012), we can see

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<sup>43</sup> Albrechtson (2008) argues that much academic research places blame on users for not setting adequate privacy settings.

that people still care a great deal about privacy (Turkle, 2010). Going as far back as 2005 when social networking research was still in its nascent stages, research has repeatedly shown that people do care about what information they share, even if they may not always understand the consequences of their sharing or what they are sharing by default.

One of the earliest examinations of the intersections of SNS and privacy was Gross and Acquisti's (2005) study of the Carnegie Mellon University Facebook network. They found that users "provide an astonishing amount of information" on the site (p. 5). As a sign of how fast the informational landscape is changing, some of the information they point to as "astonishing" now seems rather mundane a short six years after they published their study. For example, they discuss how 90.8% of people provided at least one image on their page, 87.8% of users shared their birthdate, and 39.8% of profiles listed a phone number. If someone performed the same study today, it is doubtful that any of those findings would stand out as astonishing. However, even if it may seem minor to some, the information shared can have real consequences, and Gross and Acquisti discuss concerns about "re-identification," arguing that the information provided on these sites is often enough to piece together people's social security numbers, which potentially has serious consequences. They use this to show that their study participants did not realize the consequences of their information sharing.

However, in a different article published using the same dataset, Acquisti and Gross (2006) acknowledge that it is misleading to argue that the Carnegie Mellon students they studied do not care about privacy and the information they share. Many students reported caring about privacy but then provided information on their profiles anyways, suggesting that

they had little understanding of who could see their information.<sup>44</sup> This finding makes sense, especially because Facebook made this information available to members of users' regional network by default, and research has shown that people rarely change the default settings on software (Mackay, 1991). Still, Gross and Acquisti found that students do express concerns about how they control their information; they just often misunderstood who could access their information, leading to privacy issues because they were not in control of that information sharing.

There has been a push in more recent research on SNS and privacy to fight back against the belief that younger people do not care about how they control the information they share with others. Raynes-Goldie (2010) performed a one-year ethnographic study with a group of Toronto youth and detailed the great lengths her participants went to maintain their social privacy, which included creating lists to control how information was shared, using alias accounts to protect their identity, and altering default privacy settings. Tufecki (2008) warns that students are sharing too much information on SNS, but also notes the myriad ways they acknowledge the need for privacy by controlling who can access their information. Krishnamurthy and Wills (2008) note that while students still do not understand privacy settings as well as they should, they did appear to understand them better than in Gross and Acquisti's (2005) earlier sample, suggesting that the sample they studied was becoming more adept at controlling the social situation of SNS. In addition, Fogel and

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<sup>44</sup> This phenomenon is not exclusive to SNS. HCI researchers have found that people's expressed beliefs about general privacy are often not reflected in their beliefs about specific practices. For example, Nguyen, Kobsa, and Hayes (2008) found that people were more concerned with tracking technologies like RFID when they were discussed generally than they were when presented with specific cases of tracking technologies.

Nehmad (2009) note that despite what they term the “risk taking” behaviors of Facebook users, certain types of privacy information were rarely shared, seen most notably in the fact that less than 10% of the profiles they viewed included home addresses and mobile phone numbers.

Finally, in a comprehensive longitudinal study, boyd and Hargittai (2010) surveyed a group of 18-19 year olds in 2009 and then again in 2010. Their results “challenge widespread assumptions that youth do not care about and are not engaged with navigating privacy” (n.p). They found that in the period between the two surveys, their respondents increasingly modified their privacy settings and developed other ways to protect their information, likely in response to changes Facebook made to its privacy policy between 2009 and 2010, but also possibly because as Debatin, Lovejoy, Horn, and Hughes (2009) show, some people do not pay as much attention to the information they share until something happens to show them the consequences of their information sharing. As the studies discussed in this section show, people may not always understand exactly what they are sharing, but that does not mean they do not care about how they control their information and who can see it. They still often try to make sure that they have control over their social situation, even if they are not always successful. Often, it takes time for people to adjust to new information architectures and alter their practices to fit with the new informational landscape (boyd, 2008a; Sloop & Gunn, 2010).

What the existing literature on social networking privacy shows is that people do develop ways to protect certain pieces of information when sharing with others. As early studies show, they are not always successful, but that does not mean they do not care about

privacy. They take time to adjust to new information architectures and develop new ways to exert control over their social situation when interacting with SNS. While this literature informs the framework I use to address my third research question, there are still gaps in the existing literature on social networking privacy discussed above. Namely, all of these studies address only online SNS that do not include the explicit sharing of location information enabled by contemporary LBSNs. Consequently, these existing studies are not able to detail the tactics people use to control social situations while sharing physical location or the specific concerns people may have about sharing location information. My work in addressing my third research question in chapter nine addresses this gap by examining how adding location information to online social networking requires new tactics to maintain privacy. This gap in existing literature on social networking privacy also suggests the importance of understanding how social locational privacy has been addressed in earlier studies, a topic I cover in the next section.

**Social locational privacy.** As I mentioned in the introduction, the majority of published studies on locational privacy focus on technical aspects of location-sharing systems. However, there is existing research that examines user practices, and this research has approached the study of social locational privacy in different ways. Lederer, Mankoff, and Dey (2003) used a questionnaire approach to show that people's choice to share location is strongly influenced by the person requesting the information. Consolvo et al. (2005) studied how 16 non-technical users felt about disclosing their location through an SMS service. They found that 77% of the time their participants disclosed their location in fairly accurate terms (e.g. an address or a place name), but the researchers also found that disclosure was greatly influenced by both who was doing the requesting and when the request occurred. There are also empirical studies of

employee (Kaupins & Minch, 2006), child (Boesen, et al., 2010) , and parolee tracking that examine social locational privacy issues.

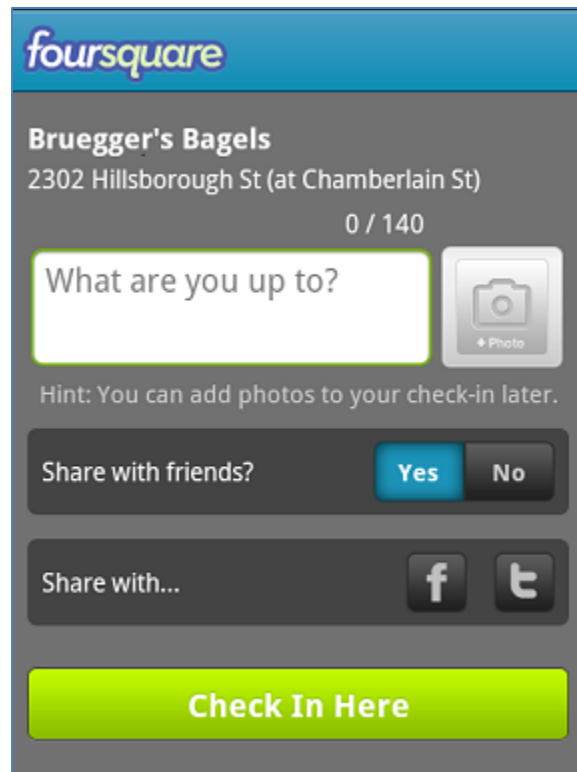
As I discuss in more detail later, these studies all examined systems that are significantly different from Foursquare; however, they do shed light on issues that can be applied to check-in based LBSNs. Namely, in both the parolee tracking study and the child tracking study the people whose location were tracked developed multiple tactics to control their location information (Boesen, et al., 2010; Shklovski, et al., 2009). Parolees, who faced severe consequences if their location tracking technology failed, changed their mobility patterns to make sure they were able to keep their GPS devices charged. More pertinently, the teenagers who took part in the tracking study developed multiple ways to control the location information that was transmitted about them to their parents. The authors note that “Limitations in technology were exploited to make someone appear where they are supposed to be even if they are not, allowing kids to break the rules” (Boesen, et al., 2010, p. 70). This finding also relates to Dourish and Bell’s (2011) more general description of “digital deception” as a privacy tactic, arguing that allowing people using digital technologies to falsify certain pieces of information enables ways for users to maintain their privacy. While the teenagers and parolees operated under location tracking systems that are significantly different from Foursquare, the innovative tactics they used to participate in those systems show that people often develop new ways to manage information when facing new information architectures.

In addition, both the Consolvo et al. (2005) and Lederer et al. (2003) studies showed that people’s decisions about whether to share their location information depend on context. While the system Consolvo et al. researched was different from Foursquare and Lederer et al. drew

from a questionnaire, their findings that people made decisions based on who they were sharing location with and what their current location was are important for understanding privacy issues surrounding check-in based LBSNs like Foursquare. As I discuss in chapter nine, both people's Foursquare audience and the location being shared shaped how and if they share specific check-ins, a finding suggested by these earlier studies. Both these studies and the studies of child and parolee tracking provide valuable foregrounding of the tactics Foursquare users adopt to control the information they share, a point that I address in detail in chapter nine.

To understand how sharing information on Foursquare is different from these earlier studies, it once again helps to turn to the specifics of the application. The figure below shows the screen users see when they are about to check in to a location (see Figure 5). They are provided with a number of different options over which they have control. The first is the white box that lets them push a message that is attached to their check-in. They can also use the photo icon to upload a photo of the venue. The second set of options asks them if they want to share the check-in with friends. If they choose "no" (it is on "yes" by default), then they can check in off the grid, meaning no one else can see the check-in. If they choose "yes" their Foursquare friends can see their check-in. The next two options address whether they want to share their check-ins with Facebook or Twitter (these only appear if Foursquare users link their Twitter and Facebook accounts to Foursquare). They can choose these options and push the check-in to all their Twitter and Facebook friends, but these are not the defaults and unless they specifically change their settings, they have to choose to do so with every single check-in. These different options are different than complicated privacy settings. That does not mean there are not privacy settings people can change. For example, when someone using the default settings checks in to a location,

other people who are checked in to that location can see that they are there and click on their thumbnail photo. They can then see the name the person uses in their Foursquare account and a list of mayorships that person has. Users are able to go into the privacy settings and make it so that other people at that location cannot see that they are checked in. For the most part though, most of the negotiation of privacy comes during the check-in process rather than the manipulation of privacy settings.



**Figure 4: Foursquare's check-in screen**

The check-in system shows how Foursquare is different from the studies discussed above. Unlike the tracking systems, people on Foursquare do not have their location

“tracked” by members of their social network, which contrasts Foursquare with other LBSNs like Google’s Latitude that do rely on real-time location tracking. Instead, people cycle through multiple screens to check in to a location and share their information with other Foursquare users, a model that contrasts with the experimental design Consolvo et al. used in which people were pinged with requests for their location. As Cramer, Rost, and Holmquist (2011) argue, the check-in system mitigates “problematic issues such as privacy” (p. 9). However, while check-in systems may “mitigate” privacy concerns, they certainly do not erase them completely. Despite the control people have over their information with Foursquare, there are still power issues present in check-in services that can be understood through Simmel’s (1950) framework of urban life. Simmel argued that urban individuals are both public and anonymous at the same time. They constantly share the streets with strangers, but because of the sheer number of people, they are able to maintain their privacy by blending in (Lehtonen & Mänpää, 1997). When someone broadcasts their location information with an LBSN, they sacrifice some of that anonymity for the possible benefits of sociability. Sutko and de Souza e Silva (2011) write that with LBSNs “The ability to identify individuals within the mass bypasses the ‘blasé’ attitude theorized by Simmel as a response to the overwhelming stimuli of the city and the masses within” (p. 814). To see how LBSN users can lose that anonymity typically associated with public spaces, it helps to turn to an ethnographic study of the LBMG Mogi, which may actually be closer to the experience of Foursquare than the experimental designs of some of the HCI studies cited above.<sup>45</sup>

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<sup>45</sup> Interesting, the two significant articles to empirically examine *Dodgeball* did not address whether the study

In a paper on the LBMG Mogi, Licoppe and Inada (2009) describe a situation in which a female player felt harassed by a male player. The male player claimed to be so close to the female player that he could see her in physical space but refused to log his location, so she could not see him. The female player felt her privacy was being violated to the point that she called on two other male players to help. Licoppe and Inada frame this as a power asymmetry, and this example is a realistic (though still uncommon) approximation of what could occur during Foursquare use. When people check in to a location on Foursquare, they see other people who are also checked in. They can then use the thumbnail picture to find the person even as the other person may have no idea that person is checked in to that location. Unlike with Mogi, however, to see who is checked into a venue, a user must check in as well. Despite this difference, Licoppe and Inada's study suggests that the social situations of Foursquare can feature different levels of informational exchange and lead to situations in which one person can know a great deal more about another user. This was also explored in a web-based project called PleaseRobMe (now defunct) that aggregated public tweets from people who shared their Foursquare check-ins with Twitter as a way to show that people were making their location publicly available without thinking of the possible consequences.

As this section has shown, the literature on social locational privacy has examined a diverse number of situations, ranging from mobile gaming to parolee tracking. Just as with the social networking literature discussed earlier, these studies provide a valuable framework I draw from, particularly in the ways they show that locational information sharing depends

on context and that people develop tactics to manage their locational privacy. In my third research question, I focus on the micro-practices people develop to protect their privacy when using Foursquare, and that question is informed by the literature discussed in this section. However, these existing studies still leave gaps in our knowledge about LBSN privacy. Namely, none of these studies research a system that is all that similar to Foursquare. The Consolvo et al. study used an experimental design that was SMS-based and had people request other users' location, in contrast to Foursquare where people share location when they want without request. The employee, child, and parolee tracking systems are also significantly different from Foursquare. None of these systems involved voluntary participation. Instead, the employees, children, and parolees had little say over whether they had their location tracked, a significant difference from a voluntary system like Foursquare. In addition, all of these systems used real-time location tracking in which their location was constantly transmitted back to the observer. This contrasts with Foursquare's check-in model that I discussed above and is more similar to LBSNs like Google Latitude. The Mogi system also features differences because with Mogi people did not form social networks of people with whom to share their location; they instead shared their location with everyone else participating in the game. Consequently, we can expect that the micro-practices people use to maintain their privacy with Foursquare will be different from these earlier studies, leaving a gap in the literature of how check-in based LBSN users adjust to sharing their location with their social network. In chapter nine, I begin to fill this gap by detailing the specific tactics my research participants use to protect their privacy while sharing their location with their Foursquare networks. Related to the differences among Foursquare and the other examples of

location sharing I discussed above, I found that many of these tactics were specifically related to the design of Foursquare, suggesting that design plays a major role in managing locational privacy. Some of these tactics I uncover involve people checking in “off the grid”; people checking in as they leave locations, broadcasting basically a false current location to their social network; people choosing not to check-in based on their social situation; and people choosing to limit their Foursquare network to bound their social situation and limit the reach of their information sharing. Some of these adjustments to the informational environment of Foursquare do share some similarities to the earlier research discussed in this section; however, they also show that specific design elements matter and show that there is a gap in current research left by the lack of specific analyses of voluntary, check-in-based LBSNs like Foursquare.

## **Conclusion**

This chapter has examined literature on both SNS and locational privacy. As I mentioned in the introduction, privacy is a complicated concept, but it is not a concept that is going away. Privacy is not dead, nor is it dying (boyd & Hargittai, 2010). We produce more information than ever before, and friends, companies, and governments do likely know more about us than they did previously. That does not mean people no longer care what they share. If we view privacy as the power to exert control over the information one shares in specific social situations, then there are myriad ways people still seek to limit what others can see on SNS like Facebook, and as I discuss when I examine my data on privacy in the context of

Foursquare usage, people use many different tactics to exert control over the information they share when using the mobile application.

To frame the privacy dynamics of Foursquare usage, I established a framework that shapes my data analysis and discussion in chapter nine and helps me address my third research question. That framework draws from boyd's definition of privacy as the ability to exert control over social situations. I used that definition to discuss literature on both social networking privacy and locational privacy, two other bodies of literature that are important for my privacy framework in the ways they show that people seek to develop new ways to exert at least some control over their social situations. I examined these two bodies of literature to point to gaps in our knowledge that my work with Foursquare users helps fill, but also used this literature to show that people do care about privacy and that they develop ways to control the information they share with others. I return to the definition of privacy as control over social situations and existing research on social networking and locational privacy in my discussion section in chapter nine as a way to address my third research question and frame the privacy practices of my research participants.

## **Section 2: Methods and Data Analysis**

## Chapter 6: Putting Grounded Theory into Practice

Grounded theory<sup>46</sup> is more than a coding method. It is a method that shapes all steps of the research process. Consequently, I went back and forth between coding and interviewing during my research process. In the following sections, I explain that process in more detail. I begin by discussing how I applied theoretical sampling to collect data. I then move on to my interview process and then discuss how I analyzed data, focusing on both my coding scheme and how I attempted to not lose the holistic nature of my data while fracturing the data into categories. I conclude by discussing how I present my data in my three data analysis chapters.

### Theoretical Sampling

The bulk of my data was derived from 36 interviews I did with Foursquare users. I began with the intention of only interviewing people in Raleigh, NC and Washington, DC, but that proved to be untenable. I found people in both cities, but after interviewing a few of them, I realized that confining myself to those two cities made it difficult to target people who used Foursquare frequently enough to develop adequately dense substantive theories. I then chose to rely on theoretical sampling to identify users who could help me develop a better understanding of the potential impacts of Foursquare use.

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<sup>46</sup> There are different types of grounded theory, ranging from more traditional, post-positivist approaches (Glaser & Strauss, 1967; Strauss, 1987) to a more recent push towards more constructivist approaches (Charmaz, 2006; Clarke, 2005). My approach more closely follows the constructivist tenets described by Charmaz (2000, 2006).

Theoretical sampling<sup>47</sup> is an approach unique to grounded theory and is guided by the emerging theory and early data collection and analysis. The goal is to collect early data, code the data, and then use later interviews or observations to fill out the emergent categories and test new concepts and categories. Consequently, my earlier interviews and data analysis guided my later sampling by allowing me to identify the types of people that could help me examine the questions that drove my research. My goal was not to develop a generalizable, random sample, and I do not attempt to make generalizable claims from my data that apply to all Foursquare users.

The theoretical sampling I used was an iterative process. After my first set of interviews, I began going back over the data and identifying interesting areas my participants discussed. I found in these early interviews that the people I spoke with who used Foursquare frequently were able to detail many more examples of how they used Foursquare to increase the legibility of their surrounding space, socialize with others, and manage their privacy. The two people I spoke with at this early stage who used Foursquare only intermittently had little to say that helped me identify behaviors that helped me address my research questions and address the categories I had begun to identify from my early participants' responses. For me to build a denser understanding of how Foursquare usage relates to my three research questions, I decided I would have to talk to specific types of Foursquare users. In other words, while it may be interesting from a generalizability standpoint to talk to people who

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<sup>47</sup> Glaser and Strauss (1967) define theoretical sampling as “the process of data collection for generating theory where by the analyst jointly collects, codes and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges. This process of data collection is controlled by the emerging theory” (p. 45).

use Foursquare infrequently, to build a greater understanding of the diverse experiences of Foursquare users I needed to interview active users because they had more to say about how they use Foursquare. I defined active users as individuals who have over 100 check-ins and had checked in to Foursquare at least once in the previous three days. In this way, how I chose whom to target in my theoretical sampling was shaped by the categories I had begun to identify in my data and guided by my decision of who could best help me address those categories.

I found the active users I targeted through different means. I often began by identifying people who had written tips about venues in Raleigh and then checking if those people met my criteria. I then contacted them through Twitter or Facebook to see if they would be willing to participate in my study. I also targeted Foursquare users outside of Raleigh<sup>48</sup> through the same method and also by performing a Twitter search for “4sq” and then finding their information on the Foursquare website and seeing if they met my criteria. I would then contact them through Twitter. I also asked participants to refer me to friends who would be willing to take part in my study, which is how I found 14 of my participants. While using theoretical sampling to find Foursquare users did not yield a generalizable sample, it did allow me to determine beforehand if these Foursquare users met my criteria and could help me develop my understanding of Foursquare use.

Theoretical sampling also led me to target a special group of users I discovered

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<sup>48</sup> I interviewed people from multiple regions of the country, including cities in the Northeast (Washington, DC; Boston, MA; New York, NY; Arlington, VA), the Southeast (Raleigh, NC; Chapel Hill, NC; Charlotte, NC; Atlanta, GA; Kennesaw, GA; St. Augustine, FL), the Midwest (Chicago, IL; Cincinnati, OH; Indianapolis, IN), and the Pacific Northwest (Seattle, WA; Portland, OR; Central Washington state).

through one of my early interviews. I found three of my participants on the *Getsatisfaction* Foursquare Super User site. Super Users are Foursquare users who are able to merge and correct venue information, and they play a major role in cleaning up the information people see when they check in to Foursquare. I was unfamiliar with the Super User structure until it came up in an interview, and I then turned to the *Getsatisfaction* site to recruit three more Super Users for my study. I realized from coding an early interview that Super Users would be able to provide me with a unique perspective on how Foursquare manages data and the different options available to Foursquare users.

I interviewed my 36 participants face-to-face when possible, but I also relied on phone interviews and Skype interviews. In total, I interviewed 16 people face-to-face, 17 people using Skype, and 3 people using the phone with no video. Research suggests that phone interviews often reveal similar information as face-to-face interviews (Sturges & Hanrahan, 2004), and I did not feel the phone/Skype interviews were any less robust than face-to-face interviews. The interviews lasted between 25 and 90 minutes, and I had participants sign written consent forms when possible and give verbal consent when that was not possible.<sup>49</sup> I recorded all interviews<sup>50</sup> and later transcribed them. My interview participants included 16 women and 20 men, and they ranged across age groups. The majority (32) were between 18-36 years old, and I also interviewed two people who were

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<sup>49</sup> It is also important to note that I did receive approval from North Carolina State University's Institutional Research Board. For my Skype interviews, I emailed the participants the consent forms and they gave me their verbal consent at the beginning of the interview.

<sup>50</sup> I did record all interviews, but two of the recordings were only partial because of technical problems. I transcribed as much of those interviews as I could. Also, one of my interviews involved 2 participants, bringing my total number of interviews to 35.

between 36-54 and two people who were over 55. Four of my research participants were college students, and two of my older participants were retired. All of my other participants were employed, with 16 of them being employed in social media/marketing-related positions.

I chose to stop my field work when I reached the theoretical saturation point. Theoretical saturation is an important part of a grounded theory approach because it tells the researcher when it is time to stop collecting more data. As Dey (1999) points out, theoretical saturation is often one of the most misunderstood parts of grounded theory. Theoretical saturation is not the same as seeing repetition in what people say. Instead, I reached theoretical saturation when I was fully able to identify thematic similarities among different sets of categories, achieve a robust conceptualization of my dataset, and clearly identify how they related to the three research questions that drove my study.

I also supplemented my interviews with additional materials. In grounded theory, researchers are encouraged to draw from a diverse set of materials (Strauss, 1987). These are called “slices of data” and they can shape field work and offer different perspectives. I followed this prescription and drew data from other sources that supplemented my interviews. One source was my personal experience using Foursquare.<sup>51</sup> Through my personal experiences, I was able to guide the interviews and bring up issues I had noticed through my usage. I was also able to view the tips people had written about venues because of my Foursquare use and begin understanding the kinds of messages one can expect to find

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<sup>51</sup> While some argue that personal experience should play no role in a grounded theory approach (Glaser, 1992), Strauss and Corbin (1994) disagree, arguing that “Equally important is the utilization of experiential data, which consists not only of analysts’ technical knowledge and experience derived from research, but also their personal experiences” (p. 11).

when one checks in to a location. My knowledge of tips and other Foursquare uses provided me with an extra level of understanding when asking questions and analyzing participants' responses to my questions.

I also had three participants give me partial screen shots of their location history. Foursquare logs every place someone checks in to, and the user can go back and look over their history of check-ins. It is not possible to easily export this history with dates attached, but three of my participants provided me with partial records of their location history. The screen shots were enough for me to view their check-in patterns and see how those patterns had changed over time. I only asked three of my participants for this information because it is a sensitive source of data, and I did not feel comfortable asking most of my participants to turn over their entire location history for analysis.

These different “slices of data” were all ancillary to my main interview data; however, they still played a role in how I shaped my interviews and how I approached my research questions.

## **My Interview Process**

I approached my interviews with certain questions in mind and a script I submitted to the North Carolina State University Institutional Review Board (see Appendix A). In this way, my approach to my interviews was not completely inductive<sup>52</sup> because I did have a priori

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<sup>52</sup> In older forms of grounded theory espoused especially by Glaser (1978, 1992; Glaser & Strauss, 1967), grounded theory was supposed to be a purely inductive method in which the interviewer enters the field with no preconceptions. However, later researchers have argued that pure induction is not often possible, with Strauss

research questions—reflected in the structure of my original script—when I began my data collection process.

My first interviews closely followed the interview questions included in my original script. I departed from the script to ask for elaboration about certain issues that came up, but I focused almost exclusively on the areas I had set forth. However, drawing from grounded theorists, my interview approach changed as I went back and forth between coding and interviewing. As my interviews progressed, I took a less structured approach. I asked more open-ended questions and stopped adhering as closely to my script, allowing my participants to elaborate on their experiences without restricting their thoughts to my areas of interest. I still kept the script with me to add some structure to the interviews (Charmaz, 2006), but I gave participants the opportunity to discuss uses I had not thought of when putting together my initial set of questions.<sup>53</sup>

My interviews were also shaped by the constant back-and-forth between coding and field work. As I coded data, I began identifying interesting categories and specific behaviors, and I then used later interviews to shed more light on these areas. I found that people I interviewed used Foursquare in ways I had not anticipated, and after identifying those areas in initial coding, I was able to ask later participants about these usage practices. These topics,

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and Corbin (1990) writing that the over emphasis on induction in *The discovery of grounded theory* was mostly rhetorical and that “We all bring to the inquiry a considerable background in professional and disciplinary literature” (p. 48).

<sup>53</sup>As Seidman (1991) points out, interviews can occur on a spectrum from fully structured, strictly following a script, to completely unstructured. My interviews began closer to the fully structured end of the spectrum, though I allowed people to explore issues that arose from their answers. As my field work continued, I moved much more to a semi-structured approach, still focusing on certain areas of interest, but not following my script because I felt it was too structured to allow for my participants to fully address areas I had not thought of.

included how and why people link Foursquare to other platforms like Facebook and Twitter, how people use third-party applications to manage their location data, and specific micro-practices people use to manage their privacy when using Foursquare. By identifying areas in earlier interviews and returning to them in later work, I was able to take advantage of the iterative emphasis of grounded theory.

## Coding and Memoing

Following the tenets of grounded theory, I coded my data throughout my research process, starting after the fourth interview I performed. My approach was inductive in the way I allowed categories to emerge through my constant comparison analysis, but my data analysis was also driven by my goal to address the three research questions that framed my study. These research questions formed the three core categories I used to frame the themes and specific categories I developed. My three core categories were: (a) Foursquare and the Mediation of Space (RQ 1), (b) Mediating Social Connections through Location (RQ 2), and (c) The Varying Nature of Locational Privacy (RQ 3). Every step of my coding process, including my theoretical sampling, interview process, and data analysis, was shaped by these three core categories, and I address each of these core categories in separate chapters. I detail the first core category in chapter seven, the second in chapter eight, and the third in chapter nine.

I used the qualitative software program Atlas.ti to code my data and began my data analysis with an open coding procedure in which I coded each even somewhat relevant piece of data. What I considered data ranged from a single sentence describing a behavior or

feeling to longer paragraphs with detailed descriptions of a behavior or situation. I focused on pieces of data that related to my three core categories, but I also coded other pieces of data so that I could return to them later. As my interviews progressed, I transcribed new interviews and would then code those transcripts using the categories I had already developed, or I would create new categories if none of my earlier categories fit this new data. I repeated this process throughout my research, and from this process, I ended up with roughly 70 categories. Near the end of my interviewing process, I went through each category and determined how (and if) the category applied to my three core categories. I began grouping the relevant categories together inside each core category, not focusing on how they relate to each other, but rather focusing on if they dealt with how my participants relate to their surrounding space, their social practices, and how they talked about privacy. In this way, I was able to begin seeing how my initial categories applied to my three core categories and identifying categories that may not be relevant.

After roughly grouping categories together, I then recoded my entire dataset. This step in my selective coding process allowed me to begin piecing my initial fracturing of my data back together, identifying categories that fit together inside each of the three core categories and allowing me to significantly reduce the number of distinct categories by combining similar categories to increase the density of my analysis. Some of the specific pieces of data could fit inside multiple categories, but I focused on which categories I felt best fit the piece of data rather than applying multiple categories to my data. I also began linking certain categories together using Atlas.ti, which helped me begin to see different themes that ran through multiple categories. At this point, I still did not fully identify

thematic similarities among different sets of categories, but I did begin to analyze how different categories fit together inside my core categories.

After reducing the number of categories, I then analyzed my data again, focusing mainly on thematic similarities shared among my categories. I did so by looking for specific words and phrases describing similar behaviors and identifying thematic patterns shared by multiple categories. With each of the categories, I asked the basic question “what is this statement or description about?” and noticed similarities between the pieces of data that made up my distinct categories. Through this process, I identified six thematic concepts under which I grouped my distinct categories. Those six themes are

1. **Spatial legibility and exploration (core category 1).** This theme refers to statements in which my participants described using Foursquare to learn more about their surrounding space. The five categories that are linked together in this theme are (a) The Foursquare Explore feature as a spatial search engine, (b) Digitally endorsing locations through check-ins, (c) Revealing the unseen through the reading of space, (d) Reading branded spaces, and (e) Writing space. All five of these categories concerned people accessing spatial information through Foursquare to find out new things about physical spaces, which was the main criteria I used to thematically link these categories. The fifth category—Writing space—was slightly different than the first four categories because it concerned contributing to spatial information rather than drawing from spatial information. However, I grouped writing space in this theme because the behaviors my participants described that fit this category shared

- thematic similarity with the other categories, though these behaviors were about producing information rather than accessing it.
2. **The digital, ludic layer of the city (core category 1).** This theme includes the statements in which my participants discussed changing their behaviors because of the gaming elements of Foursquare and includes three categories: (a) Scoring points, competing over the everyday, (b) Digital ownership and mayoral competitions, (c) Badge hunts and rewarding mobility. Each of these categories refers to a different gaming element of Foursquare, but they shared thematic similarity because the data I coded in these categories refer to descriptions of how Foursquare's gaming elements affected the way my participants related to their surrounding space. By linking these categories together, I was able to see how certain game elements were more influential in influencing behavior and begin understanding how they encouraged different types of behavior.
  3. **The dynamics of location-based sociability (core category 2).** This theme covers my two categories that address how and if people used Foursquare to meet up with and coordinate with others. Those two categories are (a) Check-ins and coordinating sociability and (b) Engaging difference, meeting strangers. The first category concerns how people engaged with others in their Foursquare network. In earlier rounds of coding, I split this category into two categories, one noting people describing using Foursquare to coordinate with others and another that included my participants describing why coordinating through Foursquare was complicated and did not occur frequently. I collapsed those two categories into a single category

because they were both addressing why or why not my participants used Foursquare to facilitate co-present interaction, and this allowed me to examine the specific situations in which my participants did use Foursquare as a social application. The second category also describes how involvement with Foursquare lead some of my participants to directly engage in co-present interaction, but this category covered situations in which my participants met new people through their Foursquare usage.

4. **Linking platforms and presenting an idealized self to others (core category 2).**

This theme involves people's descriptions of the conscious choices they make about how they present themselves to others and to themselves when using Foursquare. The two categories I identified as sharing this thematic similarity are (a) Presenting an idealized self to others and (b) The presentation of the present self to the future self. The first category includes descriptions of people making decisions about how to present themselves to others through location. In earlier instantiations of my coding, I had separate categories for how people presented themselves to their Foursquare audience, their Twitter audience, and their Facebook audience. I merged those categories into one category because all of the data inside those categories were describing similar behaviors, and by viewing all of these behaviors inside one category I could compare the different ways people presented themselves to others based on the platform with which they were sharing. The second category includes any description of how my participants use Foursquare as a memory tool. At first, I was unsure where to place this category, which was surprisingly prominent in my data. After rereading each piece of data in this category, I noticed that many of the

ways people described using Foursquare as a memory tool were quite similar to how they describe using Foursquare to present themselves to others. Consequently, I noted the thematic similarity shared between the two categories and include them here.

5. **Managing the network (core category 3).** This theme refers to my participants' descriptions of how they decide who to accept as Foursquare friends and includes two categories: (a) Network as privacy tactic and (b) Foursquare as an open network. The first category is broader than the second. In the first category, I included my participants' explanations of why they limit their Foursquare network for privacy reasons. Inside this category, there is a great deal of variance in my data. One of my participants will not accept a single person as a Foursquare friend. Other participants will include anyone they have interacted with at least once on Twitter. Despite this variance, if a piece of data included a description of limiting the network because of privacy in any way, I placed it in this category. The second category contains explanations from the few participants I spoke with who have no criteria for who they will accept as Foursquare friends. I included these categories in the same theme because regardless of the behavior or criteria described, all pieces of data that fell inside these two categories concern the way people view and manage their Foursquare network.

6. **Privacy practices in a new locational information environment (core category 3).** This theme included a number of different ways my participants spoke about privacy and Foursquare. The thematic similarity I drew from when linking these five categories together was that all of these categories refer to people describing specific

design elements of Foursquare and how they relate to privacy. The five categories that I include in this theme are (a) Varying views of locational privacy, (b) Control as protection, (c) The relational nature of social networking privacy, (d) Unintended consequences of information sharing, and (e) Micro-practices and managing locational privacy. There was some overlap among these different categories, but I assigned each piece of data to a single category based on which category I felt the data best addressed. The first category includes my participants' descriptions of how they feel about the concept of locational privacy when using Foursquare. Many of my participants went out of their way to defend Foursquare, arguing that people who will not use it because of privacy concerns do not understand how the application works and the control it gives people over the information they share. This category is similar to my second category, which concerns any description of how the design elements of Foursquare give people control over the information they share. The third category is also similar to the first two and includes any statement in which my participants compared Foursquare to other social networking applications when discussing privacy. They frequently compared Foursquare favorably to other sites specifically because of the control they felt they had with Foursquare, linking this category to the first two. The fourth category is slightly different and includes descriptions of situations in which people faced unintended consequences because of the information they shared. The final category focuses on the micro-practices my participants described to manage their privacy on Foursquare, practices that often

related back to the issue of control described in the second category that makes up this overarching theme.

These are the themes and categories I include in my final analysis. However, I also had categories that I do not include in my data analysis chapters for one of two reasons: either they did not help me address my research questions or they did not arise frequently enough in my data to justify their inclusion. An example of the first type of category has to do with descriptions of the Super User structure that manages Foursquare locational metadata. This data was interesting but did not fit with the rest of my analysis. A particularly interesting example of the second situation was the category “Foursquare as a safety tool” that only fit one piece of data so I did not include it in my analysis.

Here it is important to make a brief comment on numbers and how they relate to my categories. Grounded theory is typically not about counting (Dey, 1999), especially not constructivist grounded theory. While more quantitatively minded grounded theory researchers occasionally code data and break those codes into percentages for a perspective on a dataset (e. g. 54% of my participants reported going to a place to get a certain badge), this was never the goal of my work. As Fisher (1997) argues, “There is little point in counting the pieces of text to which a heuristic code has been applied, since its importance does not lie primarily in its numerical incidence in the data, but rather in the way it illuminates one aspect of interaction” (p. 70). However, to establish that my categories did arise frequently enough to represent a valid reading of my data, I tabulated the occurrence of each category (see Appendix B). Note that I do not view one category as more important than another just because it arose more frequently.

I was conscious throughout the coding process that while categories and themes are a helpful way to organize and fracture data, they are only one part of a grounded theory. I made sure not to lose a more holistic view of my participants and their responses, something that can happen easily when coding data, especially when using qualitative software (Dey, 1999). To be able to combine a more naturalistic approach with the coding process, I wrote vignettes of all my research participants (see Appendix C for an example). These vignettes served as one step in the memoing process that I detail below, and they included a narrative description of each participant and how they use Foursquare. I chose to write a vignette about each participant so that I could return to those descriptions later to help me conceptualize Foursquare usage in ways that are difficult to do after the data is broken down into discrete categories.

I also wrote extensive memos throughout the process. Memoing is "the core stage of grounded theory methodology" (Glaser, 1998, p. 177), and I wrote multiple drafts of memos that ranged from a couple sentences to multiple pages. In the early stages of my research, my memos were mostly about emerging areas of interest that I wanted to return to in later interviews. The memos helped me organize my ideas and begin to conceptualize the theoretical worth of different sets of categories and how they related to my research questions. I also used memos to outline the behaviors I was looking for in my more prominent categories and begin detailing thematic similarities shared among categories. After I had finished around half of my interviews, I began writing memos that tried to explicate what I was looking for in each of my three core categories and begin noting how different pieces of data fit together. This process showed me weak points in my theory that I needed to

address in later interviews. These memos were informally written and functioned as personal notes that helped me collect my thoughts and organize my analysis.

## **Building Theory and Presenting Data**

The ultimate goal of my research approach was to collect data I could use to address the three core categories drawn from my research questions that shaped my interviews and my data analysis. Theory, however, is a complicated term that needs to be examined in the context of a grounded theory approach. To understand how I approached theorizing from my data, it is important to understand the goals of the constructivist grounded theory approach I took.

Post-positivist researchers view “theoretical concepts as variables and construct operational definitions of their concepts for hypothesis testing through accurate, replicable empirical measurement” (Charmaz, 2006, p. 125). Their primary goal of theory is to establish concepts that have predictive power. While predictive power has long been the hallmark of good social scientific theory, I did not approach my data analysis with the goal of developing predictive concepts that are necessarily replicable and generalizable. I instead embraced an alternative constructivist view that “emphasizes *understanding* rather than explanation” (Charmaz, 2006, p. 126, emphasis in the original). My approach to my research is interpretive and exploratory in nature and seeks to understand how my participants construct meaning in situations and shed light on practices and context rather than try to identify variables and develop hypotheses.

I also embraced the indeterminacy of Foursquare as a new artifact that does not have set meanings. In other words, the interpretation of my data I present is not fully declarative or

authoritative. I did not attempt to formulate “this is how people use Foursquare” statements. Instead, I acknowledge that the usage habits I found were widely divergent and find threads in these disparate practices that helped me gain a more holistic understanding.

While presenting my data in the following chapters, I weave together description and direct quotation<sup>54</sup> to describe the themes and specific categories being addressed, and I avoid most citations to theoretical or existing empirical work when describing my data. The purpose of the preceding chapters was to examine what has been written about the issues I addressed in my field work, and I do not weave that existing work into my description of my data except when necessary. After laying out the categories I developed from my data, I then include a discussion section in each chapter that ties my data back to the literature I discussed in the previous chapters. In those discussion sections, I use my data to both support some existing theory and as a way to urge the rethinking of some existing theory concerning the adoption and use of location-aware mobile technologies. I separate the data analysis from the discussion and relation to other literature in order to let the stories people told me speak for themselves.

## **Conclusion**

In this chapter, I detailed the understanding I built through my field work, coding, and memoing. It was not the goal of my research to paint a generalizable picture of Foursquare

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<sup>54</sup> I changed the names of all my research participants to protect their confidentiality. I include three pieces of information with the direct quotes I present in the following chapters: a pseudonymous name for the participant (which maintains their gender), their age, and their location. The location I include is at the city level except for one of my participants who lives in a small town and would be too identifiable if I listed his city.

usage. I make no claims that every piece of data I describe applies to all, or even most, users. Instead, my goal is in line with other interpretive qualitative researchers. Vannini (2012) argues that for interpretive researchers, “Rather than explain what common phenomena are and how frequently they occur, the objective is to describe and interpret how diverse experiences unfold and how they are practiced and experienced” (p. 50). In the following chapters, I present my interpretation of how the diverse experiences of Foursquare users unfold and are experienced, noting variation and difference in usage patterns. Ultimately, I hope to highlight how people may use location-based applications to shape how they relate to locations and each other while also avoiding sweeping statements about the impacts of these applications. Through grounded, empirical work with users, the following chapters help build a better understanding of how people adjust to the new location information architecture enabled by applications like Foursquare and address the three research questions that drove my analysis.

## Chapter 7: Foursquare and the Mediation of Space

As I discussed in the previous chapter, the first core category I used to shape my data analysis was “Foursquare and the mediation of space.” This core category was related to my first research question and shaped the questions I asked participants and some of the behaviors I focused on in my coding. I identified two themes that captured similarities among different sets of categories and specifically related to my first core category and that I discuss throughout this chapter. The first theme is called Spatial Legibility and Exploration and includes five categories: (a) The Foursquare Explore feature as a spatial search engine, (b) Digitally endorsing locations through check-ins, (c) Revealing the unseen through the reading of space, (d) Reading branded spaces, and (e) Writing space. These five categories are linked together because they all concern the issue of spatial legibility I discussed in chapter two (Dourish & Bell, 2011). The second theme is called The Digital, Ludic Layer of the City and has to do with Foursquare’s gaming elements, which like other location-based mobile games can turn the physical spaces of the city into a ludic play space (de Souza e Silva & Hjorth, 2009; de Souza e Silva & Sutko, 2008; de Souza e Silva & Sutko, 2009a; Licoppe & Inada, 2006), awarding people with points, mayorships, and badges for their physical mobility. This theme includes three categories: (a) Scoring points, competing over the everyday, (b) Digital ownership and mayoral competitions, (c) Badge hunts and rewarding mobility. These three categories are linked together by their focus on how gaming elements can impact behaviors. These two themes are not wholly separate from each other, and both detail how people can see the city differently when using Foursquare.

The themes and categories I discuss here are not entirely distinct from the themes and categories I discuss in the next chapter. The next chapter will focus on the presentation of self and sociability on Foursquare, which also has implications for how people explore and make legible their surrounding space. In addition, some of the elements of exploration, mobile annotation, and gaming I detail in this chapter are undoubtedly social. I chose to address issues of sociability in the next chapter because the sociability categories I identified have more to do with how people interact with others than with how they interact with locations. It is impossible to examine how people relate to locations without discussing who they find in those locations and the types of people who write messages about locations, and the algorithm for the Explore feature I discuss in the next section is based around social elements. Rather than argue that there is a clear line between location and sociability, I instead chose to use this chapter to draw from my data to interpret and understand how different uses of Foursquare make space legible in new ways and can impact people's mobility choices how they see their surrounding space.

## **Spatial Legibility and Exploration**

Since its launch on March 29, 2009 at the South by Southwest festival, Foursquare has increasingly focused on making physical space more searchable. Originally envisioned as a social networking application with gaming elements, the designers and engineers have begun to focus on how to use location data to make space more legible, in a way turning Foursquare into a spatial search engine through newly developed algorithms, which I discussed in chapter two. Through the Foursquare interface, people find new locations through various

means, including the nearby locations list, the location of friends, the geotagged tips left about a location, and the Explore feature. Some recent changes by the Foursquare engineers have led Dennis Crowley to suggest that the future of the application will be based more on finding locations than checking in and sharing location with friends (Empson, 2011). My purpose is not to predict the future of the application, but as I detail in the following categories, exploring through Foursquare is a fairly common practice. Many users rely on the application to tell them about nearby locations, and the ways they accomplish this goal are diverse.

**The Foursquare Explore feature as a spatial search engine.** Foursquare makes nearby space legible in a number of different ways. Most basically, people checking in to a location pull up a list that shows nearby locations' distance from their current location. The basic check-in interface does not tell a great deal about the surrounding space, but it does highlight locations that people may not have otherwise seen. This is the most basic form of using Foursquare to explore that I found in my interviews, and it was less about targeted searching than about simply becoming more familiar with an area by identifying nearby locations:

Abigail (28, New York City, NY): I find it helpful to just see what is physically around me and see what my options are. So I've definitely opened it [Foursquare] in places I'm less familiar with just to check on that.

Pulling up a list of locations has limited utility because it does not typically involve any kind of targeted search. For example, typing in "café" on the check-in list will only tell someone if there is a place nearby that has the actual word "café" in its title, a limitation that annoyed

many of my participants. However, the Explore feature addresses that limitation by allowing people to search for specific types of locations based on where they are and receive suggestions based on where other people check in. As I discussed in chapter two, the Explore feature works through an algorithm that suggests locations one's friends and other similar people tend to go. The first, and more prevalent reason I found people use Explore is to find locations when someone is somewhere unfamiliar. For example, Toby lives in the suburbs of Cincinnati and rarely uses Explore when he's near his work or out in the suburbs. He told me that he already knows enough about these areas and has no need for a digitally augmented form of spatial search because he is comfortable with his choices already. However, if he travels or goes downtown, he relies heavily on Explore because he does not know what is around him:

Toby (34, Cincinnati, OH): Yeah yeah. I do that and I use Foursquare Explore function a lot, especially if I'm traveling. I know every restaurant that's around my office so I don't really need Foursquare to help with that. If I'm in downtown Cincinnati or in a new city I use Explore all the time.

Toby's quote is representative of how many of my participants reported using the Explore function. Most of us have areas we are familiar with and restaurants and bars we already like in those areas. Someone who has lived in downtown Raleigh for a significant amount of time likely knows where to go get a cup of coffee. However, when people leave their comfort areas the Explore feature can make space legible in new ways, allowing them to search by key word to see if there are locations nearby and telling them how popular those locations are with other Foursquare users and if their friends have been to those locations before. In this way, Explore functions as a digitally augmented marker of spatial information, guiding

people based on preference and search terms. When people are somewhere unfamiliar, this information can help them make decisions about where to go, as the quote below from Dolores illustrates:

Dolores (29, Washington, DC): You know, I have actually... there was one time when I was going over to a friend's place in Virginia and she wasn't going to be home for a while. So I was really early. So I decided to search for something nearby and I used the search feature to find somewhere to hang out. Another time, I was at a conference in Northern Virginia, and I'm really unfamiliar with that area, so I checked Foursquare to see what was nearby to get coffee and use the Internet

The second reason my participants tend to use Explore is to find new locations in areas with which one is already familiar. As I discussed in chapter two, mobile applications like Foursquare can make space legible in new ways by revealing information people did not know existed and providing new ways to "read" the legibility of spaces. I also described how Explore works by using algorithms based on other people's check-ins to suggest locations. These algorithms proved useful in showing locations my participants had not been before and telling them why they should go there. While more of the participants I spoke with used Explore when they were somewhere new, some do use it while in areas they are more familiar with as a way to find new locations that may be similar to the locations they already go, as this quote from Danny shows:

Danny (26, Raleigh, NC): Well, I really like that. I like when I'm stuck in a rut and bored with my option. It [Explore] tells me where I can find places that I'm more likely to like. I think it's interesting how they do it, especially from an engineering perspective. It's like the app knows what I like and makes recs based on that. It hasn't lead me wrong yet.

Suggestions based on search terms and locations one's friends have checked in are not the only way Foursquare can make nearby space more legible. It also works as a sort of

marketing tool, giving users the option to sort nearby locations through the Explore feature based on which ones offer Foursquare specials. My data suggests that Foursquare specials can be a successful way for businesses to highlight their locations to users, and my participants do often choose locations based on which ones offer them the best specials. Once again, the utility of sorting locations by Foursquare specials depends on the context of the user. Most people I spoke with will not go to a location they do not like to save 5 USD because of Foursquare. As Ainsley (24, New York City) told me, “I’d rather have a fun time than go to a place just for discounts.” In addition, if people already have their mind set on a specific location they are unlikely to change their mind based on the modest Foursquare deals. However, in certain situations, Foursquare specials directly influenced my participants’ mobility choices.

Almost everyone I spoke to had used at least one special, though this did not necessarily occur because they specifically search for a special. They were particularly likely to search out specials when they had no previous plans or were somewhere unfamiliar. In these situations, they were not looking for particular locations, so the opportunity to go to a location that offers a free beer or an appetizer lead them to choose that over somewhere else that had no offers. The first situation is represented by Ginger’s quote below. She wanted to go out but had no plans and wanted to find a new bar in her area she had not been to before. In this way, the one bar that offered a special stood out over the other bars she could have found through Foursquare.

Ginger (24, Arlington, VA): Uh yeah. I actually did that for the first time recently. I was just bored and wanted to find somewhere new so I decided to go somewhere

that had a cool special because it was all the same to me and I had no idea where else to go. Ended up with some solid happy hour priced beer so it worked out.

The other situation in which specials were especially successful in highlighting locations was when people were traveling and used Explore to find a nearby location. With no attachment to anything nearby, the special brings added attention to the location for the traveler. Zooey (33, Raleigh) is an example of this. She works in the pharmaceutical industry and her previous position required her to travel upwards of four days a week. When she was staying at hotels in different towns and cities, she would often use Explore to find places to eat, and the ability to search for nearby specials affected the locations she would read more about. For Zooey, the special was not enough to determine her choice for dinner; she would still check out a location after seeing the special, often by checking on Foursquare tips—which I address in detail in a later section—or by using Yelp to see others’ reviews. However, the specials would highlight certain locations she may not have found and led her to check them out to see if the location was okay:

Zooey (33, Raleigh, NC): I also use the Foursquare special a lot too. I would use those because some of them would have half priced apps for newbies and stuff

Me: So you would actually end up going to those places because of the specials?

Zooey: Yep definitely sometimes. I would check out the place too, but it would lead me to looking at that location when I wouldn’t have done that without Foursquare. I may have found it anyways, but maybe not.

Finally, Foursquare worked as a spatial search engine in a social way as well. Using Explore, people can see what locations are currently trending on Foursquare, meaning they can see which nearby locations currently have the most other Foursquare users currently checked-

in.<sup>55</sup> By looking at trending locations, people can see the locations that are currently popular with Foursquare users, information that would have been difficult to access without a spatial search engine like Explore.<sup>56</sup> While this is an interesting function, the participants I spoke with who were aware of this capability reported being more interested in where their specific friends go than an aggregate representation of the location of other Foursquare users they do not know. While a spatial search engine that shows which locations are trending highlights the current popularity of locations, it does not tell users anything about the types of people at those locations. From my data, I found that a more successful way that locations were highlighted in social terms came from the check-ins of the people they actually know, which as I discuss in the next category, work as a way friends can endorse locations through check-ins.

**Digitally endorsing locations through check-ins.** Checking in on Foursquare is a social act. It shares one's location with the other members of one's social network. As I discuss in the next chapter, however, relatively few of these check-ins worked in a way that encouraged my participants to directly meet up with their friends. Often, check-ins instead function as a social way to endorse certain locations to one's social network and encourage people to explore the city by going to those locations. By checking in, people highlight

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<sup>55</sup> The “what’s trending” feature in Foursquare is similar to early LBSNs like Citysense that provided heat maps people could use to see which places had the largest collection of other Citysense users (Sutko & de Souza e Silva, 2011). Citysense is only available in San Francisco, and despite being released in 2008, has not moved past the testing stage. Sutko and de Souza e Silva (2011) call these anonymous interfaces because they are based on aggregating information rather than the identities of individual users.

locations that friends may not have known exist or may have never considered visiting. This information works as a personalized endorsement in a way that is often more persuasive than the anonymous, aggregate data about which locations are trending on Foursquare. People tend to trust friends' opinions in general, and the same is true on Foursquare:

Dolores (29, Washington, DC): Yeah actually it makes me more curious. I think "why do they keep going to this particular restaurant? They must really like it." So it does really keep me informed because I assume my friends have really good taste so I care where they go. If multiple friends go to the same place then I assume there must be something cool happening.

A good friend's check-in highlights a location, either bringing attention to previously unknown locations or making someone curious about why a friend would want to go to an already familiar location. Just as in any other social network, how important of an endorsement the check-in actually is depends on the friend. As Danny describes, he only takes the check-in seriously if it comes from a friend whose opinion he trusts:

Danny (26, Raleigh, NC): Totally depends on the friend. Like I said, not all my Foursquare friends are good friends. But...if, you know, it was someone whose opinion I trust, I would definitely be more likely to check out a place out if friends went there.

The tracking of friends' check-ins in the ways described by Dolores and Danny works as a different way to explore the city. Just as the Explore function highlights certain locations through algorithms, check-ins highlight certain locations through the mobility of one's social network. They can make a city more legible through the social sharing of location information, casting light on locations as a digital, social endorsement. As Danny's quote suggests, the fact that these check-ins come from one's own social network also gives them context that is not available in aggregated information on what's trending or on public review

sites like Yelp that aggregate the reviews of all users. The context allows people to weigh check-ins differently depending on the opinion the person holds of the friend checking in, and the information people know about their Foursquare friends can give certain check-ins even more weight. For example, Ainsley (24, New York City, NY) found a small market in her neighborhood because she saw that two friends had checked in there. However, she did not go just because those friends went. She decided to go because she knew that those Foursquare friends live quite a distance from the market and were going far out of their way to shop there. Because the check-ins came from people she knew outside of Foursquare, she was able to place their check-ins in greater context, and they were more persuasive because she realized the lengths her friends had to go to get to that market. Because of that information, their check-ins meant more to Ainsley, and she chose to explore the market and has since been back many times.

These examples show that Foursquare check-ins can work as endorsements of locations. People can follow their friends' paths through the city and other people's mobility can suggest new locations for the user to explore at a later date. They are not, however, the only way people can endorse or share information about locations on Foursquare. As I discussed in chapter two, people can also use mobile annotation to write tips about locations. In the following categories, I explore the issues of legibility and exploration that pertain to the tips that become new ways to read and write the city.

**Revealing the unseen through the reading of space.** Foursquare tips are a form of geotagging in which people's annotations are attached to the specific locations they

describe. Geotagging is a common element in many location-based services and LBSNs, including popular applications like Yelp, Urbanspoon, and Where. With Foursquare, any time people check-in to a location they can read through the tips. They can also read through the tips when they are searching for a location, giving them the ability to make mobility decisions based on what people have written about a location. These tips play a significant role in how some Foursquare users navigate space by providing them with information about nearby locations.

Just as with the Foursquare Explore function, tips were more likely to impact my participants' mobility choices when they were either somewhere new or had little prior preference about where to go. Most participants told me they looked at tips and paid attention to them, but not to the point that they would not go to a location they had already decided to go just because it had poor tips. For example Lionel told me that he and his girlfriend occasionally used tips to find places to eat, but if they were already set on a restaurant, a bad tip was not enough to change their mind:

Lionel (62, St. Augustine, FLA): Yeah, I mean I pay attention, but there aren't that many options in my town. So if I want Mexican, I'm not going to not go to a place just because someone else doesn't like it.

Rather than determining behavior, tips often work as an additional marker that help people make up their minds rather than change their minds, meaning they are particularly useful when people are somewhere unfamiliar. For example, Claudia (28, Raleigh) used Foursquare tips as a way to choose which bar to go to when visiting New York City. She did not know much about the surrounding areas, so the tips were a way to access other people's impressions and influence her decisions.

In this way, tips work as another way people can use Foursquare to make space legible, and tips can affect how people read the nearby space and choose where to go. Most often my participants use tips to explore in concert with the other exploration functions I described in the section above. They find locations using Explore or by clicking through the nearby locations list and then read tips to see if they are positive or negative. The tips work as a form of mobile annotation that shares information about locations that people would not have been able to access without the digital layer that makes up the hybrid spaces of Foursquare.

Not all tips on Foursquare, however, are reviews of locations that come in positive or negative form. Tips actually include diverse types of information that can tell people a great deal about a location, and merely viewing Foursquare tips as reviews (like on applications like Yelp) misses much of the richness that makes up the mobile annotations of Foursquare. For example, my participants commented on a wide variety of tips they had found useful, ranging from the best places to stand in a music venue to which car on a DC metro line tends to be the last to get crowded. In addition, two of my participants told me they found a place to smoke at an airport by logging into Foursquare and going through the airports' tips, and another participant—Mark (29, Minneapolis)—used Foursquare tips to find the bathroom in the Minneapolis airport where former Senator Larry Craig allegedly solicited a man for sex. Some of these tips are playful and some are informational in nature, but they all show how tips that people read can work as an extra digital layer that augments the information present in a location.

All of these examples show that location-based platforms like Foursquare allow people to share their experiences in new ways, and those experiences can have an effect on how other people “read” a location. Not all tips, however, come from other individual Foursquare users. In my data, I found that some of the most persuasive tips a few of my participants drew from came from companies that created Foursquare accounts and wrote tips about locations. The next section details branded tips and discusses how my participants used these branded campaigns to explore the city and increase the legibility of locations they visited.

**Reading branded spaces.** Many tips come from companies that use Foursquare as a marketing tool, not by offering specials but instead by marketing their expertise in the form of Foursquare tips. Earlier, I discussed how friends’ check-ins can be influential as endorsements of location because people often trust their friends’ opinions over those of strangers. In a related though different way, some users also rely heavily on branded promotional campaigns as a way to explore the city. Just as friends’ check-ins come from a trusted source, tips from companies people trust also make space legible in new ways and encourage Foursquare users to explore their city.

The branded campaign that had the most impact on my participants was the History Channel Foursquare account, so I will describe that in detail to give the reader an idea of how these campaigns work. The History Channel has a Foursquare account that people can follow (as of February 2012 the account has 290,000 followers, compared to the History Channel’s Twitter account that has 199,000 followers). Because these accounts are listed as “celebrity”

accounts, people can follow them like on Twitter without being “friends” with the account. Then, if they check in anywhere at which the account has left a tip (The History Channel account has currently left over 1500 tips) that tip appears as soon as the person checks in. The tips will often suggest other historical sites that are linked to the site to which the person is currently checked in, and they give people historical information about the location and tell them specific things to go find. For example, Foursquare users at the Monument Terrace in Lynchburg, VA who follow the History Channel immediately see the following tip when they check in: "In memory of approx. 1,100 Confederate soldiers buried at UVA; 4 bronze tablets carry the names of soldiers buried at the cemetery with 17 blank spaces on the tablets representing unknown soldiers." The fact that the History Channel has left a tip at a location validates that location as historical in some people’s eyes, and some people enjoy following the tips to find things they otherwise would have missed:

Leo (34, Atlanta, GA): The History channel had a tip when they first rolled out their original historian US based badge, they had several places and tips in Atlanta, and one of them was this Magnolia tree at the east in the middle of the old baseball park in Atlanta, and that tree still exists even though the baseball park is long gone, and I had heard about that thing for a while. But because of that history channel tip, I knew exactly where it was now and had to look it up on Foursquare. I was like, ok, I’ll go check it out. I’d been working towards that badge [The official History Channel badge] anyways, and I’d been in Atlanta 20 years and had never actually seen the tree, and so that branded campaign modified my behavior to go do that.

These branded campaigns work by providing people with information through tips, and users often trust these tips more than others because they come from a trusted source. The History Channel is far from the only company that uses Foursquare to share information through tips. Another of my research participants—Fitz (31, Raleigh, NC)—follows a number of television networks that leave tips telling people about movies or television shows that were

shot at specific locations. Josiah (29, New York City, NY) follows MoMA and the New York Times to see the tips they leave on locations around New York City. There are currently hundreds of brand pages on Foursquare that people follow for specific information, ranging from hyperlocal news information to information about tourism. These accounts share information with people they would not have otherwise had, and just as a close friend's tip means more than a stranger's, a tip from a company one trusts means far more to many people than the average Foursquare tip.

These branded campaigns also often include specific badges created by these companies. The badges also influenced my participants' mobility through the addition of gaming elements. Later in this chapter, I discuss how gaming through Foursquare impacted how people chose where to go and how they relate to locations. Before doing that, however, I first move on to a discussion of the tips my participants wrote about locations to show that Foursquare is not just a way for people to read space in new ways; it can also be a way for them to help write the spaces others will read.

**Writing space.** Unsurprisingly, most of the tips my participants reported writing about locations were similar to the tips they reported reading about locations. Many of their tips focused on reviews of restaurants and advice for other people dining at those restaurants. For example, Donna (27, Cincinnati, OH) leaves tips telling people to avoid certain dishes; Danny (26, Raleigh, NC) leaves tips telling people about good beers a bar may have; and Claudia (28, Raleigh, NC) leaves a lot of tips about cakes people should order. There were many similar examples in my data.

Not all tips my participants write concerned impressions of locations and dishes, however. The tips my participants write often contained information people would have no way of knowing if they did not use Foursquare. For example, the quote below concerns Dolores—a food writer—sharing information she has about restaurants with other Foursquare users.

Me: Ok, what kind of places do you write tips for?

Dolores (29, Washington, DC): Oh...mainly for specific dishes. Uhm...let's see if there's something to avoid, or if there's a particular trick that I learned.

Me: What kind of trick?

Dolores: Like something that's off the menu. There's this restaurant here in DC that has this phenomenal dessert that isn't on the menu. I think other people should know. It's not like a total secret. More of an open secret that those kinds of dishes are on the menu.

In this quote, Dolores discusses writing tips that tell people about dishes they were otherwise unlikely to find out about. Other participants reported leaving similar tips. For example, Jed (26, Charlotte) leaves tips for other vegans about vegan deserts his two favorite restaurants have but do not list on the menu; Claudia makes a habit of leaving tips about specialty drinks certain bartenders make that are not advertised. Others leave more playful tips at their friends' work, telling people to ask for their friend by name and bring up some personal event. These are all examples of people writing about experiences in a way that is designed to share information about a location with other Foursquare users. They write space as a way to affect how other people read that space, whether they are writing about a secret cake or a friend who works at a bar.

Another, more exceptional example of one of my participants writing about his experiences to alter the legibility of locations comes from Toby (34), who is an amateur

photographer in Cincinnati. Toby created a list of the best places to photograph in Cincinnati that now has hundreds of followers. He uses tips as a way to give people who check in detailed instructions about the best angles and times to take photographs at these sites. People following his list of locations to photograph can go to those locations and then rely on his tips as a way to capture images in ways they would likely not have been able to do because they are unfamiliar with that location.<sup>57</sup> He views the things he writes about photographing locations as a way to help other Foursquare users and highlight some of the nicer parts of Cincinnati. By writing this space in new way, Toby is able to share his expertise with the goal that people will look at the location differently by following his advice on setting up their cameras.

Both the reading and the writing of space are important for understanding how Foursquare can affect spatial legibility. By allowing people to share location-based experiences with others in new ways, tips can affect how people view the locations to which they check in. Tips can do so in a variety of ways, ranging from affecting what people might order to how people may position themselves in a location to take a specific photograph. In the next section, I explore the other major thematic grouping of categories that arose in my first core category that also affects how people view locations, albeit in different ways: the gaming elements of Foursquare.

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<sup>57</sup> Interestingly, Toby's example shares similarity with some of the earlier photographic practices surrounding the 1893 World Fair in Chicago. Gordon (2010) discusses how many people who attended the fair with handheld cameras sought to capture the same photographic angles that were popularized in magazines about the World Fair. Toby's tips are basically a how-to guide explaining the best ways to photograph a location and are similar to these magazines' descriptions of photographing the World Fair.

## The Digital, Ludic Layer of the City

The tips and Explore function both impact how people relate to location. People use Foursquare as a spatial search engine and they share impressions and information about the locations they visit. To some degree, these capabilities are also found in other applications like Yelp and Urban Spoon that let people search based on their physical location and then share other people's reviews of nearby locations. One of the major things that differentiates Foursquare from applications like Yelp, however, is that it includes gaming elements. Foursquare is not only used as a search platform; it also encourages behaviors by adding a ludic layer to physical space.

The game elements of Foursquare are viewed differently by different users. As I mentioned in the introduction of my dissertation, Foursquare is a relatively new technological artifact, and its meaning and utility is in no way set. Some people use it for social purposes as we saw earlier in this chapter and will see in the next chapter. Others focus more on the gaming elements, scoring points and collecting badges based on their mobility. The game elements contribute to interesting ways that people use Foursquare and affect both mobility choices and the social elements of the application. In the following subsections, I detail how the Foursquare's game elements can affect how people see surrounding space and the mobility decisions they make.

**Scoring points, competing over the everyday.** As I explained in chapter two, every time people check in to Foursquare, they get points. Those points go to the leaderboard (which includes only their Foursquare friends), and they can see how many points they have

compared to their friends. The leaderboard also ranks them, so they can see how their point total compares to the rest of their Foursquare network over the last seven days. Points are not distributed equally for all locations. People get more points for checking in to new locations, new categories of locations, locations where they are already the mayor, and locations they are checking in to with one of their Foursquare friends.

Most of the Foursquare users I spoke with enjoy the points. They enjoy being rewarded—even though the reward is only points that do not translate to any concrete reward—for going to locations and performing everyday activities. The level of involvement with the points varies significantly among users, with the majority of my participants telling me that points are a fun addition but not something they take seriously enough to frequently go out of their way to score more points. The points often do become a competition, but not an overly involved competition because in most situations, people cannot hope to compete with other friends who have more active lifestyles and collect thousands of points each week. For example, Doug enjoys the points, but he works 9-5 and his wife recently had a child, so he only collects large point totals on the weekends when he has the opportunity to check out new places. He has friends who check in everywhere he cannot catch them on the leaderboard, so while he pays attention to the points, he knows he is not going to win and does not force himself to go out just to get points:

Doug (37, Indianapolis, IN): Eh, as serious as I can. I do try and get as many points and make use of all my check-ins if possible. If I know that I'm one day away from a seven or a ten day streak at the same place I'll try and get that check-in to get extra points. Likewise, if I do get a mayorship, I like to get that extra 5 points. So yeah, I do take it fairly seriously, but because I'm working M-F I do tend to visit the same venues, so maybe on the weekends or on holiday I visit new venues or venues I haven't been to for a while to get bigger points, so I don't strive to be at the top of the

leaderboard because I just can't. Of my friends now, I'm probably further down the scoreboard than most of them.

For someone like Doug, Foursquare becomes somewhat of a weekend game that he can play with much more involvement when he is not hindered by his work schedule. For others, the points rarely affect where they go, but the points can make people's lives and relationships to certain locations legible in new, often interesting ways. For example, while many people told me they do not change their mobility patterns and choose one location over another just to get points, they still enjoy what the points can tell them about a location and their past experiences. In social media terms, this is the "surprise and delight" factor of Foursquare (Kerpen, 2011), meaning people receive information about their behavior that surprises them and can make that experience more playful. For example, one participant was surprised to see that she received more points for checking in to her first Vietnamese restaurant, another received more points because his last check-in at that location was over six months ago, and another participant received extra points for checking in with one of his Foursquare friends for the first time in over a year. None of these people realized they were going to get those extra points for checking in and their enjoyment of those extra points had nothing to do with the boost they got on their leaderboard. Instead, the points make their past experiences visible to them in new ways, telling them they were reconnecting with a friend or a location or that they were visiting a new type of restaurant. Here we see how game elements can be useful even when people are not playing to compete.

The descriptions above of people who enjoy the points but do not let them dictate behavior described most of the people I interviewed. Some, however, are far more serious

about collecting points. They check in everywhere they go and take their position on the Foursquare leaderboard seriously. They sometimes score over 1,000 points a week and are the reasons others do not get into the leaderboard because they know they cannot compete with these frequent users. For people who take the boards seriously, they use their point total as a way to gauge their involvement and notice if they slip down the board. They may then respond by checking in to more locations to reassert their high position on the leaderboard. Charlie is an example of this type of Foursquare user. He constantly monitors the board and changes his behavior if he notices that he has begun to fall behind:

Charlie (33, Raleigh, NC): Let's look at points for example....I do pay attention. I use them to gauge my involvement or my engagement. There are times for example, like today, I haven't checked in as often as I normally would, so I would look at that and say "well, did I drop in points?", meaning have I not been checking in enough or going out enough? That doesn't mean I necessarily drive off road just to check in, but I do have the system in the back of my mind. Plus, some of my friends are very into it. Take \_\_\_ for example. He has more check-ins than I do. So it's a matter of how close am I to his point total? If I'm like 150 off, that might be an issue

The need to get more points to compete with his friends also plays a role in Charlie's mobility choices, and he occasionally will change where he goes based on where he will get more points. The gaming elements lead him to go to one place over another, even if that second place may be slightly more inconvenient:

Charlie (33, Raleigh, NC): let's say you're driving to work and check in. On your way you stop at DD [Dunkin Donuts] to get a coffee, so you check-in. Now let's say you go to lunch, and you're done with lunch and you want an iced mocha, and you happen to be at the same DD, but checking in twice you aren't gaining points or a count towards your mayorship. So that's a situation I might be selective and grab an iced mocha from somewhere else. Also, I have times where I get past the 30 check-in limit,<sup>58</sup> not intentionally, but it just happens. And also, there have been times I knew I

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<sup>58</sup> Foursquare only allows users to check in 30 times a day as a way to prevent people from oversharing.

was at the limit or close to it, so I choose to check in one place rather than another if I'm going to get more points for the second check-in. I might decide to shout out though so people know I'm somewhere even if I don't check in. I guess there have been cases where I haven't been to a certain category where I choose to go to a new type of place for points

Charlie's case may seem extreme, and of the 36 people I interviewed, only three other people took points as seriously as Charlie; however, many of the people I talked to told me that they do not feel overly competitive over points because they have a few people like Charlie in their Foursquare network. The following quote from Danny accurately captures that sentiment:

Me: Ok, so how about other Foursquare dynamics? Do you take the point thing seriously?

Danny (26, Raleigh, NC): Well, depends on what you mean by seriously. I like the points thing. I kind of get excited when I check in somewhere new because I know I'll get more points, so that's cool. But seriously? Not really. I mean, I have a couple friends who check in absolutely everywhere, so the leaderboard doesn't mean all that much to me. I mean, I have friends who are like 1000 points ahead of me each week, so I'll never catch up to them. But I do think it's cool when I get points for going to a new type of place or something like that.

So, while their all-time high for a week may be around 200 points, they can only hope to climb to fourth or fifth position on their leaderboard because they have friends who average hundreds of points a week. This suggests that while Charlie may not represent the average Foursquare user, he is certainly not alone in his level of involvement with points.

These different examples of how points affect Foursquare use show how varied usage patterns are. Some people hardly look at points, some take them somewhat seriously, some enjoy receiving surprise points because of what it tells them about their past check-ins, and others make mobility choices based on the points system. Despite the varying levels of importance my participants impart to points, most of my participants enjoyed how

Foursquare used points to turn the things they were already doing into a game. Points, however, are only one aspect of Foursquare's addition of gaming elements to everyday life, and for many people not the most interesting element. In the next two sections, I discuss mayorships and badges, which played a significant role in affecting how people use Foursquare and choose where to go.

**Digital ownership and mayoral competitions.** Every public venue that has had someone check in at least twice has a Foursquare mayor. People earn the mayorship by being the Foursquare user who has checked in the most times at that venue. Because mayorships are awarded to whoever has the most check-ins, they often switch hands frequently as more and more people check in to that venue and Foursquare becomes more popular. While only a few of the people I spoke with are competitive about earning points, most of my participants are competitive about earning and maintaining certain mayorships. While there is often no actual reward for these mayorships besides prestige,<sup>59</sup> the competition over winning affected where people chose to go and how frequently they would check in.

Mayorships are different than points because they reward repeat visits, whereas points typically reward novelty. Many people go to the same locations far more frequently than they go to new locations, and mayorships reward that behavior. Some of my participants take a great deal of pride in being the mayor of their favorite restaurant, bar, or neighborhood and when they lose a mayorship they express annoyance and end up checking in more frequently.

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<sup>59</sup> In some cases, there are rewards for mayorships. Some venues offer special deals to the Foursquare mayor.

Here it is important to note that for most of my participants, mayorships are more about quality rather than quantity, especially as Foursquare has become more popular. Most people I talked to have been using Foursquare for a year and a half or longer, and as early adopters, many of them were mayors of a large number of locations because not many other people were checking in. As the number of users increased, they lost many of those mayorships but often still maintained a few key mayorships that mean something to them:

Molly (28, Raleigh, NC): Ok, for a long time I had a Super Mayor, meaning I was mayor of over 200 places, and this was back when I was unemployed and used to be out all the time. And I got all my mayorships at the time. Then I started working and didn't have time and kept it up for a little bit, but lost a lot of them. And then people, well, I think I've had the Raleigh Times one off and on for 5 or 6 months, and it's the same person who is always after it. I kind of feel like he cheats and just checks in from his office

Me: You could check in from your office too, right?

Molly: Yeah, but I wouldn't do that. I do find though, that I get really competitive about it and go to Raleigh Times a lot. So I was there last night and I'm coming tonight.

Me: To get your mayorship back?

Molly: The thing is, if I check in multiple times a day it doesn't count. But...if I got for lunch or something and end up drinking here at night, I'll wait until after midnight so I can check-in and have it count for a different day.

The quote above shows that mayorship battles over certain places can be quite intense.

Accusations of cheating were fairly common in my interviews, and Amelia told me she had engaged in cheating to earn a mayorship at a library:

Amelia (26, Chapel Hill, North Carolina): I have. I've actually checked in to the library when I was driving by because that was a place where I was really close to being the mayor but I wasn't. And you know, I was driving by and I started checking in because I was so close already (laughs) So yeah, I do really care about becoming the mayor.

Most of the time, however, competitions over mayorships are friendly and spurred my participants to go back to that location and use Foursquare more frequently. For example, Dolores lost the mayorship to her neighborhood and it caused her to check in more frequently. She then lost the mayorship to two of her favorite locations and she worked to get them back and actually contacted the person she was competing with through Twitter and ended up having lunch with him. Sam (62, Central Washington State) will choose a location at which he is competing for a mayorship if he is undecided among a few different locations, just as Danny ended up returning to a Pho restaurant the next day because he received an alert that he was only one check-in away from winning the mayorship.

In these examples, the gaming elements of mayoral competition affect how people choose where to go. By adding a layer of gaming elements, people turn everyday activities into a competition and that competition affects their activities. While “mayorship wars” obviously have an effect on how my participants view their surrounding space and make mobility decisions, they are also often social in ways that points are not. Because mayorships reward repeat visits, people often know whom they are competing with for the mayorship. For example, two people competing over a local bar will likely have met each other because they are both regulars at that bar. This social element made mayorship battles more interesting to many of my participants than point competitions that reward exploring rather than repetition. For example, Leo (34, Atlanta, GA) frequents bars in his neighborhood and the people he competes with over mayorships with are all his friends who live in that neighborhood and go to those bars. It becomes a friendly competition among friends and rewards loyalty to a location (which is why mayorships often play a role in Foursquare

specials). Another participant who works for a social media marketing firm told me that his entire office competes over the mayorship of the building. Whoever currently holds the mayorship gets to park in the reserved spot closest to the front entrance.

In conclusion, mayorships do affect where my participants choose to go but do so in different ways than points. Because they are more about direct competition with others, most of my participants were far more likely to choose one location over another based on earning or maintaining a mayorship than scoring more points. This encourages people to become familiar faces at nearby establishments rather than explore new locations to add to one's list of Foursquare check-ins. In this final subsection, I examine Foursquare badges, which are a Foursquare game element that can have the opposite effect and encourage people to explore new locations.

**Badge hunts and rewarding mobility.** The first time people use Foursquare they immediately receive a Newbie badge celebrating their first check-in. They then receive an Adventurer badge celebrating their tenth check-in to a new venue, an Explorer badge celebrating their 25<sup>th</sup> check-in, and Superstar badge celebrating their 50<sup>th</sup>. These badges are designed as an inducement to get people to use Foursquare and keep using the application. They celebrate usage and make users feel like they have accomplished something, even though they do not win anything concrete for earning these badges. For many people, earning the badge is enough reward in itself to encourage behaviors.

There are now hundreds of Foursquare badges, ranging from badges that are easy to get to badges that are extremely difficult to earn.<sup>60</sup> Many badges require people to go to certain categories of locations. For example, people earn the Greasy Spoon badge after they check in to five different diners, the Jet Setter badge for five check-ins at airports, and so on.<sup>61</sup> Other badges are city-specific, meaning they can only be earned when people go to certain locations in specific cities or at specific events. For example, there are many badges that can only be earned at the SxSW festival in Austin, Texas.

My data suggests that badges are a particularly successful way to induce people to certain behaviors. My participants expressed a fondness for earning badges, mostly because of the enjoyment that comes from collecting and performing tasks, an enjoyment that is frequently discussed in academic articles on gamification (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011; Jarvinen, 2009), defined as the “use of game design elements in non-game contexts” (Deterding, Dixon, Khaled, & Nacke, 2011, p. 9). Because of the prize of the badge, many of my participants would go well out of their way to explore just to get badges, especially while traveling. This is what is called a “badge hunt”, and it involves wandering around a city to check in at the locations required to get that city-specific badge. For example, one of my participants detailed a night he spent wandering San Francisco to find three bars he needed to check in to earn the Socialite badge, which can only be earned by

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<sup>60</sup> The “Local” badge is an example of a badge that is easy to get. Anyone who checks in to the same place 3x in one week earns this badge. The “Roker” badge is an example of a badge that is extremely difficult to get. Sponsored by The Today Show, people can only earn the Roker badge by checking in to the NBC studios 3x before 6am.

<sup>61</sup> For a full list of the badges that can be earned on Foursquare, go to <http://www.4squarebadges.com/Foursquare-badge-list/>.

going to three marked venues in New York or San Francisco. Another participant had a day off during a business trip to Chicago and wandered around the city with a coworker, collecting six badges in ten hours. Another participant spent a week in Pennsylvania visiting his girlfriend's family and ended up driving two hours to a small town that was offering a Pennsylvania tourism badge. All these examples show that the desire to collect badges can play a significant role in encouraging users to explore.

Others rely heavily on branded badge campaigns as a way to explore a city to collect badges. New York's Museum of Modern Art provides badges to people who visit certain galleries, and my participants told me stories of wandering through New York City to find those galleries and earn the badge. The History Channel, Bravo, MTV, and a number of other networks also offer badges people can collect by going to certain locations. The desire to follow pages like the History Channel and Brio and go on badge hunts was actually the main reason one of my participants decided to use Foursquare in the first place. He is a history buff and told me that branded badge campaigns have often determined where he goes when visits someplace new. In the quote below, he recounts one of these instances:

Leo (34, Atlanta, GA): Now I will say that because of branded campaigns that involve badges I have made a modified behavioral pattern. One example would be when I was, it was during black history month in February, and there was a brand new badge around that, I'm pretty sure Brio sponsored it, or something like that. So I pulled up their page and saw that they had tips in Atlanta or something like that, and I was driving through Birmingham, and I hadn't earned the badge yet, and there were a few places nearby I could go to on that list, so I pulled up Foursquare, found them, and ended up going to a specific museum and park, pulling off the highway, and I got the badge. It changed my way through town and I went to this museum that I never would have thought of going to driving through that town. But that branded piece of information changed my behavior, right? I have a lot of different examples of things like that. The History channel had a tip when they first rolled out their original historian US based badge that I listed to as well.

The examples of people changing their mobility patterns to go out of their way to collect badges show how the desire to collect rewards can influence behavior. The desire to collect is so extreme in some people that they become what are called “jumpers.” Jumpers cheat the system and can change their current location through IP addresses and pretend to check-in at places just to earn city-specific badges, often doing so from other countries. None of my participants had ever cheated to get a badge, and the Super Users I talked to who are familiar with jumpers expressed disdain over people who have over one hundred badges when they had clearly not been to the necessary locations to earn them.<sup>62</sup> For my participants, the delight comes from doing something to earn a badge and being able to go back and look where they earned the badge. Cheating over a badge that is not worth anything in the traditional sense seemed pointless to the people I spoke with who were familiar with jumpers:

Sam (62, Central Washington State): Also, a lot of badges are city specific. I try to get them when I can and try to do it the right way, but some people just want badges and don't care about cheating. It's pretty obvious when people have 150 badges and they obviously haven't been to the places they need to go to get them. So you can tell. I've known a couple people who use the Wifi on a place to just check in everywhere so they've been to more states and get more points. I mean, there's lots of stuff you can do, but it's kind of no fun and misses the point. I mean, when I unlock a badge, it shows the date. So I can look back and remember exactly what I was doing when I unlocked the badge, which is cool. People who cheat can't really do that.

Ultimately, most people earn badges without cheating. These badges may come as a surprise, or they may be consciously sought after. When they are sought after, they become an

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<sup>62</sup> In a presentation at the 2012 Local and Mobile conference, Haleguoa, Leavitt, and Gray (2012) examined the phenomenon of “jumping” from the perspective of the jumpers. They argued that the reason people “jump” is that their countries are not adequately represented inside the Foursquare system, so the only way for them to earn badges is by subverting the check-in system.

example of how the gaming elements of Foursquare can have a significant effect on how people explore their surrounding space. By turning the act of moving from location to location into an act of collecting, the application can turn a night on the town into a game with a goal to achieve. In this way, the design of the application allows people to see the spaces of the city as a game board to move across, with only certain locations as the pieces one needs to “win” the game and earn the badge.

## **Discussion**

The data outlined in this chapter has focused on how people use Foursquare to relate to the spaces they move through differently. In the ways detailed above, Foursquare becomes a “new lens through which the spatialities of urban space can be viewed” (Bell & Dourish, 2006, p. 120). It does so by increasing the legibility of spaces, letting people read them through engagement with the location-based digital information provided through the application (de Souza e Silva & Frith, 2012, forthcoming). As I argued in chapter two, the combination of physical spaces and digital information found in Foursquare leads to the formation of hybrid spaces (de Souza e Silva, 2006), which can impact how spaces are read. Here I want to return to the concept of hybrid space and discuss the data discussed above inside that framework.

Hybrid spaces are formed through the combination of the digital, the physical, and the social. Many of the categories I discussed show how Foursquare users move through hybrid spaces, able to access a large variety of digital, socially produced information about physical space. For example, the tips people leave about locations are social. They are produced by

users for users. They augment physical space by allowing Foursquare users to access other people's impressions and advice in much the same way earlier locative media art applications like Urban Tapestries did (de Souza e Silva & Frith, 2012). As I explained in chapter two, these augmentations can contribute to the legibility of urban spaces by "making the invisible visible" (Dourish & Bell, 2011, p. 195). Through elements like Explore, the location of friends, and digital annotation, people can read spaces in new ways. They can draw from the digital, social information present in those spaces to "render the everyday world legible in new ways" (Dourish & Bell, 2011, p. 193). Going back to my discussion of reading and writing space in chapter two, it is also important to note that people can also contribute to that legibility. Contrary to top-down applications or some art projects such as Terri Rueb's audio walks or projects like 34N 118W (Knowlton & Spellman, 2002; Rueb, 2007), users can contribute to the writing of space through their check-ins and the tips they leave at locations .

That Foursquare users occupy these increasingly legible hybrid spaces has implications for how they relate to the spaces they move through. As I detailed in chapter two, mobile technologies have often impacted the ways people engage with space while mobile (de Souza e Silva & Frith, 2010a, 2012). Foursquare does so as well, but because the information people engage with while using Foursquare depends on their physical location, it does so in different ways than previous mobile technologies like books, iPods, and older mobile phones. With Foursquare the digital information that is part of these hybrid spaces often directly influenced where my participants go in a variety of ways. As has been suggested about other location-aware technologies (Brewer & Dourish, 2008; Dourish &

Bell, 2011; Shklovski, et al., 2009), it makes these spaces legible in new ways and that legibility reveals elements that can impact choices about mobility. For example, following people's check-ins reveals others' trajectories through space and suggests new locations for my participants to go, Explore revealed similar locations my participants did not know existed, and the impressions left through tips sometimes affected the "presentation of location" and impacted the areas my participants choose to explore.

While my field work showed the ways Foursquare can affect how people relate to their surrounding space, it also showed the importance of not overestimating the impact of mobile technologies. As I discussed throughout my data analysis, the tips, Explore function, and gaming elements most commonly impacted my participants' choices in two situations: when they are exploring somewhere new or when they have little preference about where they are going. When people are set on a location, friends' check-ins, tips, and gaming elements are rarely enough to get them to change their destination, nor does the increase in geotagged information affect their decisions because they already know where they want to go. Instead, Foursquare works to nudge my participants toward certain behaviors, not determine them. Basically, how much of a role the ability to search and read space played in my participants' decision making depends on many factors that are outside the application. They often had other commitments and attachments to locations that had nothing to do with Foursquare. This points to the importance of avoiding deterministic claims about mobile technologies. My participants' larger social context determines their Foursquare usage far more frequently than their Foursquare usage determines their choices.

Another important point to make is that much of the importance of Foursquare in how my participants relate to locations has more to do with making things easier than leading to completely new behaviors. Take Explore for example. People could certainly find new places before Foursquare and other location-based services were developed. They could look in the Yellow Pages, ask friends about restaurants, or wander down the street and pick locations at random. The desire to search for a new location is not something that is caused by Foursquare. Instead, my field work suggests that the importance of services like Foursquare is often that they make these preexisting desires easier to accomplish rather than cause these desires. However, it is also important to note that the ease with which people can do things like search for nearby locations can cause changes in their mobility patterns. While people may have wanted to find a new coffee shop to go to before the development of location-based services or online mapping services like Google Maps, they may not have done so if it had required searching through the Yellow Pages and consulting a paper map.

The ability to follow friends' check-ins as endorsements of locations is another example of preexisting behaviors that are made markedly easier through Foursquare usage. As de Souza e Silva and others have argued and as I discussed in chapter two, the addition of location-based information such as tips and friends' check-ins affects the "presentation of location" (de Souza e Silva & Frith, 2012; Sutko & de Souza e Silva, 2011), shaping how some Foursquare users view locations. Before the development of location-based services, locations were still presented to people in social ways; people relied (and still rely) on friends' suggestions about locations long before Foursquare, especially when traveling to

somewhere new.<sup>63</sup> For example, E.M. Forster's *A Room with a View* features British aristocrats traveling to Tuscany, and their travel relied heavily upon the suggestions of their social network. So, the idea that friends can endorse locations goes back a long way. However, just like with the Explore feature, Foursquare makes following the locations friends like easier as the example of Ainsley and the neighborhood market showed. It does not lead to an entirely new behavior, but because of the ease with which people can endorse locations, it does increase the likelihood that my participants would go somewhere new because of where their friends go. Rather than make sweeping statements about new behaviors caused or enabled by mobile applications like Foursquare, my field work suggests that it is often the ease with which people can engage in these behaviors rather than their novelty that is important.

However, while both searching for new places and following the recommendations of others existed long before mobile applications, the gaming elements in Foursquare do suggest how mobile applications can encourage relatively new behaviors. As I detailed earlier, many of my participants did report choosing where to go because of the gaming elements, in a way fitting with Dennis Crowley's original goal to "turn life into a game" (Crowley, 2010a; Sutter, 2010). This finding is similar to work on location-based mobile games (LBMGs) that are designed to reward people for exploring. For example, Geocaching

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<sup>63</sup> Similar findings have been reported in other studies on mobile communication, particularly during the overthrow of President Estrada in the Phillipines (Rafael, 2003), the lead-up to the 2004 Spanish elections, and the 2004 elections in South Korea (Castells, Fernandez-Ardevo, Qiu, Jack, & Sey, 2007). In these examples, messages that spread were taken seriously because they came from people one already knew in contrast to mass media messages. While political protest is different than choosing a bar on a Saturday night, these examples share similarities in the way they show that recommendations that come from trusted sources mean more than advice shared by unknown others.

rewards people for finding digital objects revealed through mobile devices (Gordon, 2008); Mogi lets people compete over the collection of digital objects and some players reported changing behaviors and avoiding the subway because it temporarily took them out of the game (Licoppe & Guillot, 2006; Licoppe & Inada, 2006); and Botfighters and Alien Revolt encouraged players to hunt down other players in parts of the city with which they may have been unfamiliar (de Souza e Silva, 2008; de Souza e Silva & Delacruz, 2006; Sotamaa, 2002).

Similarly to these earlier studies on LBMGs, my data shows that Foursquare's gaming elements can encourage people to explore their cities and find new locations. My data analysis showed multiple examples of my participants choosing to return to locations because of mayorship competitions and finding new locations because of Foursquare, the most notable example of which might be the badge hunts. By adding a digital, ludic layer to the city, Foursquare can turn physical space into a game space, as scholars have noted about earlier LBMGs (de Souza e Silva, 2008, 2009; de Souza e Silva & Delacruz, 2006; de Souza e Silva & Frith, 2012; de Souza e Silva & Hjorth, 2009; de Souza e Silva & Sutko, 2008; Gordon & de Souza e Silva, 2011). Importantly, when my participants explore the city while interacting with Foursquare's gaming elements, they often learned new things about the city they were exploring. They went to historic sites to get Black History badges, art sites to get a MoMA badge, interesting bars to get a Socialite badge. The additions of these game elements lead people to parts of cities they did not know existed, suggesting support for Hjorth's (2011) argument that mobile gaming may "teach us new ways of experiencing place upon various levels" (p. 357).

Unlike with the Explore feature and following the recommendations of others, the addition of gaming elements does cause new behaviors rather than make existing ones easier. People explored new locations and even occasionally viewed these locations as items to be “collected” through pins on a map or published travelogues long before Foursquare began rewarding them with points and badges for exploring, but their exploration was not part of a larger social networking/gaming environment. With the ability to collect points, mayorships, and badges, people are encouraged to view locations as things that can be collected (Gazzard, 2011). In these ways, the gaming elements do not only increase the legibility of these hybrid spaces, they change it by “reworking our understanding of the spaces and places around us” (Gazzard, 2011, p. 417). They add the ludic layer to that legibility, turning a historical site into not only a location of historical interest but also (or even predominantly so) a location at which one can add to one’s collection of badges. As we will see in the next chapter, the gaming elements, exploration elements, and social elements of check-ins are all not only unique ways people read surrounding space, they are also unique ways people view the meaning of their Foursquare usage.

## **Conclusion**

Foursquare can become a lens through which people view their surrounding space. The different elements of Foursquare discussed above do have implications for how people relate to their surrounding space in the ways they make locations legible in new ways. People could always share their impressions of a location, but those impressions did not have the extensibility or permanence they have when someone leaves a tip that everyone else who

checks in to that location can access. Foursquare users can now read and write space in new ways, and they can use the application to find new locations in the city and turn physical space into a game space filled with digital badges, points, and mayorships. While it is important not to overstate Foursquare's impact on how people relate to space, the examples detailed above do show that it often does have some impact. As Gordon and de Souza e Silva (2011) have argued, to account for contemporary public spaces, we must also account for the digital information that is part of those spaces. For the Foursquare users I spoke with, that claim certainly rang true.

As I noted in the introduction, many of the areas covered in this chapter involved social elements. Some of the gaming elements, especially mayoral competitions, involve issues of sociability. In addition, tips and even the way the Explore feature uses algorithms to make recommendations based on one's network involve social elements. However, in this chapter I focused on my first core category and research question, which concerned how Foursquare can impact the way people relate to their surrounding space. In the next chapter, I go into more detail on how Foursquare can impact the relationships among people rather than physical spaces, building on the data analysis I began above.

## **Chapter 8: Mediating Social Connections through Location**

The second core category I used to organize my data addresses my second research question and is called “Mediating social connections through location.” This core category contains two themes that group together categories that describe related behaviors. Those two themes are (a) The dynamics of location-based sociability, and (b) Linking platforms and the presentation of self through location. The first theme includes two categories: (a) Check-ins and coordinating sociability and (b) Engaging difference, meeting strangers. The second theme also includes two categories: (a) Presenting an idealized self to others and (b) The presentation of the present self to the future self. After examining the different categories grouped inside these two themes, I then relate my findings to the conceptual framework I developed in chapters three and four.

### **The Dynamics of Location-Based Sociability**

Throughout my dissertation I have argued that Foursquare combines the mobility of mobile phones with the social networking aspects of online SNS. By sharing one’s location with friends, people can see that someone is nearby and choose to meet up with them. I found that this did occur but that the ways users view what a check-in means varied, and some participants did not view check-ins as a direct invitation to interact in a co-present fashion. In the following sections, I examine sociability through Foursquare usage in more detail, discussing the variation in how people view check-ins. I conclude this section by examining how some Foursquare users meet new people through the application.

**Check-ins and coordinating sociability.** When my participants check in on Foursquare, they almost always share their location with friends, rarely checking in “off the grid.” As I discussed in the sections on gaming elements in the previous chapter and will discuss in the presentation of self-section later in this chapter, only some of those check-ins have to do with the possibility of meeting up with friends. My participants often check in as a way to score points, earn badges, present themselves to others, and remember where they have been. In many instances, my participants check in despite knowing that there is almost no chance that anyone will be close enough to act on that check-in and come meet up. In some cases, however, people do check in in situations in which people may have the opportunity to meet up with them in a co-present manner, but there are problems with relying on location sharing as a way to coordinate behavior.

One of the main problems with coordinating behavior through Foursquare that arose repeatedly in my data was the problem of physical distance. Most people told me they do not meet up with people when they see them check in because it is simply too far to go:

Me: So...a couple of times where you would be out at a bar for example and see that someone checked-in down the street and go meet up with them?

Donna (27, Cincinnati, OH): Yeah, but most of the time they're just too far away.

Me: So you have changed what you were doing because a friend checked in nearby?

Danny (26, Raleigh, NC): Yeah, not too often, but I have. It only works at specific times though. Most of the time, people check-in too far away for me to really want to stop by. I mean, I'm not going to drive to go meet up with someone because of a Foursquare check-in.

Interestingly, however, the problems of distance were not found only in less dense, more sprawling cities. People who live in New York City, Chicago, and Washington, DC also told

me that most friends were too far away for them to coordinate through Foursquare. Whereas in a less dense city someone may be able to drive four miles in five minutes to meet with someone, in a city like New York if someone is even a mile away it can be difficult to meet up with them if that trip requires public transportation or finding a parking spot. Distance plays a major role, regardless of the city, in inhibiting the ability to meet up with people and coordinate action through Foursquare.

That being said, some of my participants had met up with friends directly because of Foursquare. These meetups mostly occurred in specific situations in which they could expect to find a higher density of friends in a geographically bounded area. Most of these examples concerned nights spent drinking in areas in which bars are concentrated. In Raleigh and Atlanta, participants told me that though their lives are spread out, their social lives on the weekends tend to be concentrated in specific areas, and they had used Foursquare as a tool to find friends and meet up with them. The other situation participants described using Foursquare to meet up with friends concerned lunch breaks at work. Because people were already congregated at an office, they were able to use Foursquare to see where co-workers headed for lunch and go meet up with them. The social situation of the work lunch lead to a higher concentration of people than most situations because the lunch options were often limited to within a mile or two of the office, making it easier to coordinate meeting through Foursquare.

Here it becomes interesting to look at the meaning of a check-in in a sociability context. I found that almost all of my participants did not view check-ins as invitations to friends for them to show up to a location. Instead, check-ins are often a form of collective

mobile communication that invite further mobile communication. Likewise, only one person I spoke with had ever directly headed to a place to meet up with a friend who had checked-in nearby without contacting the person first. Rather, the proper etiquette shared with me was to use the check-in as an invitation for a text message or a voice call.

Claudia (28, Raleigh, NC): Yeah, if I see they're checked-in I'll text them and be like "are you still there? Do you want to go to this place instead?"

Josh (34, Kennesaw, GA): Like, if I'm at a game and other people are nearby and I'll decide to text them. I don't necessarily just show up and say "hey!" I'll let them know and I'll ask how long they'll be there.

That many participants did not view check-ins as invitations to directly engage in co-present interaction makes sense for a number of reasons. Most basically, the check-in does not necessarily display someone's current location. People can check in to a location and leave a minute later or they can intentionally check in as they are leaving, which is a notable difference between Foursquare and location-tracking LBSNs like Google Latitude that share location information in real time. For that reason, most of my participants will send a text message or comment on a friend's check-in on Foursquare if they see a friend is nearby. Additionally, as I discussed in detail in the previous chapter, my participants check in to locations for myriad reasons, only one of which is sociability. My participants check in to keep a log of their mobility, to score points, and to earn badges. They do not only check in when they want people to meet up with them, and most people told me they would think it was rude to show up at a location just because they had seen a friend checked in.

Context is key to understanding the etiquette surrounding how my participants viewed their Foursquare check-ins. As many participants expressed, simply sharing their

locations with friends does not provide enough context for someone to assume that it is okay to stop by. In certain situations with certain friends, the context is understood or established beforehand, and then the situation changes. For example, Leo's (34, Atlanta) social life is mostly concentrated in a specific neighborhood in Atlanta that he goes to on the weekends with friends. He and his friends sometimes make plans to go out but also occasionally just head to that area and check in on Foursquare and wait to see if other friends stop by because they see the check-ins. In this example, it is okay for Leo and his friends to assume that the check-in is an invitation because they have a shared understanding of what it means when one of their friends check in to that area on a Friday or Saturday night. Most people do not have that detailed understanding of context, however, and the check-in instead becomes an invitation to seek more information about what the person is doing.

The tendency to contact people after checking Foursquare and seeing their location impacts sociability most frequently in a situation I label "setting the scene." Many of my participants reported that they check Foursquare before heading out. They use Foursquare to "set the scene", seeing where friends are checked in as a way to either get ideas about what they should do or find people who are out and then calling them or texting them to see if they would like to meet up later in the night.

"Setting the scene" was a way for my participants to read space by locating friends. They did not head directly to those locations because there was no assurance that friends would still be there, but they did use Foursquare as a way to begin planning for the night. Instances of "setting the scene" arose frequently in my data and were the most commonly reported way people used the ability to coordinate behavior through the Foursquare interface.

This is an example of my participants using Foursquare to find people they know; however, a few of my participants also reported using Foursquare to meet new people. In the next section I examine how my participants managed to meet new people through their Foursquare usage.

**Engaging difference, meeting strangers.** Foursquare is designed as a way to share location information with friends, but, as I discussed in chapter two, people can also use it to meet people they do not know. The most common way in which this occurred in my data has more to do with the community that has arose around Foursquare than with the actual application itself. Foursquare has an active community of users, many of whom feel emotionally invested in the success of the application. This investment is seen most obviously in Super Users who invest hours every week as volunteers for this site. But it extends past Super Users to average users who take part in what are called Foursquare meetups. For these meetups, people come together at a predetermined site to meet other Foursquare users. The most widely attended meetups occur on April 16<sup>th</sup>, a day the community has labeled 4sqday.<sup>64</sup> On 4sqday, users come together to celebrate Foursquare, and a large group of users even got Greg Ballard—the mayor of Indianapolis—to officially recognize April 16<sup>th</sup> as 4sq day in the city of Indianapolis.

The sense of community that has built up around Foursquare has given people the opportunity to meet new people at these meetup events. Note that this is not directly because

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<sup>64</sup> 4sqday began as a grassroots movement in Tampa, FLA and spread throughout the country and around the world. I spoke with one person who began using Foursquare because he randomly attended a 4sqday event while he was living in Indonesia for work.

of any of the elements in the application; rather, people meet up at these events because of a mutual investment in the growth of the application. The sense of a larger community of Foursquare users provided many of my participants with the opportunity to make connections with people they had not met before.

There are also certain uses of the application that also can lead to meeting new people through Foursquare. When someone checks in on Foursquare, they are given thumbnail images of the other users who are also checked in to that location. In some instances, people will start conversations with other people who are also checked in on Foursquare. For example, Matt has used people's thumbnails as a conversation starter to introduce himself to other Foursquare users:

*Matt (31, Atlanta, GA): Like, I've been at places before and checked in and there were several people checked in there. Even if they're not my friend, I'll pull up the list and kind of see who's there. There have been multiple times when I've been standing at a patio on a bar and see someone who has checked in standing right up to me. And then I'll just strike up a conversation with them about Foursquare. For me that element of the application is something that people just don't take advantage of. It's a great way to meet new people and chat with folks.*

From Matt's example, we can see how the shared knowledge that someone uses Foursquare can provide an opportunity to begin a conversation. While finding people through their thumbnail photos was not an overly common occurrence, it does show the potential for applications like Foursquare to link online representations of users to their offline selves and connect users who did not previously know each other.

As an exceptional example of both Foursquare community and how one can use the application to meet new people, I now turn to a detailed vignette that arose from my data.

This vignette concerns the blog 4sqLoveStory.<sup>65</sup> In the summer of 2010, one of my interview participants—Dwayne—relocated to a suburb of Atlanta. Dwayne had been using Foursquare extensively before his move, and he decided to see if he could contact anyone through Foursquare because he did not know anyone in his new home. To do that, he began friend requesting people who checked in frequently to the gym he goes to everyday. On June 20<sup>th</sup>, 2011 a woman named Elaine accepted his request and he asked her if she wanted to be Facebook friends as well so they could chat about the area. She accepted and they began conversing through Facebook and following each other's check-ins on Foursquare. On July 18<sup>th</sup>, he saw that they were both checked in to the gym and they met in person for the first time. They immediately hit it off and had their first date on July 23. One and a half years later, they are still together.

Dwayne and Elaine's story shows how people can use Foursquare to connect with others. Interestingly, however, 4sqlovestory also became an example of the importance of the Foursquare community. After telling friends about his experience, Dwayne was encouraged to create a blog to share the story with others. He did so, and Dwayne and Elaine also created a 4sqlovestory Foursquare account and Twitter account. They each maintain their individual Foursquare accounts, but any time they go somewhere together they also check in on the 4sqlovestory account. The account now has over 1700 followers, and it includes a list of tips

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<sup>65</sup> The full blog can be found at <http://4sqlovestory.com/>. It includes a more detailed version of this story and a blog that updates the relationship. Because of the rather specific nature of this story, I received permission from Dwayne to use their real names and divulge the URL to his blog. There was no way to tell this story without including identifiable elements that could lead back to them. You can also find a discussion of 4sqlovestory in chapter 13 of Gallo's (2011) *The power of Foursquare: 7 innovative ways to get your customers to check-in wherever they are*.

anyone can see that basically amounts to a spatial history of their relationship (e.g. “Turner Field: [8/28/10] Elaine takes Dwayne to his very first Atlanta Braves baseball game! Talk about strikeouts - Hudson rang up 13 Ks in route to the 12-3 victory over the Marlins! Boy is this stadium beautiful!”). Through their linking of their personal story to the larger community, Dwayne and Elaine have made it so that strangers can contact them and let them know if they are checked in nearby. They can also contact them through the 4sqlovestory Twitter account that broadcasts their check ins. Their relationship started because of the ways people can meet strangers through Foursquare. It has now grown into a story experienced by over a thousand people and has led to the creation of new friendships through the sense of a larger Foursquare community that shares in their experiences.

### **Linking Platforms and the Presentation of Self through Location**

The presentation of self is important in both computer-mediated and face-to-face settings. People actively choose to present certain aspects of their self to others as a way to manage the impressions they generate. In my field work, I did find occurrences of people consciously choosing how to present themselves to their Foursquare network through their check-ins, but the elements of the presentation of self often extended past the Foursquare audience. Notably, how people present themselves through Foursquare has a great deal to do with the other social networking sites (SNS) to which they push their check-ins. In other words, people are more likely to be discerning about how they present themselves through location when pushing their check-ins to Twitter and Facebook than when the check-ins are confined to Foursquare. I also found that the elements of the presentation of self often played a major

role in how people use Foursquare as a mnemonic device. I labeled this “the presentation of the present self to the future self,” and I discuss it in detail after explaining how the presentation of self to others worked for my participants.

**Presenting an idealized self to others.** In chapter three, I discussed how it has been observed that people choose not to check in to certain places because they want to present only certain parts of their mobility to others (de Souza e Silva & Frith, 2012). I did find instances of this in my data. Some participants discussed how they avoided checking in to McDonald’s or Walmart because they did not want others knowing they were there. For the most part though, my participants shaped their presentation of self on Foursquare not because of embarrassment about certain locations but because of the recognition that their audience might not want to see 30 check-ins a day. Many of my participants told me they did not check in to certain locations, such as gas stations and work not because they were embarrassed they go to those locations (in the way a Facebook user who builds a reputation for liking independent music might be embarrassed that he is a huge Katy Perry fan), but rather because they do not feel that information is interesting, which is important to the presentation of self in the way they avoided sharing uninteresting information about themselves to their Foursquare friends. They would still check in at many locations throughout the day, but might avoid checking in to work and gas stations they felt were repetitive. A few of my participants did not care about overloading their Foursquare friends and did check in the maximum number of times a day (30).

While my participants tended to avoid rote repetition when sharing their check-ins with their Foursquare audience, they tended to show a more concerted effort to highlight only certain aspects of their self through which check-ins they decided to push to two other social networking platforms: Twitter and Facebook. All of my participants push at least some of their check-ins to Facebook or Twitter (sometimes both), and they often put much more thought into choosing which check-ins to highlight when sharing with these services than with their Foursquare audience. Because their Facebook friends and Twitter followers were not members of Foursquare and not as accustomed to seeing people share their location, it was more important to my participants to be discerning in which locations they highlighted about themselves on these platforms. Most people focused on pushing particularly interesting or novel locations, as the three quotes below show:

Me: Do you only push certain check-ins to Twitter or do you just do it by default?

Donna (27, Cincinnati, OH): Yeah normally I don't post it so much anymore. I'll post it if it's somewhere new or if it's somewhere interesting. Or if I'm at this really popular park in Cincinnati, I'll post it just so other people can see.

Danny (26, Raleigh, NC): Uhm...well...interesting stuff I guess. If I'm going to a bar I go to a lot, I'm not tweeting it. But, if I'm at like a show or something really cool, then I'll tweet it. Basically, I push the check-in if it's something I would have tweeted about anyways.

Abigail (28, New York City, NY): I think I did at one point. Well I have it linked up to all my different accounts, and sometimes I'll tell it to publish it to Twitter for certain check-ins. It doesn't automatically go anywhere. I only do it if I'm somewhere extra cool or if I have something interesting to say. Then I'll push it to twitter.

These three quotes all emphasize the filtering of aspects of the self that occur in other social networking sites like Facebook. People consciously choose locations to highlight to their

Twitter followers and Facebook friends (mostly Twitter followers) as a way to share their interesting experiences, and as some participants told me, as a way to make themselves seem more interesting than they feel they truly are. My participants were far more likely to push their check-ins to special restaurants, shows, or vacation spots to Twitter than they were to push the majority of their check-ins to these other platforms.

The choices of which check-ins to push and locations to highlight details interesting aspects of the presentation of self and how that presentation is mediated by the platform and the nature of the social network. My participants were more willing to check in to many locations on Foursquare and present a fuller picture of their mobility for a few major reasons. Most obviously, Foursquare is a platform built around check-ins. People who use the application are expected to check-in when they go out, so their social network has the expectation that someone may check in multiple times a day. The network is also often a more limited audience than on Facebook and Twitter, and by agreeing to be someone's Foursquare friend, one is implicitly agreeing to follow their check-ins. In these ways, the network and the implied expectations of the network mediate how people present themselves on Foursquare.

Participants also told me that the design of the platform plays a major role in why they are often less discerning over how they present themselves through location on Foursquare. For some, the game elements built around points and collecting badges are important, and for people who enjoy those elements it makes sense to check in everywhere because they can collect more points and mayorships. In some instances, the understandings of what Foursquare as an application *is* come into conflict, with some of my participants who

use the application for more social/coordination reasons—and are consequently less likely to check in at mundane places—expressing mild annoyance over people who focus on the game elements and check in everywhere.

Another way the design shapes the willingness to check in frequently is the interface of Foursquare. On Twitter, if you follow people, you follow all their tweets. On Facebook, for the most part you can either hide someone completely from your timeline or see all their updates. There is no way to only follow some of their tweets or updates. On Foursquare, people can choose not to receive alerts about a person's check-ins, meaning that they will not get email notifications or notifications on their phones. The person will still appear in the list of their friends' locations when they log in to Foursquare, but in that case, it does not matter how many times they check in because only their most recent location appears in the list. By allowing people to filter who they receive notifications about, Foursquare enables others to be freer with their check-ins and present themselves in a less discerning way because others do not have to receive updates about those check-ins. They can then choose to only receive notifications about certain friends. So, for example, Josh tells people when they friend him that he checks in frequently and they should turn off notifications if they do not want to be overloaded with his check-ins:

Josh (34, Kennesaw, GA): The thing is for me, I have thousands of check-ins right now, so uhm, I probably average like 8 a day, and a lot of times more. So some people might not want to see every check-in on their phones. And I tell them they can turn off pings and take care of that.

The understanding of audience and context on these different social networks plays a major role in how my participants use check-ins to present themselves. People follow someone on

Twitter to see all their tweets, but not everyone who follows is a Foursquare user, and they are not necessarily following someone on Twitter with the agreement to follow their location. For that reason, people have to speak to a wider audience on Twitter and be more discerning about which check-ins they decide to highlight and which locations they use to present themselves to others. Some people do not recognize the multiple audiences they are speaking to on Twitter and can annoy followers who never signed up to follow a large number of

Foursquare check-ins:

Danny (26, Raleigh, NC): I had a guy I followed on Twitter who tweeted like 20 Foursquare things on twitter a day. Fuck that guy. It was terrible. I probably only tweet like a tenth of my check-ins

Me: Do you link Foursquare to those other platforms?

Toby (34, Cincinnati, OH): Sometimes, if I choose. I never just do it by default. I've had to unfollow people who just tweet nothing but Foursquare check-ins.

All of my participants who do push their check-ins to Twitter or Facebook did express some recognition of audience, which is central to the idea of the presentation of self. Pushing information people do not want can put someone in a negative light with one's audience on these platforms in different way than on Foursquare. As I mentioned earlier, on Foursquare checking in is expected. On Facebook it is not and my participants expressed the belief that sharing all their check-ins would annoy friends:

Jessica (27, Raleigh, NC): I feel like I didn't really want all my Facebook friends to know every time I got a badge or checked in some place. A lot of my friends when I was still in school thought it was weird and didn't get it. I didn't want to clog their timeline with stuff they didn't want to see

Sam (62, Central Washington State): Well I do, but it annoyed people. Some things I'll go ahead and send to Facebook and Twitter, but I don't send every check-in. Pushing 25 check-ins a day gets people discouraged.

The mediating effect of these networks shapes how selective people are when sharing with an audience outside of the Foursquare application. So, for example, one of my participants is into the local Seattle music scene and pushes his music venue check-ins to Twitter as a way to share with his followers that he is attending a show. Within the Foursquare application, he checks in frequently, but the only check-ins he pushes to Twitter are music related. Another participant, Dolores (29, Washington, D.C), is a food blogger and she pushes all of her visits to restaurants to Facebook and Twitter because she has friends on both those platforms who are interested in food.

All of my participants only pushed certain check-ins to Twitter and Facebook, but regarding how often and where they check in on Foursquare, I found a great deal of variation. Some people avoid checking in to places they go everyday like work and their neighborhood because they do not think it is interesting to share. Other Foursquare users do check in literally everywhere they go, averaging over ten check-ins a day and often reaching the maximum of 30 check-ins a day. As I mentioned earlier, for some the application is about collecting as many locations as possible. For others, it is about highlighting interesting places or only checking in as a way to meet up with others. These uses vary and conflict in some cases, but regardless of how people use Foursquare, I found that all the Foursquare users I spoke with used their check-ins to present certain aspects of themselves to other platforms as

well, and doing so required a finer-tuned understanding of audience that was always necessary when sharing only with Foursquare friends.

**The presentation of the present self to the future self.** The previous section discussed how people use Foursquare to navigate the constraints of audience both inside the application and when sharing with other social media platforms. A category that I identified in my data, however, concerned not the presentation of self to others but instead the presentation of the present self to the future self. In other words, I found that many of my participants use Foursquare as a mnemonic device to log their activities and the locations they visit so they can revisit that information at a future date. Through checking in and using outside applications to remind them of those check-ins, many of my participants are conscious of how they are presenting their present self to their future self through memory, and this can be the main reason they use the application:

John (35, Silver Spring, MD): I would say actually the number one reason I use it is, as kind of like a journaling tool as a way to kind of trace my activity throughout a year or whatnot. It's nice to go back and see, like occasionally I'll leave comments and what not about certain places, but it's usually based on the series of things I do on the day that I'll remember the context. So for me it's kind of like a way of linking a certain period in my life to, kind of an archiving of it through place. For me, it's kind of like a journaling or archiving tool.

Many of my participants reported using Foursquare as a memory tool, and they informed me of outside applications that aid its utility as a mnemonic device. On the Foursquare website, users can go back and look through the entire history of their check-ins. However, the list of locations and times is limited in its functionality. Most of my participants instead turn to outside applications, most commonly 4sqmap (<http://www.4sqmap.com/>) and

4sqand7yearsago (now called Timehop <http://timehop.com/>). 4sqmap uses Foursquare's API to provide a much richer data set about people's check-ins than the Foursquare website. It provides maps of all of people's check-ins, a list of the venues they have checked in to (and the frequency), where their badges were earned, and the categories of the locations they have checked in.

4sqand7yearsago (now Timehop) is also a third-party application that works with Foursquare's API to provide people with different ways to remember. To use 4sqand7yearsago, Foursquare users give the site their email address. They then receive an email each morning that informs them of all the locations they checked in to on that date one year ago. By receiving reminders of their location and mobility from one year ago, people use Foursquare check-ins as a way to remember their past activities.

The links expressed between locations and memory were significant in my interview data. By using these outside applications, my participants were reminded of their past behavior, memories that could be poignant in cases in which they recently moved or had entered a new stage in their life. For example, Ainsley recently graduated from college and took a job as a social media expert with a firm in New York City. She began using Foursquare extensively while a senior at a large university, and the daily reminders she receives from 4sqand7yearsago are a reminder of the college life she left behind.

Ainsley (24, New York City): Ah, it's very cool. You sign up and they send you a daily email of all your check-ins one year ago. So you forget what you were doing, but then you get this daily reminder. It's awesome. It made me sad at first because it would email me all these bars I was at in college.

Conversely, the daily emails can also serve as a reminder that people may not be exploring as much as they should by showing them they are doing the same thing this weekend they were doing that time last year:

Donna (27, Cincinnati, OH): I do use 4sq and 7 years ago... I do like that service. It's really cool when a vacation or something that was a lot of fun when it pops up, but it's scary when something pops up and I'm like "uh, I was there this weekend last year. I'm going there this weekend."

4sqmap works differently than 4sq and 7 years ago, but it also works as a mnemonic tool and influenced where some of participants go and where they choose to check-in. 4sqmap populates a robust data set that includes information about whether someone checked in to a place with a friend, all of their check-ins over a certain time period, and lists of venues and categories. Because it provides so much detailed data about people's past mobility, it is a useful tool for remembering activities, especially activities that may be out of the ordinary like a bachelor party or a vacation. For example, Fitz discussed with me a bachelor party (stag party to the British) he went to with his friends in England. He used 4sqmap as a way to go back and reconfigure in his mind what was a busy weekend with his friends:

Fitz (31, Raleigh, NC): It's a nice way to remember if I spent a day with someone. For example, I was away on a stag weekend and we went out to Newcastle which is 3 hours away, so I was going to brand new places I'd never visited before...but I used 4sqmap to go back to those venues to see the photos posted and also it gave me a history and a list of which venues we visited

Others use 4sqmap for more general reasons, not so much to only catalog specific instances like a bachelor party but instead to archive the mundane aspects of one's everyday life and go back and look over past mobility:

Sam (62, Central Washington State): Yeah, my favorite is probably 4sqmaps. It breaks down all your check-ins into categories, so you can see how many bars, airports,

whatever you've checked into. That's a cool way to see how often you go to new places and things like that.

As the last sentence in the quote above shows, 4sqmap as a mnemonic tool can make one's past mobility legible in new ways. My participants reported using the mapping function to spatially visualize their past mobility, and the ability to break down check-ins by frequency and to see the locations one checks in to often shed light on activities they do without thinking. For example, two of my participants told me that they had no idea how often they went to bars until they started using 4sqmap and realized they had checked in to bars far more frequently than they would have thought over the last three months. Another participant told me he did not realize that he had fallen into a rut with his lunchtime choices at work until he looked at 4sqmap and realized he had been going to the same Chinese restaurant around three times a week for the past couple months. By making legible these activities that become second nature, 4sqmap can cause people to reflect on their choices.

Interestingly, for my participants who use Foursquare as a mnemonic device, they often engage in many of the same activities that are discussed in literature on the presentation of self in SNS and LBSNs. Both 4sqmap and 4sqand7yearsago often influenced when my participants check in and where they go because of the conscious recognition of the locations they are adding to their data set. In other words, my participants who use Foursquare as a mnemonic tool often consciously choose where and when to check in based on the locations they want to be reminded of. Just as I discussed how some people do not check-in everywhere because they do not want to share uninteresting information with their friends,

they often do not check-in at mundane places like work and gas stations because it pollutes the data set they use to help remember their life:

Danny (26, Raleigh, NC): I don't check-in to gas stations or anything like that because I just don't really care about remembering that I went to a gas station. I also don't check-into work or my neighborhood anymore. I used to, but I stopped because it kind of dawned on me that I didn't need to tell everyone I was at work and I don't need to remember that, you know be reminded of it, that I was at work.

John (35, Silver Spring, MD): Yeah I just don't get a lot out of chronicling every move, For me, especially coming at it from a memory standpoint, it just muddles the data because then I have, you know the grocery store, the gas station on you know every single day and there's nothing exceptional about it.

With 4sqand7years ago, many of my participants do not want to receive an email every morning telling them the only location they went on that day last year was the office in which they still work. For my participants who take the data on 4sqmap seriously, they often do not want to populate the data on their mobility with hundreds of check ins at work, home, and gas stations to which they have to go. This skews the data and presents a less exciting view of their activity that is dominated by domestic and professional rather than social activities. And some people do take this data seriously. They are interested in presenting their past in a way that highlights the more enjoyable things they do while downplaying the necessary utilitarian locations many people have to go to on a daily basis. The memory function in some cases even encouraged some of my participants to go to new location because they want to add a new location to the collection of distinct venues they have checked in to, as the quote below shows:

Danny (26, Raleigh, NC): Actually, I think I might choose the new place more so I could kind of add a new place when I go back and look at 4sqmaps than just for the points.

As this section has shown, it makes sense to view these mnemonic practices in terms of the presentation of self. The participants I interviewed who extensively rely on 4sqmap or 4sqand7yearsago do not check in everywhere they go. Instead, they cultivate a certain image of themselves based on more interesting activities as a way to remember the things they did that were outside the bounds of their work and home life. Just as my participants may decide to share only specific information with others because of an image they have cultivated, they also show a tendency to share only a specific image of their present activities to their future self. This suggests that many people do not want to log their life in its entirety; they want to log the pieces of their life that make them happy.

## **Discussion**

My data shows that the variability of how people use Foursquare to meet up with others and coordinate is important to understanding how it promotes sociability. In many popular press accounts, it is the serendipitous encounter that is emphasized when discussing Foursquare and sociability (Jackson, 2010; Kirkpatrick, 2010) and Dennis Crowley has claimed that “promoting serendipity” is one of the main goals of the application’s designers (Crowley & Cashmore, 2011). In the ideal serendipitous encounter, someone is sitting at a café and sees that a friend checked in down the street and they meet up. I did find that some of my participants had experienced these serendipitous encounters; however, I found that how Foursquare works as a form of collective mobile communication involves more than serendipity and that not all people view check ins as invitations to co-present interaction.

One problem I noted with the enactment of serendipitous encounters was the problem of distance. Many times, people checked-in too far away to make meeting convenient, showing that it is important to keep in mind that location-based services are significantly affected by the places and contexts in which they are used (de Souza e Silva & Frith, 2012; Dourish & Bell, 2007, 2011). Even more importantly, people use Foursquare to accomplish different goals, and this makes it difficult to make decisions based solely on a friends' check-in.

That finding partially suggests a difference between Foursquare and what Humphreys (2007, 2010) found in her field work with Dodgeball users, an earlier SMS-based mobile social network. In her field work on Dodgeball, Humphreys found that the collective mobile communication facilitated through the application often contributed to a form of "social molecularization" in which people coordinated behavior through sharing location and moved through the city in a sort of small pack (similarly to Smart and Flash Mobs) in ways that I did not find with the Foursquare users I interviewed. There are a couple possible explanations for that different finding. One is the difference between the Dodgeball and Foursquare user base: when Dennis Crowley sold Dodgeball in 2005, Dodgeball had 30,000 users ("Foursquare adding 25k users a day; Dodgeball had 30k when it sold to Google," 2010); Foursquare now has over 20 million users. Humphreys' (2007, 2010) work and these user statistics suggest that Dodgeball was more of a niche application used by people with extremely active social lives. It is also likely that there are Foursquare users who use the application similarly to how people used Dodgeball but did not make it into my participant pool.

A second possible explanation is that Dodgeball was not as diverse an application as Foursquare. Humphreys did find that not every check-in was meant to coordinate behavior. Some people checked-in as a way of “showing off and cataloguing one’s life” (Humphreys, 2007, n.p.). However, Dodgeball did not have gaming elements; users could not annotate space through tips; it was not a search engine. Most people in Humphreys’ data used the application to coordinate with friends through the sharing of location. Because that was its dominant purpose, people could assume that when someone checked in on Dodgeball, they were inviting others to meet up with them. As I discussed above, most people did not use check-ins in Foursquare to find friends in the same way as people did with Dodgeball. Because the reasons people check in were so diverse, many people did not view their check-ins as an invitation for others to stop by. Rather than as invitations for co-present interaction, check-ins were instead often an invitation for someone to send a text message to ask about what the person is doing. In certain specific situations, my participants could rely on check-ins to find friends, but as I explained, this required a shared understanding of the context in which a person was checking in and necessitated a level of coordination beforehand. Matt’s example in Atlanta shows the importance of this pre-determined understanding. His friends negotiated the meaning of check-ins on Friday and Saturday night, and because they did that up-front work, they used Foursquare as a form of collective mobile communication to coordinate among multiple people in ways that were more direct than with my other participants. The problems of context also differentiate Foursquare from the LBMGs I discussed in chapter three. In LBMGs like Mogi and Botfighters, if people were sharing their location with the game it could be assumed that they were willing to engage in gameplay

because that was the primary reason to share location. The necessity of understanding the contexts of different check-ins also reflects an important finding in my data that shaped the collective communication practices of my research participants: categories of Foursquare users.

Humphreys' work showed that with Dodgeball most people were social users, and a few people even publicly denounced the service when some people started sharing check-ins at times when they obviously could not meet up with others. To the majority of Dodgeball users, coordinating with friends was the "correct" way to use Dodgeball (Humphreys, 2007). The same dominant understanding of use can also be seen with earlier LBMGs like Mogi and Alien Revolt: users were all game players (de Souza e Silva, 2008; Licoppe & Guillot, 2006; Licoppe & Inada, 2006, 2009). In my interviews, I found no "correct" way to use Foursquare. Some of my participants could be actively described as "social users." They used Foursquare mostly as a way to find friends, be found by friends, and present themselves to others in certain ways like they would on Facebook. Many of my participants, however, could be more accurately described by different labels. For example, some were "gamers." To them, Foursquare was a game they played to score points and win mayorships. These participants often checked in everywhere with no intention of meeting friends through the application. As an extreme example in the next chapter I discuss Amelia, who uses an alias on Foursquare and does not have a single Foursquare friend but uses the application to compete over mayorships. Others could be labeled as "explorers" who use Foursquare mostly to find new locations through Badge hunts and the Explore feature. And finally, as I discussed above, some of my participants were "cataloguers" who use Foursquare mainly as way to log their

life rather than as a way to meet up with friends or score points. Almost all of my participants described occasional uses that could fall in each of these labels, but most of them did have one dominant reason for using the application.

The rough taxonomy of Foursquare users described above speaks to the importance of understanding motivation when people take part in relatively new technologically-mediated environments. In his seminal study of MUDs in the mid 1990's, Bartle (2006) described a taxonomy of MUD participants that is quite similar to what I found with Foursquare. Bartle broke MUD users down into four categories: achievers, explorers, socializers, and killers. The first three categories fit nearly exactly with my taxonomy. Achievers in Foursquare focus mostly on scoring points and earning badges and mayorships. Explorers use Foursquare to explore the game space, which unlike with MUDs, is the actual physical world. Socializers use the application to meet up with others. Foursquare does not have a direct correlate to Bartle's "killer" category, though the act of cheating to take someone's mayorship, an action that is possible, does suggest ways some can create havoc for other users. The importance of the brief taxonomy I explained above is to show that the meaning of new technologically-mediated environments are rarely agreed upon. Different people use new technologies for different reasons, and as I discussed above, those uses can sometimes come into conflict.

These different types of users complicate the issues of sociability and collective mobile communication discussed above. Some people who used it for more social reasons or as a way to catalogue their life only checked in to more interesting locations they wanted to highlight. But other users who saw Foursquare more as a game checked in everywhere.

These are all forms of collective mobile communication, but they have different goals and the different reasons my participants chose to share a location complicated the context of each check-in. Consequently, because Foursquare contains more elements than Dodgeball or contemporary LBSNs like Latitude, the etiquette that arose around the check-in involved my participants texting or calling before going to meet up with someone who may be checked in nearby. This tendency was also shaped by the design of the application. Unlike location-tracking LBSNs like Latitude that transmit locations, check-ins on Foursquare do not necessarily show someone's current location.

Just because my participants used Foursquare for different reasons and did not frequently meet up because of serendipitous check-ins, it does not negate the importance of Foursquare as a social application and form of collective mobile communication. In chapter three, I defined collective mobile communication as communication people engage in while mobile that transmits the same piece of information to multiple others, in contrast to dyadic text messages or voice calls. People did often use Foursquare as a tool to, returning to the previous chapter, make space legible by giving them an idea of where friends are before making plans for the night. I called this "setting the scene", and while it might not be as dramatic of an example of sociability as the nearby serendipitous check-in, it still shows how people use Foursquare to promote sociability and engage in collective mobile communication. The mere act of checking in communicates one's location to the entirety of one's Foursquare network, working as a collective form of communication that works more like a mass text message than a typical SMS or voice call. People can then use Foursquare to keep tabs on a large number of friends and use that information to plan later activities. Using

Foursquare in this manner is not markedly different from texting friends before a night out to see what they are doing. However, just as with my discussion of exploration and Foursquare, the important shift is that the sharing of location in a collective manner makes these behaviors easier.

My analysis of data on issues of sociability in Foursquare use also raises the question of homogeneity that I showed has been repeatedly raised in literature on LBSNs. In chapter four, I discussed the fears about the death of public sociability that are present in some of the seminal urban theory texts (J. Jacobs, 1961; Sennett, 1977, 1992; Whyte, 1980). I discussed how Foursquare can be seen as both detrimental and beneficial to the vitality of public sociability: beneficial in the way it encourages people to engage with others in a co-present manner but detrimental in the way it allows people to seek out homogeneity. These fears about homogeneity shaped my approach to my field work, but I found that Foursquare usage is, at least with my participants, less impactful than Crawford (2007) feared about similar mobile applications. People can “set the scene” and find friends, but doing so did not lead to my participants consciously choosing not to engage difference in ways they did not already do before they began using Foursquare (Sutko & de Souza e Silva, 2011). For example, some of my participants used Foursquare to map the locations of coworkers during work lunch hours and then go meet up with them. It would be a stretch to assume that if they had not been able to map their coworkers they would have gone to lunch alone and struck up a conversation with a stranger. Consequently, at least for my participants, the ability to map their egocentric networks did not turn their physical spaces into the sorts of networked publics discussed by boyd (2008c). My participants may have been able to filter their space

to some degree, but it was not nearly as dramatic as Crawford fears and none of my participants reported that their Foursquare usage lead them to avoid engaging difference in ways they would not have done anyways. As I discussed in the previous chapter, many of the behaviors my participants reported were about making things easier rather than engaging in totally new behaviors.

As I discussed in chapter four, while the ability to map friends may be criticized from an idealized view of public space, most people are not all that interested in constantly engaging the unknown and sought out these types of homophily long before LBSNs (Sutko & de Souza e Silva, 2011) . This suggests that it makes more sense to view LBSNs like Foursquare as a new part of public space rather than the privatization of the public through the ability to connect “like with like—or the friend of like with like” (Crawford, 2007, p. 89; Sennett, 1977). Gordon and de Souza e Silva’s (2011) concept of net locality shows that these types of networked connections, these new abilities to filter the social information one accesses about surrounding space, contribute to new kinds of publics rather than detract from the vibrancy of public space. These net localities include a multitude of networked connections that do not necessarily distract from the co-present or engagement with others in one’s surroundings, especially in the case of a location-based application like Foursquare. As the concept of net locality suggests, Foursquare usage becomes one context enfolded inside the larger context of the physical space, and the context of Foursquare cannot fully overcome the other information present in a physical space. I found support for this argument in my interviews. For my participants, Foursquare became just another way to coordinate behaviors

and keep tabs on friends. It did alter social behaviors in some specific instances, but not in ways that were significantly different from using other forms of mobile communication to check on the locations of friends.

In addition, my data did show that my participants do occasionally use Foursquare to meet new people. As Gordon and de Souza e Silva (2011) have argued, LBSNs have the potential to bring us together rather than push us apart, and this was reflected in my data in the ways people activated “latent ties” (Haythornthwaite, 2005) through the ways they met strangers by browsing through the thumbnails of others checked in to a location or going to Foursquare meetups. This finding closely resembles Lampe, Ellison, and Steinfeld’s (2006) study of social browsing and social searching on Facebook. They found that most people used Facebook to maintain existing relationships but that some users did take advantage of the service to find “people online for offline encounters” (n. p.). I found much the same things with Foursquare. Most people followed friends and maintained existing connections, but some did engage in social browsing through Foursquare to meet new people. In this way, some of my participants did engage with difference, especially in the example of Dwayne and Elaine that I detailed above. Because physical presence becomes the locus of sociability when using LBSNs, people who are checked in to the same location have the opportunity to engage others by seeing who else is currently at a location. These people are also Foursquare users, and they might often come from similar social background and share similar demographic characteristics, a finding Humphreys’ reported in her work on Dodgeball. Consequently, as the example of Dwayne and Elaine shows, this may not be the types of

engagement with true difference that some would value. Dwayne found Elaine because he was interested in finding another person who also likes to work out and is a frequent social media user. In a way, he used the social affordances of Foursquare to “engage with an other that fits within the self’s pre-established frame of otherness” (Farman, 2012, p. 73). While these behaviors can certainly be criticized, they are not particularly different from the wealth of sites and applications, ranging from Internet dating sites to earlier MUDs designed around common interests, that people use to find others who meet certain criteria. As I discussed in chapter four, it is unlikely that most people want to constantly meet others who are entirely different from them. At least with Foursquare, users can find the “just different enough” (Sutko & de Souza e Silva, 2011) and meet new people in ways that were not possible with earlier mobile technologies like the Walkman and earlier dyadic forms of mobile communication like text messages and voice calls.

The Foursquare meetups I detailed were another way my participants met new people because of their Foursquare usage. Note that this was not directly because of any element of the application, but rather related to the community that built up around Foursquare. This finding closely resembles other online/offline community meetups like gaming conferences and conventions like ComicCon. Notably, Taylor (2006) begins her book on Everquest with a recounting of her experience at an Everquest meetup conference in Boston. At the conference, people who participated in the online game but had never met were given the opportunity to meet in person. Foursquare meetups, most notably 4sqDay on April 16, provides much the same opportunity to meet new people who are part of the community as the Everquest meetup group detailed by Taylor.

As I discussed in chapter three, the ability to find others and interact is not the only social aspect of LBSNs like Foursquare. How people are able to present themselves to others through the application is important as well, and as de Souza e Silva and I (2012) argued, with LBSNs location becomes an important part of that presentation. Goffman (1990) famously wrote of the presentation of self as a performance, using dramaturgical metaphors such as “actors” and the “stage.” We are all actors playing different roles depending on the social situation, and the ways we present our self are always intersubjective processes that depend on others. “That is why for Goffman the presentation of self is not an individual act, but always based on social interaction”(de Souza e Silva & Frith, 2012, p. 165). In addition, the presentation of self is not something we often fully control. Rather, it consists of both impressions “given” and “given off.” The presentation “given” are the elements we control: the clothes we wear, the ways we behave. The presentations “given off” are “those unintentional messages that individuals unwillingly disclose and that sometimes tell much more about who we are” (de Souza e Silva & Frith, 2012, p. 166). What shifts with online interactions is the balance between the two. In online spaces, we often have more control over how we present ourselves and can limit the presentation “given off.” The examples I discussed in chapter three of people meticulously crafting SNS profiles and their public social networks show that shifting balance. As Donath (1997) has stated, when we are online the “control over one’s self-presentation is greater” (p. 38).

The way some people chose when or when not to check in on Foursquare reveals the importance of the presentation of self and also shows the shifting balance between impressions “given” and “given off.” As I mentioned earlier in my dissertation and examine

in more detail in the next chapter, the check-in system of Foursquare is markedly different from the location-tracking systems of other LBSNs like Loopt and Latitude and employee, child, and parolee tracking systems (Boesen, et al., 2010; Minch, 2011; Shklovski, et al., 2009). People actively choose when to share their location rather than passively broadcasting their location, giving them greater control over the impressions “given.” For example, many of my participants reported not checking in to work and locations like gas stations because they thought those were uninteresting pieces of information to collectively communicate about their lives. They instead checked in less frequently to share certain locations with their social network, shaping how they were viewed through the location they shared. Others, however, did not do that and chose to check in everywhere. We can see in this an example of the impressions “given off” because by checking in everywhere these participants may identify themselves as a certain type of user whether they know they are doing so or not. And as we will see in the next chapter, even though people do control when they check in, there are still always opportunities for misunderstanding. Nonetheless, the ability to control when one checks in gave my participants much greater control over the impressions “given” than if they were constantly broadcasting their location.

Of course, the impressions we attempt to give are not static across situations. They depend on the other people present in a social situation and the understandings those people take to the situation. The intersubjective nature of the presentation of self can be seen most clearly in the ways people put more thought into which check-ins they used to present themselves on Facebook and Twitter than on Foursquare. Partly because applications like Dodgeball could not be shared with other social networking services and these practices are

relatively recent with contemporary LBSNs, the impact of location in the presentation of self as it extends across multiple audiences has not been examined in the literature. Many of the people I talked to did not put as much thought into the check-ins they communicated to their Foursquare friends because the audience is often limited and friending someone on Foursquare is an implicit agreement to follow their check-ins, showing that the intersubjective social situation affects the presentation of self in both on and offline spaces (boyd, 2008c). Here we see people's check-in practices responding to the situation. The audience is more limited; the shared understanding of the situation is more obvious. As my participants pushed check-ins to Twitter and Facebook, they confronted a much larger and less defined social situation.

All of my participants have different friends on different platforms. It may be perfectly acceptable to share ten different locations on Foursquare because of the diverse reasons people use the application and the understanding that people may check in frequently. On Twitter and Facebook, those same behaviors would likely not be acceptable to one's audience, which is often rather undefined. As Marwick and boyd (2010) discuss with Twitter, there is a "context collapse" that occurs because anyone can follow anyone on Twitter, muddying the idea of an identifiable audience to which one is speaking. The same is now partially true of Facebook, which began as a limited audience of college students but now includes work colleagues, parents, grandparents, and other groups. The social situation becomes less defined as the check-in leaves the Foursquare audience and extends to the public of Twitter and the limited public of Facebook, requiring people to tailor the ways they presents their mobility to these audiences.

The nature of how the presentation of self through location shifts as it extends across social networks can be best conceptualized by returning to boyd's (2008c) idea of networked publics. In the networked publics of online SNS, "the network mediates the interactions between members of the public" (p. 125). As I discussed in chapters three and four, people's behaviors are shaped by the members of their social network, and the shared understanding of audience shapes how people present themselves in these networked publics. Likewise, I found that how my participants understood when and what to share about their location was significantly mediated by the network with which they were sharing their location. Foursquare's audience is typically more limited than Twitter and Facebook, and my participants' information sharing behaviors are thus less constrained when their check ins are limited to their Foursquare network than when they leave the application and enter the larger informational landscape of linked social networking sites.

The mediating effect of the network also suggests that as Foursquare's user base continues to grow, people may exert more effort shaping their presentation of self inside the application through the locations they communicate to their Foursquare network. For example, in the early days of Facebook, people could be far freer in the information they shared on the site. Their social network was limited to other college students who were typically of a similar age (Acquisti & Gross, 2006; Gross & Acquisti, 2005). As the number of Facebook users has exploded, the mediating effect of the network has become more powerful. Many people now are Facebook friends with family members, prospective employers, and co-workers. The binge drinking photo that may present an appropriate part of

oneself when that network consisted of fellow 20 year-olds may not be appropriate now that the network is far more diverse. As Foursquare moves past the early adopter stage, it will be interesting to see if the way people check-in and share information changes as more of their offline connections begin using Foursquare.

Of course, the use of Foursquare as a mnemonic tool complicates the idea of a mediating network, especially in some cases in which my participants were more concerned with how they present their current activities to their future self than how they present themselves to others. As I mentioned in chapter three, Humphreys' (2007) work with Dodgeball users also showed that some people used the service as a mnemonic "social diary" (n.p.). Just as with my data on Foursquare users, Humphreys found that one of her participants felt that mnemonic cataloguing could be the driving force behind a few people's Dodgeball use. The life-logging that occurs through services like Dodgeball and applications like Foursquare is part of a larger push to use digital technologies to make one's past experiences legible (Mayer-Schönberger, 2009). With Foursquare, this life logging centers around one's physical mobility, transmitting a record of where one goes, and as the example of my participant who used his Foursquare history to reconstruct a bachelor party weekend shows, linking locations together in the person's mind (de Souza e Silva & Frith, 2012). What was most interesting about this form of cataloguing locations and that shows this behavior's thematic similarity to how people present themselves to others was that my data shows that it shaped some of my participants' Foursquare usage in much the same way as the elements of presentation to self to others shaped where they checks-in and what they share.

My participants who engage in this location logging actively work to highlight the more interesting aspects of their lives and not pollute their data sets with hundreds of mundane check-ins. Of course, Foursquare is not the only tool people use to present an idealized view of their past. They also use a host of other social media tools, and even long before the growth of digital media, people used photographs as a way to record an idealized record of their past. Sontag's (2001) work on photography has shown that people selectively record the past to make themselves appear better to the future. She writes that "People want the idealized image: a photograph of themselves looking their best. They feel rebuked when the camera doesn't return an image of themselves as more attractive than they really are" (p. 85). My data on Foursquare and memory shows a similar phenomenon. My participants often want an idealized representation of their past mobility, a representation that may return an image of themselves as more interesting and active than they really are. People actively engage in shaping how their present is presented to their future, an interesting finding that suggests that, in some instances, the network that mediates usage can literally be a network of one.

## **Conclusion**

This chapter has examined the issues of sociability that arose in my data. I covered two themes I identified: (a) The dynamics of location-based sociability, and (b) Linking platforms and the presentation of self through location. The first theme examined the distinct categories I developed that describe how people use Foursquare to meet up with their friends, set the scene before heading out for the night, and meet strangers through the application.

Throughout these categories I also showed that understandings of the meaning of check-ins varies because of the numerous ways people use Foursquare and argued that it makes sense to view different categories of Foursquare users.

I also examined how the presentation of self through location played out in my interview data. Most people are at least somewhat discerning of the places at which they check-in on Foursquare, but everyone I interviewed reported being even more conscious of how they presented their check-ins when they pushed their Foursquare data to Twitter and Facebook. I showed how the linking of different platforms to Foursquare complicates the nature of the audience and shaped the different ways my participants presented themselves through location on Twitter and Facebook as well as Foursquare. Of course, the presentation of self is not the only reason someone may choose not to check in when using an LBSN like Foursquare. Their check-ins are also shaped by the privacy concerns that arise through the sharing of location information, a topic I cover in detail in the next chapter.

## Chapter 9: The Varying Nature of Locational Privacy

The third core category I used to organize and identify relevant pieces of data relates to my third research question and is called “The varying nature of locational privacy.” In my field work, I delved into the issues of privacy my participants face when using Foursquare. I found that my participants had different approaches to managing their information while using Foursquare. Out of my interviews, I developed two related thematic groupings of categories that focus on privacy. Those two themes are (a) Managing the network and (b) Privacy practices in a new locational information environment. The first theme includes two categories: (a) Network as privacy tactic and (b) Foursquare as an open network. The second theme includes five categories: (a) Varying views of locational privacy, (b) Control as protection, (c) The relational nature of social networking privacy, (d) Unintended consequences of information sharing, and (e) Micro-practices and managing locational privacy. These two themes and the accompanying categories address data that helps me answer my third research question concerning how people understand and maintain their privacy when using Foursquare. After discussing my data, I then close the chapter with a discussion that connects my findings to existing literature.

### **Managing the Network**

The "managing the network" theme consists of two groups of categories: (a) Friends as a privacy tactic, and (b) Foursquare as an open network. The goal of this theme is to explore how my participants decided whom to friend and whose requests to accept in their

Foursquare network. Until someone is actual friends with someone on Foursquare, they can only see that person's limited profile. The default for the limited information profile includes a list of the tips they have left, their number of check-ins, their badges, and their mayorships (if they share this information). I found in my interviews that people take different approaches to managing their Foursquare network, and I detail those approaches below.

**Network as privacy tactic.** Most of my participants were at least somewhat selective over who they allow into their Foursquare network, using the network as a privacy tactic. In other words, by being discerning about whom they accepted as friends, they bounded the social situations of their check-ins. They did not want to share their location with everyone and most only pushed certain check-ins to Twitter (which is much more public and often features a larger network). There were a number of reasons people chose to only accept certain people as friends.

The most common reason people exerted control over their network was privacy. The specific reasons why they chose to limit their network for privacy reasons varied. One reason a few of my participants expressed was the fear that they could have their house robbed if they share their information with everyone who sends a friend request. The following quote exemplifies this concern:

Ainsley (24, New York City, NY): We just don't have friends in common, so why would I friend you? I definitely don't just accept anyone on Foursquare. That's weird. I just feel like... if they know you're on vacation or something and you're voluntarily sharing, how do you know they aren't going to rob your house or something?

By limiting the network, participants are able to share information with people they trust, reducing concerns about sharing location when away from the home. Others expressed this as a similar concern but in the context of their loved ones, with two participants expressing concern that if everyone could see their information, everyone would know when their wife and children were home alone.

However, most of my participants whose answers fit inside this category did not vocalize specific concerns about allowing everyone to be their friend on Foursquare. For these people, it just went without saying that they would not friend everyone and share their check-in information publicly. They understood that they wanted to bound the social situation of their check-ins to a limited network, but when asked why, they did not have an answer. This unspoken, more subconscious desire to limit the network arose commonly with my participants. For example,

Matt (31, Atlanta, GA): If I don't know the person, I don't let them be my friend. I've seen people in here that have asked me to be their friends and I go look at theirs and they'll have 500 friends. Nobody has 500 friends. Yeah, there's no way, and then you check-in all 950 of those people or whatever know exactly where you're at and they may not be friends.

Here Matt expresses shock that anyone would have an open network on Foursquare, though as we will see in the next section some users do choose to manage their network in that way. Matt does not feel there are serious privacy concerns with his Foursquare usage, but it makes little sense to him to take the risk of sharing with hundreds of people. Like many people I talked to who chose to limit their networks through rejecting friend requests, he was not afraid of being robbed or stalked. He just did not feel comfortable with that level of information sharing for reasons he could not explain. This general discomfort with operating

in an open network was the most common reason my participants limited whom they accept as Foursquare friends.

Finally, Amelia (26, Chapel Hill, NC) was an interesting, exceptional case. She uses Foursquare mainly as a game and a way to get specials at nearby businesses. She likes competing over mayorships and collecting badges, but she does not feel comfortable with anyone following her check-ins. For that reason, she does not have a single friend on Foursquare. Not only does she not accept requests, but she also signed up using an alternate email address and does not include her face in her thumbnail. As Amelia said, “I just don’t want people to be able to track where I go.” Her case was a unique one in my data, but it shows that the limiting of the friendship network can turn Foursquare from a social application into a solitary game.

While this category reflects participants who chose to control their network to limit the reach of their information sharing, they did not all limit their friends to the same degree. I discussed Amelia above. She was a special case who refused to friend anyone on Foursquare. Two other participants limited their Foursquare network to friends they interacted with in person, but most were less discerning than that. Most of my participants had Foursquare friends they had never met in person but whom they had interacted with on Twitter or some other site. They do not have to know someone well to accept them as a friend, but they do have to have had some kind of interaction. The following quote represents that selection criteria:

John (35, Silver Spring, MD): Yeah. I do. Half the people I’m friends with on Foursquare are actual friends and about half of them are just kind of people I’ve

never met or colleagues overseas or things like that. Yeah for me I've had exchanges with everyone who I'm friends with. I've had some kind of exchange with prior to accepting a friend request on Foursquare. So I know them in some kind of way rather than like it is with twitter or something.

Finally, three of the people I talked to were Super Users who also run public Foursquare accounts that represent a region (for example, @FoursquareColumbus [not one of my participants]). These three individuals had personal accounts with a limited friend network and asked people they did not know to friend them on their public Foursquare accounts. They would then only check in on their public accounts at certain locations in certain situations because of an awareness of the open nature of the network for those accounts. On their private accounts, they were able to be much freer with their check-ins because they had a more limited reach due to the smaller size of their Foursquare network. I point to these examples to show that while many of my participants would not accept everyone as Foursquare friends, the criteria for acceptance was varied.

The majority of my respondents fell into this category. They limited the social situation of their check-ins by limiting the reach of their network. However, I also spoke with participants who basically operated in an open network with hundreds of friends they do not know. I discuss them in the following subsection.

**Foursquare as an open network.** Not everyone is concerned about limiting who can see their Foursquare check-ins. Some of my research participants instead friend almost anyone or accept friend requests from almost anyone. In my interviews I identified three reasons people chose to form more or less open networks on Foursquare.

The first, and most common, was indifference. Some Foursquare users do not see their check-ins as private and do not care who can see their location. For example, Claudia has a popular Twitter account with over 4,000 followers and many of those followers send her Foursquare friend requests. She accepts every one. She does not understand why they care about her check-ins, but she does not care if they see them. Bruno is the same way. He is not concerned about what his check-ins tell people about him:

Bruno (24, Raleigh, NC): Uhm...not particularly. Like I don't feel like I do anything shady and if some random stranger, and like I said at first I was careful about who I added and then I just sort of just made sure they weren't like spammers or anything because I don't need random spammers. I don't think anyone would stalk me through the program so I didn't think too much about privacy.

For these people, Foursquare is a fun game and social network, and they do not feel there are major consequences to their information sharing. As I address in a later section, however, in some situations there are consequences to having an open social network in Foursquare.

The second reason, closely related to the first, is that some users do not feel there are negative consequences to accepting friends they do not know because the majority of these people do not live in their city. They are Twitter followers and because they are not close by, they will not be able to show up at check-ins or do anything with the knowledge of the user's location. Danny describes this position:

Danny (26, Raleigh, NC): haha, yeah I do. I forgot about that. If I like them on twitter, I'll accept them, but they don't live in Raleigh, so what does it matter if they see my check-ins? What are they going to do, drive down from NY to kill me at a café?

These people do not necessarily accept just anyone, but they do accept Twitter followers even if they have not had interactions. The distance of these users serves as a buffer from

real-world consequences and makes accepting their requests less consequential than if they lived in the same city.

The final reason noted in my data why someone would cultivate an open network on Foursquare is prestige. Just as people do on Facebook, three of my participants reported having over 500 Foursquare friends and seeking out new people to friend. Josh is a notable example. He is a social media consultant who has thousands of Twitter followers as well as accounts that gauge social media impact on FirstEmpire and Klout, and he volunteers as a Foursquare ambassador. His goal is to collect as many Foursquare friends as he can, with the eventual goal being to reach “celebrity” status (1000 friends). As he says,

Josh (34, Kennesaw, GA): I have a lot of Foursquare “friends”. I tend to be one that isn’t as selective. I used to have a ton of mayorships, and I still have a lot, but when I go to a place a lot and see that a place has a mayor, I’ll friend request that person. The goal was to get to 1000 friends, and I have, goodness, hold on, I have around 900 friends and some pending friend requests.

While the participants who created open networks on Foursquare by accepting almost any friend requests were not as picky about whom they shared their information with, that does not mean they do not care about privacy, which is a far too general statement to make. For example, Josh told me he does pay attention to privacy, but he does not particularly care about whom knows his location:

Me: Ok, moving onto privacy, is privacy something that concerns you in general?

Josh (34, Kennesaw, GA): It does (hesitant). I don’t blow it off, but I don’t feel overly concerned. If someone wants to find me, they can find me. I’m not going to be worried about it with everything in my life. Now the more info you put out there the easier it is to find you, but I don’t worry about it too much. Sharing my location just doesn’t strike me as too much of a big deal compared to the crazy things people put online every day.

For the people who fell in this category, the benefits of accruing hundreds of friends, for whatever reason, outweighed the possible negativity of sharing information with an open network.

While I divided participants' management of their Foursquare network into these two categories, I do not mean to imply that the division is a clear one. As I mentioned in the previous section, participants who limited their networks limited them to varying degrees, ranging from not having any Foursquare friends to accepting everyone who may have @ replied a tweet. For some of those who accepted anyone they interacted with online, their network more closely resembled those who accept everyone than they did someone like Amelia. Still, even if they had loose criteria for accepting friends, I coded their responses in the "managing the network" section. The network, however, is only one way of controlling the flow of information on Foursquare. In the following section, I address how people controlled what information they shared through an examination of the specific tactics people used when sharing their location.

## **Privacy Practices in a New Locational Information Environment**

My participants also outlined their feelings about social locational privacy, feelings about the Foursquare interface as compared to other information sharing platforms, examples of the unintended consequences of location sharing, and different tactics they use to manage information. In the following subsections, I examine these issues in more detail, explaining what each of my categories represents and using them to gain a better understanding of how privacy is managed in location check-in systems like Foursquare.

**Varying views of locational privacy.** A significant number of my research participants expressed the belief that the privacy issues people write about and discuss with Foursquare are overblown. They report instances of friends and family members expressing dismay about their willingness to share their location, and they dismiss those concerns. Their dismissal does not mean that most of the participants whose responses fell in this category would check in anywhere at any time. More often, they expressed the belief that as long as they only checked in when they were out doing things, it was not something to be concerned about. Donna's quote exemplifies this view:

Donna (27, Cincinnati, OH): To me, it's not a big deal. I'm just telling people where I am. I mean, who cares? Why does it matter to me if someone knows I'm the mayor of some place? It's not like I'm checking into people's houses. I mean, I don't want people knowing I'm checking into some guy's house at 3 in the morning, but I don't care about bars and stuff. Seriously.

Most of my participants who expressed little concern about where they check in were people who limited their friend lists, meaning they exerted control over who could see their check-ins. Because their networks were less public, they were able to be freer with their check-ins and think less about the consequences of their information sharing. Basically, by limiting the social situation to a controlled Foursquare network, they were able to present themselves in a more controlled context than if they had an open network with hundreds of friends. The idea that as long as you limit your friend network, where and how often you check in is not a big deal was common in my data.

On a related note, there was a tendency for my participants to defend Foursquare when I asked them about privacy. Obviously, the people I talked to are frequent Foursquare users, so they feel comfortable with the application or else they would not use it. However,

many participants were vocal in their defense of Foursquare, arguing that people who criticized the application did not know what they were talking about. For example, Oliver says

Oliver (31, Denver, CO): People should use it before they criticize it. It's not hard to choose what to share, and it's not like when I go to a site and don't know what they collect or when I get tagged in a Facebook picture and don't know who can see it. On Foursquare it's up to me, and I feel pretty comfortable with how in control I am.

Oliver's quote is an exemplar of the reasoning of many of my participants. They felt that people worried about privacy and location sharing because they did not understand how Foursquare actually works. Some even brought up the site PleaseRobMe (discussed in chapter five) unprompted to criticize how the media covered that story and the fears raised by the site. Some argued that the site was unfair because all it did was tell people information they could have easily figured out in other ways. Most notably, four of my participants explicitly stated that most of their acquaintances know they work away from home, so those acquaintances could safely assume that they are not going to be home on an average weekday. People also told me that if they share something that ends up negatively impacting them, it is their fault, not Foursquare's.

In conclusion, many of my participants argued that the locational privacy issues associated with Foursquare are overblown, with a number of people voicing spirited defenses of privacy in the context of Foursquare use. The reason these people felt privacy fears were often exaggerated varied. Some expressed a belief that location is not an important piece of information and that they did not care if everyone could see where they were. These people were in the minority, however. Most of my participants stated specific reasons why using

Foursquare properly did not have negative privacy implications, ranging from the ability to control one's friend network (discussed above), the ease of use of the interface and the control it grants users, the increased control as compared to Facebook, and the difference between check-ins and tracking. In the following two categories, I explore these areas in more detail.

**Control as protection.** Control was a word that arose frequently in my interviews. My participants all described how easy it was for them to control the information they were sharing when they used Foursquare. As I discussed in chapter five, Foursquare users have a number of different options whenever they choose to check in to a location. First, they have to look up a location and then choose to check in. Then they decide if they want to share the check-in with Foursquare friends, and then they decide if they want to share it with Facebook and Twitter. Ainsley addressed the issue of personal choice in Foursquare in her discussion of her friends' initial reaction to her Foursquare usage:

Ainsley (24, New York City, NY): They just didn't get it and they all thought I should be freaked out about stalking and stuff. But I was like no, I'm only sharing it with people who know me, and if I don't want to share it I just won't have to. I mean, sometimes at times, I think "should I really check-in to that place and share it?" But at the end of the day it's your option to do whatever you want.

In a similar quote, Mark discusses the Foursquare check-in process as almost a reminder to make a good decision. Because users have to search for the location, click on the location, and then check in, they are given multiple opportunities to choose not to check in.

Mark (36, Raleigh, NC): yeah, because with Foursquare I have to make the conscious decision to make the change and share my status. And I can choose where and who to share it with. I get to be more discriminating about what I share. The application

basically asks "do you want to check-in", and that gets me to ask myself that question. And then I say yes or no.

The quote above exemplifies how almost all of my participants explained their Foursquare usage. They told me they did not have to share with Twitter or Facebook, they never had to check in, and even if they did check in, they could do it "off the grid" so that friends could not see where they are. These features were all examples of the choice built into the interface. For example, when asked if they were concerned about privacy when using Foursquare, Sam and John replied with

Sam (62, Central Washington State): No, there are just so many features on Foursquare. There's always the "off the grid" feature when you don't want someone to know where you're at.

John (35, Silver Spring, MD): Foursquare, for example, does a really nice job of offering privacy choices. I always explain them to people who are worried about sharing location, but Foursquare has answered up to the privacy challenge pretty well

In my participants' responses, the ease of use of Foursquare was something that was brought up repeatedly without prompting. There is little about the check-in process that is ambiguous, which was something that was repeatedly contrasted to other social networking sites,<sup>66</sup> making this comparison an important area of analysis to understand the issue of control over information with Foursquare use.

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<sup>66</sup> As I mentioned earlier, every one of my participants uses Facebook, and all but two of them have Twitter accounts. Many also use more niche social networking applications.

**The relational nature of social networking privacy.** The platform my participants most commonly compared Foursquare to was unsurprisingly Facebook,<sup>67</sup> and most people told me they feel less comfortable sharing information on Facebook than Foursquare. Some of these comparisons had to do with specific privacy choices Facebook has made, but other comparisons had to do with mediating network effects. Almost every person I spoke with had a much larger, more diverse social network on Facebook than on Twitter. Foursquare networks tend to be rather smaller, and even for my participants who accepted all friend requests, they still had more people they know on Facebook than Foursquare. Many of my participants' Facebook network consists of work colleagues and family, which limits what information they share and how often they push checks-ins to Facebook. Consequently, many participants felt that they had more privacy on Foursquare than Facebook because they were addressing a more limited audience.

The network effect is important to consider when understanding why many of my participants view Foursquare as less of a threat to their privacy than Facebook. Because the audience is more limited, there is less of the "context collapse" that occurs on many social networking sites and that I discussed in the previous chapter (Marwick & boyd, 2010) . Participants were able to spend less time considering how their check-ins would be received because they often did not have family members or a wide variety of colleagues on Foursquare. This was particularly important for participants who had an active social life that

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<sup>67</sup> While all of my participants had Twitter accounts, they did not use Twitter as a point of comparison. Twitter is too different in the way the application works and the networks are formed. Because tweets are public and anyone can follow anyone, the privacy dynamics of Twitter were not something my participants turned to when discussing Foursquare.

involved many visits to bars. They were less willing to share that information with their Facebook networks because they did not want to present themselves as people who drank frequently to their colleagues and family members who are Facebook friends. One of my participants even stopped pushing his Foursquare check-ins to Facebook because his parents began complaining about his frequent nights out:

Will (29, Washington, DC): One of the reasons I like Foursquare is because my parents aren't on it and I wouldn't check-in to bars as much as I do if my parents could see. That's actually why I don't push my check-ins to Facebook anymore. It's not like they have any particular religious thing or whatever, but they just get super weird and they'd hassle me about it. But everybody else on Foursquare, it's like "I'm down at the strip club" Cool! I don't care

Dolores chose to stop using Facebook Places for the same reason. Her Facebook network includes work colleagues and potential government employers, and she does not want them seeing the majority of her check-ins:

Dolores (29, Washington, DC): It just depends on where I check-in. I think if you're checking in anywhere private, it would be kind of crazy to just be friends with everyone. The difference on Facebook is the kind of people who are my facebook friends, which includes family and work people. I've got a lot of professional people, a few high up people in government, yeah, so I was a lot more conservative on where I check-in on Facebook than I am on Foursquare

Dolores: Yeah, and also there are particular places I do check-into that I wouldn't want friends on facebook to know where I am.

My participants' views of the differences between Facebook and Foursquare, however, had to do with more than just the mediating effect of the social network. It also had to do with their feelings about location information. As I mentioned before, these are all people comfortable with sharing their location information in at least some contexts, and their feelings towards location information were markedly different than one would expect from

reading certain media accounts.<sup>68</sup> Most of my participants felt more wary of Facebook because it contained so much more information about them, and some of my participants told me they are less likely to accept someone as a friend on Facebook than Foursquare. They told me that check-ins actually tell people little about themselves as compared to pictures, wall posts, status updates, and all the other information that are included on Facebook profiles:

Leo (34, Atlanta, GA): Like I said, where I check-in just isn't nearly as much info as you could find about me on Facebook. I'm more likely to let someone see my check-ins than every photo that's ever been posted about me.

Mark (36, Raleigh, NC): Uhm...yeah I guess if I rank my privacy, I want privacy on Facebook because I have more information there, a little less on Foursquare and least on Twitter

Ainsley (24, New York City, NY): So like Facebook, my profile is...uh..completely blocked. I mean, I'm searchable but you can't see anything if you're not my friend. You can't see my pictures or my wall. I think FB is different because like I was on FB as a freshman in college and other people, I don't know, I grew up on FB in college and I don't want to share all my pics and info from when I was 18 with the world. I'm not ashamed of it or anything, but I know there are people, like employers and stuff, who would care. So FB is the most private. I would say second is Foursquare. I mean, I share, the majority of my check-ins. I rarely check-in off the grid. The only thing is, I don't accept random friend requests, but I think that's normal. So I don't mind sharing my information on there, and like I said before, I'm open to accepting your friend request.

Another way that my participants frequently contrasted Facebook to Foursquare relates back to the issue of control. To repeat, privacy is not just about the ability to control information, it is about the ability to control information in specific social situations,

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<sup>68</sup> A similar finding was reported in Buscher et al's (2011) discussion of Locoblog, an early location-based blog. The designers expected, based on their readings of media discourses, people to be wary about sharing their location. They found, however, that most people posted their house as a location and were much freer with their location information than the designers had expected.

situations that are not static and that shift depending on context. Facebook has layered, complex, and powerful privacy options that allow people to exert control over their information. However, these settings are often difficult to understand, limiting people's comfort with how they are sharing information in specific social situations. This was contrasted frequently to Foursquare's check-in interface:

Danny (26, Raleigh, NC): Nope. I think people make too big a deal out of it [privacy on Foursquare]. If they ever actually use the application, they'd see that it's really up to them what they share. It's not like Facebook where I have no idea who can see what. Each time I check-in I can either share it with friends, twitter, whatever, or I don't. It's easy to choose for each check-in. I actually really like the Foursquare interface for that reason. I just feel like I have a lot of control over the information I share.

The complaints about Facebook were frequent and they provided my participants with a baseline from which to measure their comfort with Foursquare. All these reasons (the nature of the larger Facebook network, the wealth of information already on Facebook, and the more complicated Facebook privacy settings) contributed to many of my participants' reluctance to use Facebook Places as a way to share their location with friends. People repeatedly told me that they were not comfortable checking in to most places on Facebook because they felt less comfortable with the process. These differences are important for understanding why Foursquare has become even more popular after the release of Facebook Places, despite the commonly expressed opinion in the tech world that Facebook check-ins would possibly kill Foursquare.

The discussion of Facebook places brings me to another area of comparison my participants used when discussing Foursquare and privacy: comparisons to other LBSNs.

Many of my participants had experimented with other LBSNs, and some still used Gowalla.<sup>69</sup> Few people used Gowalla as a point of contrast because Gowalla uses a check-in system similar to Foursquare. The most common comparison was instead with Google Latitude.<sup>70</sup> As I discussed in chapter five, Foursquare is a check-in system whereas Latitude actually tracks people's location in real time. The difference between these two systems in my data was significant. Foursquare requires active participation and users have to click through at least three screens before they check in. Latitude is left running in the background and constantly transmits location information, making it a much more passive process. The difference can be conceptualized as a difference in levels of control and active choice, and all of my participants who had used Latitude contrasted its system negatively to the check-in process. Because they were not choosing each time to share their location, they felt the privacy problems with Latitude were markedly more pronounced than with Foursquare. The following quotes exemplify that view:

Mike (29, Minneapolis, MN): Since I had an Android phone I downloaded Latitude but I didn't really look into it but I would get emails from Google alerting me that my location was being broadcast over latitude. I still haven't figured out to look at it but I have disabled it but it did kind of freak me out that I might unwittingly be broadcasting my location to people and I don't think it was set up in a way that made me feel comfortable.

Me: So when you began using Foursquare were you worried about privacy?

Mark (36, Raleigh, NC): A little, just because for a little while I was using google latitude and it took me about three weeks to realize that the whole system is fucked.

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<sup>69</sup> Gowalla stopped operation in 2012 but was still available at the time of my interviews

<sup>70</sup> A few of my participants had used other LBSNs like Loopt and Brightkite, but the only LBSN any of the Foursquare users I interviewed still used was Gowalla.

Mark: Well, the fact that it could be running in the back ground and broadcast anyone where I am at any time, that was a big privacy concern. I thought that I was on hide mode, but I came to the conclusion that if I have to keep figuring out how to turn it on and off, I may as well just use Foursquare.

Me: Ok, so Foursquare give you a lot more control?

Mark: yeah, because Foursquare I have to make the conscious decision to make the change and share my status. And I can choose where and who to share it with. I get to be more discriminating about what I share. The application basically asks "do you want to check-in", and that gets me to ask myself that question. And then I say yes or no

As I stated earlier, my participants viewed their privacy as the ability to easily choose what to share with whom. Foursquare allowed for that control by requiring active participation and making it easy to choose with whom to share check-ins. The fear of an application running in the background, constantly broadcasting location was expressed by almost everyone I talked to who had used Latitude. The Foursquare process is more unwieldy (requiring multiple steps) and less accurate (people might not be at the location they last checked in), but the increased level of involvement was praised by the people I interviewed. Returning to an earlier quote from Ainsley, the different steps serve as a repeated "do you really want to check-in?" question that is not present in passive tracking systems.

**Unintended consequences of information sharing.** As I have discussed throughout this chapter, my participants felt comfortable with their information sharing on Foursquare. Some even went so far as to accept hundreds of friends and share their location with anyone. However, in a few isolated cases, participants did describe some of the unintended consequences of location sharing. None of these instances directly made my participants change their information sharing habits, but they did remind them that their

check-ins could have consequences, and these examples suggest the possible dangers of sharing location information.

The first example of these consequences relates back to the open friend network I described in the previous section. Claudia accepts everyone as Foursquare friends and currently has hundreds of friends. She also has an active social life and checks in everywhere she goes. She does not put much thought into her check-ins and does not worry much about locational privacy. However, she did run into two situations that showed her the consequences of openly sharing location information. The first reminder came in the form of an introduction on a night out in downtown Raleigh:

Claudia (28, Raleigh): But for Foursquare I accept every request I get, even if I don't know what city they're in. But...like two months ago I was at Neptune and someone came up to me and was like "Are you \_\_\_?" And were all acting like they knew me and I got freaked out. And I was like "how do they know me?" It turned out they'd friended me and saw I'd checked in on Foursquare and they were from charlotte or something. I was like...well ok.

Claudia did not express fear about this introduction and ended up having a pleasant conversation with that person; however, it was a reminder that she had little idea who could see her check-ins because of her large number of Foursquare friends. Her second example of these unintended consequences seems less innocuous, though once again, she did not care enough to change her practices:

Claudia: I have had experience recently, but I found it humorous. My last ex-boyfriend added me and I forgot and when I would check-in he would show up. I didn't put two and two together, and eventually, I was like "how do you know where I am? Are you following me?" and he said "it's on Foursquare stupid" and I said "well, you're the one following me around, stupid." I could see how that would be a problem.

Bruno detailed a similar situation in which he received a text message from a Foursquare user asking if he wanted to meet. Bruno had included his phone number on his Foursquare profile and chose to make it available to people who are not his Foursquare friends. The instance occurred when he checked in at a café, and after he left he received a text message from someone he did not know asking him if he was still at the café. Apparently, the person had gone to the café, saw there was a fellow Foursquare user checked in there, and then contacted Bruno. Bruno was not offended, but it did serve as a concrete reminder that people could see his check-ins and the information he was sharing could have consequences.

Bruno (24, Raleigh, NC): I don't think anyone would stalk me through the program so I didn't think too much about privacy. I think it became more real when that person texted me I didn't really know. I don't think that was anything creepy or too wrong. It just made me realize that other people are seeing that I'm doing something where I kind of felt like it may have been more of a personal thing at first.

The second class of unintended consequences I identified had to do with misunderstanding or carelessness more than open friend networks. One misunderstanding was outlined by Abigail about having to miss a friend's birthday party because she was going out of town. Before she left town, she checked in on Foursquare and her friend saw, causing a mini controversy:

Abigail (28, New York City, NY): yeah. I've also like had the situation where I like couldn't hang out with a certain person, or I, something happened where I didn't want a certain person to know where I was, like I had to cancel plans with a friend and I ended up being able to go out anyways and I didn't want to hurt their feelings by checking in. Actually, I know what happened once. I was, I had to miss a friend's birthday part because I had to go to NJ that night, and I had said, I just told her that I was busy and I actually wasn't leaving until 5pm, and I checked in somewhere at 4pm in NY, and I got a text from her immediately saying "I thought you were out of town!"

Me: Oh wow.

Abigail: She thought she like caught me but really I was leaving soon after that, but it still got me in trouble a little bit.

Abigail's example detailed a situation that was easily explained to her friend, but it still reminded her that there could be consequences to her check-ins, and for a while afterwards she thought twice before checking in. The second example a few of my participants brought up has to do with what can best be described as carelessness and was similar to stories reported by multiple people I interviewed. This carelessness occurs when people tell someone they are staying in for a night. They then apparently forget that they are Foursquare friends with that person, go out, check in, and broadcast the fact that they are out to the person with whom they broke plans.

Donna (27, Cincinnati, OH): Uhm yeah. I also like, it's kind of funny when friends tell you they're not going out and you see them out at bars. I like when you can catch them in lies or...if they say they'll never go to this place and then you see them at this place. It's just kind of silly cuz if they just hadn't checked in, no one would have ever known.

After identifying these instances of carelessness in some of my early interviews, I asked later participants about situations like the one described above and was told that they do not view these occurrences as a privacy issue. Multiple participants told me that there is nothing Foursquare can do to stop people from being careless. As one of my participants told me, "if I check in, it's my fault." Just like with people who post unflattering things about employers they are Facebook friends with, some people share information they should not on Foursquare and that information can have unintended consequences.<sup>71</sup>

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<sup>71</sup> One of the super users I spoke with explained to me that Foursquare does take some steps to protect people from themselves. When Foursquare started, anyone could make a "home" venue for their house and it would show up just like any other venue if someone was nearby. Foursquare changed that so that now "home" venues will not show up on check-in lists. To check in to a home, someone must type the name of the venue.

**Micro-practices and managing locational privacy.** Beyond the control provided through the application, individuals also used specific tactics to protect their privacy when using Foursquare. I already discussed one tactic in the section on how people limit their network to control who can see their check-ins. People also make decisions based on specific situations as a way to control their privacy while sharing location information.

The most obvious tactic people use is to not check in at certain locations. Most of the people I spoke with do not check in to their home address, though this was not always because of privacy (some people just found checking in at home to be boring). Those who do want to check in while at home but not share their exact address created larger-level venues. Some of my participants, for example, will check in to their neighborhood rather than their home. Other participants who live in large cities will check in to their apartment building but not share their apartment number.

Houses and apartments were not the only places people do not check in as a specific privacy tactic. Some of my participants do not push their check-ins to Twitter when they are on vacation to avoid telling all their Twitter followers they are out of town. Others do not check in to places like their children's school, and one participant who works in sales and visits clients will not check in at prospective clients' offices because he does not want others to know that client is considering switching to his company. For the participants I talked to who view Foursquare mainly as a game and want to gather as many points as possible by checking in everywhere, they choose to check in "off the grid" at certain places they do not want to share, allowing them to still check in but not share their location with friends.

Other people do not check-in for temporal rather than spatial reasons. In other words, it is not that they are at a certain location they do not want to share, it is that they are somewhere at a certain time they do not want to share. Examples of this practice relate back to the previous section in which people were caught in lies because of their check-ins. Some of my participants had been in similar situations in which they canceled plans with one person and made plans with someone else and did not check in to avoid getting caught. Two people told me about times they left work early and then did not check-in because they did not want their coworkers to know they had left. These examples show a more temporal than spatial privacy tactic. They are not avoiding checking-in because of *where* they are but because of *when* they are there.

Finally, many people check in for reasons that have nothing to do with sociability. They check in for points or as a way to remember the locations they have been. For these reasons, they sometimes go out of their way to make sure no one can meet up with them as a way to protect their privacy. There were two main ways people did this. The first, and more obvious method, was to check in off the grid, meaning that none of their Foursquare friends could see their check-in. The problem with checking in off the grid is that many times people do want their friends to see they were at a location (not possible with “off the grid” check-ins) but do not want to share their location while they are actually there. In addition, “off the grid” check-ins do not count toward winning mayorships. To get around this, many of my participants reported checking in only as they were leaving a location. That way they shared their location but did it in a way that allowed them to preserve their locational privacy in sensitive situations.

Participants exerted this privacy tactics in a number of situations. The two that arose most frequently had to do with hotels and banks. For a few of the women I interviewed, they wanted to record their travels through Foursquare, but they did not feel comfortable sharing their hotel with all their Foursquare friends because they were spending the night there alone. Consequently, they did not check in when they got to their hotel, but instead checked in only as they were leaving:

Dolores (29, Washington, DC): I don't check-in until I'm leaving for a lot of places. I don't do that often, but if it's a hotel, I definitely don't check-in to until I'm leaving. I don't want people to really know where I am.

The other situation that arose repeatedly concerned banks. Three of my participants (two of whom check in absolutely everywhere) discussed how they would only check in as they were leaving a bank because they did not want everyone know they may be carrying a large amount of money.

Josh (34, Kennesaw, GA): When I go to a gym I post that to Facebook and Twitter. I normally give workout details as well. However, if I'm at the bank, I might check-in as I walk out so no one sees that until I'm leaving, for you know, obvious reasons. I don't need everyone knowing I have a bunch of money that I just withdrew. You do have to be cautious and use common sense.

The tactic of checking in only as they are leaving a location allowed people to stay fully engaged with the gaming and memory elements of Foursquare while still maintaining their locational privacy in sensitive situations. It also relates back to the issues of control I have discussed throughout this chapter and shows why it can be misleading to discuss location tracking and check-in based LBSNs as if they are similar. With a location tracking LBSN like Latitude, one could passively broadcast one's location while at a hotel or a bank without realizing it. With Foursquare, people can consciously choose not to check in or to check in as

they are leaving a location. They can still share their location, but do so in a way that ensures that their check-in becomes a significantly less consequential piece of information because it becomes a trace of past movement rather than present location.

## **Discussion**

Privacy is a complicated concept. As Dourish and Bell (2011) have argued, understandings of privacy are greatly affected by culture, and privacy is practiced significantly differently across cultures. Even within cultures, there can be a great deal of variability in how people view what is private and what is public, as the example of Amelia shows when compared to some of my participants who more or less share everything. In this chapter, I examined how my participants viewed privacy when using Foursquare and found a great deal of diversity in their responses. My participants all lived in the United States (though two had recently moved here from abroad), so the data analyzed above only reflects certain perspectives on locational privacy. In addition, my field work was performed with frequent Foursquare users, and as people who chose to use the application, their views on locational privacy should not be generalized to the rest of the population. None of my respondents reported major concerns about privacy while sharing their location through Foursquare, and yet surveys have shown that a majority of people who own smartphones are “significantly concerned” about losing their locational privacy (Halliday, 2010).

Exploratory qualitative work with early adopters does not reflect generalizable views on location privacy because, almost by definition, people who adopt these technologies are less concerned about locational privacy issues than many people who refuse to use

applications like Foursquare. However, this exploratory work is valuable for a number of reasons. Namely, it contributes to knowledge about how people who have experience with an application like Foursquare feel about sharing their location, and equally importantly, it reveals the different ways these people negotiate the relatively new, location-based information architecture of LBSNs. In addition, my work suggests that it is impossible to even develop a singular understanding of how Foursquare users view the importance of locational privacy. Instead, my data shows there is significant variance in how people view what is private and what is public. For example, as I discussed earlier, some of my participants accept hundreds of Foursquare friends and check in everywhere they go. To some, that may suggest they do not care about privacy; however, when I asked these people if they do care about privacy, they tended to answer that they do even as they share information in ways that would have shocked some of my participants. They did care about privacy, but they did not feel that their location was private information most of the time. For other people, especially the participant who refused to accept even a single Foursquare friend, location was an intensely private piece of information. While these two different groups were both on the outer margins of my data, they show that different people can have significantly different understandings of what is private and what is public.

While the fact that my participants view the concept differently can be a problem of interview-based research on privacy, it can also be a strength. As Solove (2008) and others have argued (de Souza e Silva & Frith, 2010a, 2012; Gordon & de Souza e Silva, 2011), people too often discuss privacy as if it is an objective entity waiting to be violated. Instead privacy is a culturally constructed, negotiated concept that is shaped by practices and

deployed differently in different groups. For many non-users for example, discussions of sharing location elicit negative responses (Halliday, 2010). However, that response to locational privacy is far from universal. My research shows that many of my research participants do not feel that strongly about location information, and many of my participants expressed more worry over photo albums and status updates on Facebook than location on Foursquare.

In chapter five, I used the definition of privacy as the ability to maintain control over social situations to develop a framework of privacy (boyd, 2011a; de Souza e Silva & Frith, 2012). My interview data showed that this definition applied to how my participants negotiated privacy while using Foursquare. The word “control” arose—unprompted—repeatedly in my interviews. My participants felt they were able to maintain control over the social situation of their information sharing because of the options provided to them through Foursquare and the design of the application. As boyd (2011 a) argues, privacy is not just about options; it is instead about the ability to control those options for different pieces of information. With Foursquare, my participants were able to treat each piece of location information differently through the ability to check in “off the grid,” check in only on Foursquare, or push their check-ins to Facebook and Twitter. In addition, my participants praised the multi-step process of checking in on Foursquare. As multiple participants reported, the fact they have to click through three screens to check in gives them ample opportunity to think twice before sharing their location. These multiple steps as reminders were important for how my participants managed their privacy.

The control people are given was often contrasted to other online SNS and other LBSNs, most commonly Facebook and Google Latitude. Scholars have argued that the way people understand a new technology is often by comparing it to technologies that came before (Bolter & Grusin, 1999). This relational understanding of technological artifacts clearly applies to my data in the way my participants used problems they faced when using other social networking services as a way to explicate the comfort they felt with Foursquare. From my findings on the relational nature of Foursquare privacy, two different elements become clear. First, my data suggests that boyd is correct to argue that privacy is about more than just the ability to control information. Many participants told me that while they could control information on Facebook through complex privacy settings, it was more difficult to do so and they did not feel as comfortable on Facebook as on Foursquare. It is the flexibility and ease of use rather than the sheer number of privacy options that made my participants comfortable sharing potentially sensitive pieces of information like location. Secondly, my data suggests that Cramer, Rost, and Holmquist (2011) are correct in arguing that there are fundamental differences between check-in systems that mitigate “problematic issues such as privacy” (n. p.) and location-tracking services. All of my participants who had tried tracking services reported discomfort with applications like Latitude that actively track their location. As I explain later in this chapter in my discussion of “seams,” location-tracking LBSNs like Latitude can passively broadcast location while check-in services like Foursquare require active participation, which is a major design difference. The way my participants detailed the differences between tracking services and the check-in system of Foursquare suggests that researchers should be careful extrapolating privacy findings from LBSNs that incorporate

location-tracking or child tracking (Boesen, et al., 2010), elderly tracking (Perusco & Michael, 2007), or parolee tracking services (Shklovski, et al., 2009) to check-in systems like Foursquare.

As part of the framework I developed to address my third research question in chapter five, I showed that existing research on social locational privacy and social networking sites shows that people develop tactics to maintain a sense of privacy when dealing with relatively new technologies. These tactics can be seen in earlier studies of location tracking: children who were having their location tracked strategically left their devices behind or had friends take the devices to show a false location (Boesen, et al., 2010); parolee's modified their behaviors to broadcast "correct" locations to their parole officers (Shklovski, et al., 2009). That Foursquare users also developed privacy tactics was reflected in my data, much of which focused on the specific ways people navigated the information landscape of Foursquare check-ins. My data also revealed close ties between the tactics people use to maintain privacy on other SNS and the tactics people use on Foursquare. Raynes-Goldie's (2010) work shows that Facebook users often deploy a wide range of techniques to maintain their privacy, techniques that include aliases and setting up lists. In addition, boyd and Hargittai found that Facebook users are becoming increasingly aware of how to modify their privacy settings and control their flows of information.

On Foursquare, the tactics people use play out differently because of the nature of the application, but they show the close links between SNS information sharing and location sharing in LBSNs. One obvious tactic is controlling one's friend network, which is similar to what people do on SNS like Facebook and similar to Lederer, Mankoff, and Dey's (2003)

finding that whether people choose to share location or not is greatly dependent on who can see the information. My participants also engaged in more location-specific tactics to control their social situations. These tactics included creating neighborhood or building-level locations through Foursquare that allowed them to check-in while at home without giving away their specific location. My participants also often checked in only as they were leaving a location as a way to still share their location, but do it in a way that protected their privacy. This finding fits with Consolvo et al.'s (2005) earlier study of an SMS-based location sharing system that found that most of the time people shared their location accurately, but their decisions whether or not to do so depended on when they were sharing. And finally, almost all of my participants simply chose not to check in when they were at certain locations, such as their homes, potential clients' buildings, and their children's school, showing a recognition that some pieces of information should not be shared, a recognition that has been identified in the literature on SNS privacy (Raynes-Goldie, 2010). For a related SNS-based example, Fogel and Nehmad (2009) found that only 10% of the Facebook users they studied shared their home address on their profiles. These are all example of micro-practices my participants used to take part in Foursquare while still protecting information they did not feel comfortable sharing. All these tactics also relate back to the issue of control discussed above. These micro-practices are made possible because people could choose when and where to check in, in contrast to applications and devices that constantly track location.

One of the micro-practices I found most frequently in my data was when people checked in as they were leaving a place or after they had already left. They shared a location with friends, but it was not their actual location. One way to conceptualize how this tactic

relates to privacy is Dourish and Bell's (2011) discussion of digital deception. In their analysis of different forms of digital deception, the authors write that, "While lying here might be a form of deception, it is arguably a form of privacy" (p. 148). The ability to mislead others is often an important way people can maintain their privacy both off and online. I do not mean to be harsh in saying that my participants are "lying" when they do things like check in after they have left a location, but they are certainly engaging in a form of deception as a way to manage what other people know about them. Drawing from Dourish and Bell, this ability to mislead others can also be conceptualized as a form of control and can be important for maintaining one's privacy when using LBSNs like Foursquare.

The way my participants discussed privacy and control when using Foursquare suggests important design considerations for ubiquitous computing devices. In the original vision of ubiquitous computing, Weiser argued that we need calm, invisible technologies that we interact with seamlessly (Weiser, et al., 1999). Weiser's vision shaped a generation of later research (Bell & Dourish, 2006; Dourish & Bell, 2011), but more recently, some designers have moved away from Weiser's original vision, arguing that we need to design visible "seams" into ubiquitous computing that remind people they are constantly interacting with different devices (Benford & Giannachi, 2011; Chalmers, MacColl, & Bell, 2003; Greenfield, 2006). My findings suggest that people may be more comfortable in environments that remind them they are sharing and transmitting information than environments in which the computing sinks into the background. That comfort level can be seen in the way my participants contrasted Foursquare and Latitude, a location-tracking LBSN. Latitude is a more seamless, "calmer" application. Users can leave Latitude running

in the background and transmit their location without constantly interacting with their phones. Foursquare, on the other hand, is a more cumbersome application that requires people to cycle through at least three screens before checking in. Foursquare is also less accurate because users cannot be sure that someone else is still at the location they last checked in. However, while the active participation required by Foursquare makes it far less “calm,” the active participation functions as a concrete reminder that people are sharing location with others. My findings suggest that ubiquitous computing designers may be better served focusing on user control by requiring active user participation rather than focusing on embedding seamless, invisible computing into the physical environment.

Of course, while design can mitigate social privacy issues (Cramer, et al., 2011), it cannot end privacy issues. Even when people actively choose to check in they can share information they maybe should not be sharing, and despite their comfort level with the application, they may not always be aware of who can see their information. This can be seen most obviously in the examples my participants detailed of friends who apparently forgot who could see their check-ins and got caught lying to other friends about their plans. In addition, while many of my participants did limit their Foursquare network, occasionally out of fears of being robbed, some people did not. They shared their information with everyone, raising questions about what people could do with this information. As I mentioned in chapter five, sites like PleaseRobMe have already addressed what happens when people make their location public. Some of my participants reported not caring, and the “seams” designed into the application cannot stop people from sharing information if they choose to do so. The worry is that people often do not realize the consequences of their information

sharing. For example, Gross and Acquisti (2005) showed that some early users of Facebook provided enough profile information for others to determine their social security numbers. Most of my participants who did share with everyone had never experienced overly negative consequences of their actions, and as research on Facebook suggests (Debatin, et al., 2009), some people choose not to limit the information they share until they personally experience a violation of their privacy. While the check-in system does give people more control, it will not fully address all the possible social privacy issues that can arise.

The reader will notice that the analysis of my data did not include any categories that directly address institutional privacy. As I discussed in chapter five, earlier research shows that people tend to be more concerned with social rather than institutional privacy when using online SNS (Debatin, et al., 2009; Raynes-Goldie, 2010), and I found that the same is true for my participants' Foursquare usage. I asked my participants how they feel about Foursquare using their location data, but my participants did not express any serious concerns about that issue. Some of my participants went out of their way to praise Foursquare for having a clear privacy policy, but two-thirds of the people I spoke with had never read the privacy policy. Most of my participants did tell me they would be annoyed if they received location-based text message advertisements and were happy Foursquare did not do that. However, their dislike of possible text message advertisements had more to do with annoyance than privacy concerns. They also did not express any reservations about using third-party application that linked to the Foursquare API.

It is important to note that just because my participants did not express concern about institutional privacy with Foursquare usage, it does not mean institutional privacy is not an

important issue. People often have little idea what is being done with their information or what is being collected (Solove, 2001, 2004; Turow, 2003, 2012), so qualitative interviews are likely not an optimum method for addressing concerns about how companies handle data. For people to care, they often have to understand what data is collected and who it is shared with, and no one I spoke with had that level of understanding. In fact, some participants made statements about institutional locational privacy that could be seen as overly naïve. One participant told me that as long as a company is large and established, he trusts it to handle his data and only collect what it needs. Another told me that she highly doubts that any major apps share location data with advertisers, and another participant said that she was “pretty sure” companies do not store location information for longer than necessary. All three of these statements can be seen as naïve, but they show how difficult it can be to address institutional privacy in an interview setting. My findings suggest that we need more interventionist work that informs people about how their location information is used and then gauges their opinion, similar to the work done by Turow and colleagues regarding online privacy (Turow, 2003; Turow, et al., 2009).

Educating users is especially important because most of my participants are not cognizant of the information Foursquare provides to merchants, and equally importantly, as I discussed in the previous chapter they frequently use third-party services that link to the Foursquare API and operate under entirely different privacy policies. As I discussed in chapter five, Foursquare’s public API provides a large amount of data and that data is held under a different privacy policy when using a service like 4sqmap (Jones & Wolf, 2011).

Future work should systematically examine the gaps between what actually occurs when location-based services collect people's data and what people believe occurs.

## **Conclusion**

This chapter has addressed the social privacy issues people confront when using Foursquare. An obvious limitation of my data is that I only spoke with Foursquare users who are likely more comfortable sharing their location than many members of the general public. However, my field work contributes to the understanding of social locational privacy in the way it shows how different people view location differently and the tactics people use to maintain their privacy. My data also shows that the issue of control is central to how people understand locational privacy. Because my participants were comfortable with their ability to exert control over how their information was shared, they did not see Foursquare use as negatively affecting their privacy. Importantly, however, my data shows that control is about more than privacy settings and options; it is about the ease of use and flexibility to control different pieces of information in different settings. This form of control is what differentiates Foursquare from other LBSNs like Latitude and will hopefully be implemented in the design of future mobile applications.

Locational privacy is an important issue that will continue to affect the design and adoption of location-based services. As this chapter has shown, people regard their location information differently, with some sharing it freely and others choosing to be protective of who knows their location. People also are resourceful enough to develop tactics to protect their social locational privacy when using location-sharing applications, and importantly, the

tactics people use depend on the design of the application. Someone using a location-tracking system would not be able to only check in while leaving a place. In addition, my work has shown the importance of audience when understanding social locational privacy. What is alright to share with a few other Foursquare users may not be alright to share with an entire Facebook or Twitter social network. If applications like Foursquare continue to expand their user base, it will be interesting to see how people will develop new tactics and information sharing practices to account for a wider audience. Regardless, more and more applications and devices will be location-aware in the future, and there is little doubt that privacy will continue to be an important issue.

## Chapter 10: Conclusion

My dissertation has focused on the location-based social network (LBSN) Foursquare and was structured to address the three research questions that drove my research:

1. How does the use of mobile applications like Foursquare impact how people relate to the locations they move through? How do individual design elements become a “lens” (Dourish & Bell, 2011) through which people view their surrounding space?
2. What are the social practices of Foursquare use? How do people use location to present themselves to others, and does being able to track the location of friends impact behaviors?
3. How do people manage the privacy issues that come with sharing their location? How do they feel about location as a private or public piece of information, and what are the micro-practices they use to exert control over their information?

To address those questions, I split my analysis into two interdependent sections. The chapters in the first section focused on a multidisciplinary body of academic thought that I weaved together to develop my conceptual framework while identifying gaps in existing research. Chapter two focused on the first research question and detailed the concepts of hybrid spaces and spatial legibility while showing that there is a lack of empirical research addressing how location-aware technologies mediate individuals’ relationship to physical space. Chapter three focused on the second question and examined antecedents to contemporary LBSNs, detailing forms of collective mobile communication and social networking sites (SNS) to show that the merging of these areas in LBSNs raises question about collective mobile communication and the presentation of self that are not captured in existing literature. Chapter four built on the issues explored in chapter three to also address my second research question and explored the concept of net locality as a way to address the

debates in literature about mobile social networking concerning the concept of homophily. Finally, chapter five addressed my third research question and discussed how the merging of location information and social networking raises new privacy concerns that are not fully addressed by existing research.

The second section of my dissertation focused on data analysis, reporting on exploratory interviews I performed with 36 Foursquare users and showing how my data relates to the existing research I examined in section one. The first chapter of section two explained my methods and discussed the constructivist grounded theory approach I used in my research process. I then moved on to my three data analysis chapters, beginning with chapter seven, which focused on my first research question. This chapter explored how my participants used the hybrid spaces of Foursquare to make their surrounding space more legible and how that legibility impacted their mobility decisions and their relationship to surrounding space. I also detailed how the game elements of Foursquare become an important part of how some of my participants relate to hybrid spaces and can encourage certain behaviors. Chapter eight focused on my second research question and how my participants use the collective mobile communication of Foursquare to coordinate with others and how they use location to shape their presentation of self to multiple audiences. Chapter nine addressed my third research question, detailing how my participants use the different means available to them to manage their locational privacy while sharing their location with others. All three of these chapters ended with discussions sections that tied my empirical findings to the conceptual framework I established in the first part of my dissertation.

In the rest of this concluding chapter, I first highlight some of my major exploratory findings before moving on to a discussion of the contributions of my work. I then reflect upon some of the limitations of my research and how those limitations can be addressed in future work. I conclude with a final reflection on my dissertation work and thoughts on the future of Foursquare as a mobile application.

### **Highlighting Significant Findings**

Through my conceptual framework and exploratory qualitative work I was able to address the research questions that drove my analysis. In my field work, I focused on how Foursquare became a “lens” through which my participants related to their surrounding space, how the social elements of Foursquare play out in user practices, and how my participants manage the privacy concerns that arise when sharing location information with others. However, one of the strengths of exploratory research is the ability to uncover data the researcher did not expect to find as a way to contribute to existing understandings and point to possible future research. In my work, I did not expect to find so much variance in how people used Foursquare. I began my research with the idea that social uses would be the dominant reason people used Foursquare, but I found that some of my participants used it mainly as a game, some as a way to find new locations, and some as a way to catalog their lives. The cataloguing was one of my most unexpected findings, and I did not expect to find that links between Foursquare, third party applications, and memory would be such a prominent category in my data, but my data included frequent examples of participants using Foursquare as a way to record their locations as a personal archive. In addition, while I set

out to explore the presentation of self through location, I did not expect to find such nuanced understandings of audience as the presentation of self through location shifted across different SNS.

As this suggests, some of my findings were expected based on previous literature and some were not. In the list below, I detail my major exploratory findings in the order I discussed them in chapters seven through nine:

- **Foursquare usage affected how my participants “read” their surrounding space and choose where to go in multiple ways.** My data showed multiple examples of my participants choosing to go somewhere directly because they used Foursquare. My participants used the Explore feature to find new locations, relied on tips to choose where to go, and chose one location over another because of Foursquare’s game elements. I discussed multiple examples of how Foursquare affected how my participants related to their surrounding space with the goal of answering my first research question, which concerns how Foursquare impacts how people relate to locations and how mobile applications can become a “lens” through which my participants view their surrounding space. These examples show how the merging of digital information and physical space in hybrid spaces can affect how people “read” their surrounding space (de Souza e Silva, 2006; de Souza e Silva & Frith, 2012, forthcoming), and the formation of these hybrid spaces had implications for my participants’ decision making. In chapter seven, I also situated my data inside the concept of spatial legibility to discuss how Foursquare can become a “lens” through which people see their surrounding space (Dourish & Bell, 2011). I discussed how the

different elements of Foursquare can contribute to the legibility of space by “making the invisible visible” (Dourish & Bell, 2011, p. 195). These different design elements impacted how my participants used Foursquare to mediate their relationship to their surrounding space and showed how mobile applications can become an important part of the constitution of contemporary public spaces.

- **The ways my participants use Foursquare are diverse.** There was no dominant reason I could point to in my data that my research participants use Foursquare. Some participants used it primarily as a way to share information with friends; some used it primarily as a game and checked in mostly to score points and earn mayorships; some used it as a tool to help them explore new locations, whether through tips, friends’ check-ins, the Explore feature, or badge hunts; and others used it mainly as a self-cataloguing tool to create a record of the locations they visited. For this reason, I proposed that we should develop different categories of Foursquare users in a similar way to Bartle’s (2006) analysis of the different types of MUD users. The four broad categories I identified were social users, explorers, gamers, and cataloguers. Most of my participants used Foursquare for a combination of reasons, but almost all had a dominant reason they used the application. The diversity of ways in which my participants used the application was surprising, and future research should explore if other LBSNs also include different categories of users. As I mentioned throughout my dissertation, Foursquare is different from the earlier LBSN Dodgeball and contemporary LBSNs like Loopt and Latitude that tend to be less diverse and focus more on social elements. Future research can use my finding about categories of

Foursquare users to examine how the different reasons people use the application lead to different usage patterns than LBSNs based solely on social networking as compared to LBSNs like Foursquare that are based on social networking, spatial search, memory, and gaming. As I detailed in chapter eight, in my data these categories had implications for my second research question, which concerned the social practices of Foursquare users.

- **The social practices of Foursquare users, especially coordinating co-presence, are complicated and affected by the variety of reasons people use the application.** Highlighting the possibility of serendipitous encounters is common in popular press articles (Jackson, 2010; Kirkpatrick, 2010), and serendipity is a point of emphasis in how Dennis Crowley has marketed Foursquare (Crowley & Cashmore, 2011). I found that serendipitous encounters did occur for my research participants, but fairly rarely. One problem with relying on serendipity or using Foursquare to coordinate with friends was distance, which was suggested in earlier literature (de Souza e Silva & Frith, 2012; Dourish & Bell, 2007). Most of the times my participants checked in, they were simply too far away from others for them to meet up. There were specific situations in which the problem of distance was mitigated, namely work lunch hours or nights out in dense, bounded areas. More surprisingly, the ways my participants coordinated co-presence through Foursquare were complicated by the diverse elements of the application. As I mentioned in the previous finding, there are different types of Foursquare users and many different reasons to check in. Only one of those reasons is to share location in the hope a friend

will be nearby. Because Foursquare gives people so many reasons to check in, my participants did not automatically view other people's check-ins as an invitation to meet up. The check-in needed more context to be understood as an invitation, so check-ins instead became an invitation to call or text for more information rather than a direct invitation to meet up. The one instance in which I found that a group did use Foursquare as a primary coordination tool involved a group of friends that addressed the problem of context beforehand. They had already established an understanding that if they checked in to a certain neighborhood on a Friday or Saturday night, it was okay to stop by. For others who did not do this up-front work, there were too many reasons friends may be checking-in to assume that the check-in was an invitation for co-present interaction without contacting them first, partially contrasting with Humphreys' (2007, 2010) exploratory work with Dodgeball, which was a service that was more focused on the social and did not include game elements or search functions. As I mentioned in the previous finding, this suggests the potential for future comparative research that examines how the different elements of competing LBSNs affect how people use them to coordinate with others.

- **The presentation of self through location extends past Foursquare to both Facebook and Twitter, and the mediation of the networks affect the locations my participants shared.** Others have observed that with LBSNs, location becomes a key piece in one's presentation of self (Cramer, et al., 2011; de Souza e Silva & Frith, 2012), just as status updates and photo albums shape one's presentation on SNS like Facebook (Donath & boyd, 2011; Turkle, 2010). I did find instances of my

participants not checking in because they did not want to share those locations with their Foursquare network, but a more surprising finding concerned how the presentation of self through location shifted across networks. My participants were far more discerning about which check-ins they shared when pushing their location to Facebook and Twitter as compared to just their Foursquare friends. On Foursquare, my participants tended to have more limited audiences and the audience had basically agreed to follow the person's check-ins. Twitter and Facebook contained a more varied network of friends and family and included the "context collapse" present on some SNS when people are not speaking to a defined audience (Marwick & boyd, 2010), and none of my participants chose to share all their check-ins with these networks. This finding shows how Goffman's (1990) discussions of audience as shaping presentation can play out as information travels across multiple SNS and how behavior can be mediated by the network in what boyd (2008c) calls "networked publics." This finding is important for understanding not only how people present themselves through location to multiple audiences, but also suggests the need for future research on SNS in general that examines how people make decisions about the kinds of updates they choose to link to multiple SNS. For example, how do people decide when to push a Tweet to Facebook or a Facebook update to their LinkedIn profile? This is an issue that was prominent in my interviews and is under-addressed in existing research on SNS and LBSNs.

- **Foursquare can be used as valuable archiving/memory tool.** Humphreys' (2007) work with Dodgeball users found that a few people used the service to "catalog"

locations. I found the same with my research participants, though I found that this use was more prevalent than in Humphreys' interviews. Many of my participants use Foursquare as a way to record their mobility and go back and remember activities based on the locations to which they had checked in. They also used third-party applications that mapped previous check-ins or emailed reminders of past activity to increase Foursquare's efficacy as a memory tool. This finding suggests that location can play an important role in personal memory, and location-based applications like Foursquare may be a significant addition to the many other applications people use (Gmail, Facebook, etc.) that allow them to archive their lives (Mayer-Schönberger, 2009). The links between mobile applications and memory will likely be increasingly important going forward and will provide opportunities for a wide range of future research. There are currently mobile applications that allow people to create a memory archive of every television show they watch (GetGlue), every beer they drink (Untappd), every personal note they want to keep (Evernote), and every path they take when running or hiking (Mytracks). My data suggests that the link between mobile applications and memory may be especially pronounced in location-based applications that allow people to record their personal mobility, and future research should examine in detail the role location plays in memory practices when people use location-based applications. Interestingly, I also found that my participants who used Foursquare for self-documentation tended to only check in to certain locations they wanted to actively remember. Most of my participants were not interested in archiving their entire lives; they actively shaped how they presented their present to

their future self through their decisions of when and where to check in, which also suggests that future research should not only look at the mobile tools people use to preserve past experiences but also at how people make decisions about the information they feel is worth preserving.

- **Design plays a significant role in the privacy dynamics of location-based social networks.** At the most basic level, there are two designs of LBSNs: location tracking and check-in services (Cramer, et al., 2011). Location-tracking applications like Google Latitude passively broadcast location in real-time. Check-in services like Foursquare require users to actively move through multiple screens to share their location. My participants were far more comfortable with the check-in model and the active participation it required. The ways they detailed how check-ins enabled them to maintain their privacy suggests important design consideration for future location-based services. As I explained in chapter nine, while location tracking is less cumbersome and fits more closely with the idealized model of “calm” computing in which computing happens in the background without people’s active involvement (Weiser, et al., 1999), my exploratory work suggests that it might make more sense to design “seams” into these services that serve as reminders that people are sharing information (Benford & Giannachi, 2011; Chalmers, et al., 2003; Greenfield, 2006). On Foursquare, these “seams” play out in the multiple screens required to check in, and as a few of my participants suggested, these multiple steps served as a “do you really want to check-in?” reminder. This finding suggests that design plays a significant role in how comfortable people are when using location-sharing

- applications and suggests that future comparative Human Computer Interaction and Computer-Science research should compare multiple designs of location-sharing applications to examine the best ways to incorporate seams into future applications. These seams will sacrifice some of the ease of use that comes with the passive broadcasting of location, but future research can work to determine the ideal relationship between calmness and seams in future location-sharing applications.
- **People develop tactics to control the information they share in new informational environments, and these tactics are often shaped by the design of the application.** Existing research has shown how people adjust to using location sharing technologies (Boesen, et al., 2010; Shklovski, et al., 2009). They develop tactics that allow them to exert at least a modicum of control over their social situation. I found that my research participants also developed tactics that let them control the information they shared. These tactics ranged from obvious decisions to not check in to certain locations (e.g. home, a client's office) and to control who was part of their Foursquare network to more unique practices such as only checking in as they were leaving a location or creating neighborhood-level locations rather than checking in to one's home. This shows that my participants developed ways to adjust to sharing their location, and it also once again shows the importance of application design. Many of the tactics my participants detailed were based around the control granted by the check-in model and would have played out differently in a location-tracking LBSN, suggesting that future research should examine how people develop

ways to maintain their privacy using LBSNs like Latitude that operate using a different model.

- **My participants did not show significant concern or knowledge about institutional privacy issues associated with location-based services.** Research on other SNS has shown that people typically care more about social privacy than institutional privacy (Debatin, et al., 2009; Raynes-Goldie, 2010). Research on online privacy has shown that people typically have little knowledge about what information is collected and how it is used (Solove, 2004; Turow, 2012). I found support for both these positions in my interviews with Foursquare users. The people I talked to did not particularly care about what information Foursquare collected, nor did they seem to have much knowledge about what information was being collected. This finding is especially notable because most of my participants also linked Foursquare to third-party services that operate under completely different privacy policies. This finding extends past Foursquare to all location-based services. As the number of people using smartphones increases, people will be sharing their locational information with more and more applications. It will be important for users of location-based services to be educated about the information practices of these companies and become more aware of how their information is being used.

## **Contributions to the Literature**

My findings contribute to the body of knowledge about mobile applications and SNS in multiple ways. In the introduction of my dissertation, I discussed the gaps in existing

literature that my work fills and how I can contribute to academic knowledge about mobile applications, hybrid spaces, and SNS. In the list below, I detail my major contributions.

- **My work is one of the first qualitative examinations of Foursquare and links user practices to a multidisciplinary body of theoretical research.** There has been qualitative research with applications that are fairly similar to Foursquare. Humphreys (2007, 2010) used participant observation and interviewing to study Dodgeball users and Licoppe and colleagues (Licoppe & Guillot, 2006; Licoppe & Inada, 2006, 2009) detail a case study of the LBMG Mogi. I drew from these works throughout my dissertation, but I also argued that Foursquare is significantly different from both Dodgeball and Mogi because it combines more elements that affect how people use the application. There have also been conference presentations in Human-Computer Interaction that detail interviews with Foursquare users (Cramer, et al., 2011; Lindqvist, et al., 2011). However, my research is different from these studies because I combine qualitative work with Foursquare users with a multidisciplinary body of academic literature, linking user practices to concepts such as hybrid space and spatial legibility to show how mobile applications can affect how people relate to their surrounding space. By detailing how hybrid spaces play out in user practices, I was able to give concrete examples of how the merging of digital information and physical space affected my participants' behaviors.
- **My findings contribute to the understanding of how mobile technologies can mediate people's relationships to physical space.** Research on mobile technologies, most notably, the Walkman (Bull, 2000; du Gay, et al., 1997), the iPod (Bull, 2007),

and the mobile phone (De Gournay, 2002; Gergen, 2002) has often argued that mobile technologies disconnect people from their surrounding space (de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011). Other work has discussed how location-based mobile applications complicate this argument because they depend on physical location and refocus attention on surrounding space (de Souza e Silva & Frith, 2012; Gordon & de Souza e Silva, 2011). Through my empirical work, I was able to contribute to this argument by detailing examples of how the social, gaming, and search elements of Foursquare affect how people relate to surrounding space by highlighting elements of people's surrounding space rather than disconnecting them from it.

- **My findings contribute to the understanding of how existing infrastructure can affect the design of mobile applications.** In an influential article, Dourish and Bell (2007) argued that ubiquitous computing technologies would be shaped by the spaces in which they were used. I found the same thing with my work with Foursquare users. The ways my participants used Foursquare to coordinate with others were often shaped by physical distance, suggesting that Foursquare use is greatly shaped by physical context, supporting the arguments of Dourish and Bell.
- **My findings contribute to understandings of how people can use mobile technologies to coordinate behavior.** Coordination has been a major focus in earlier studies of dyadic mobile communication (Licoppe, 2004; Ling, 2004, 2008; Ling & Yttri, 2002). Coordination was also a major focus in Humphreys' (2007; 2010) work with Dodgeball users. In that work, she found that Dodgeball use contributed to a

form of “social molecularization,” in which people moved through the city in a sort of pack, relying on others’ location as a way to coordinate behaviors. I found that coordination with Foursquare works differently than with Dodgeball. Because there were more reasons people used Foursquare than Dodgeball, coordinating behaviors was more complicated. Most people I spoke with did not check in to locations primarily as a way to meet up with friends. This finding contributes to understandings of mobile coordination by suggesting that context is key to understanding each check-in on Foursquare because of the diverse reasons my participants use the application.

- **My findings contribute to the understanding of how audience affects the presentation of self on SNS.** The presentation of self on SNS has been addressed in existing literature (Donath & boyd, 2011; Ellison, et al., 2006). Scholars have also detailed how the presentation of self through location plays out with LBSNs (de Souza e Silva & Frith, 2012). However, the existing literature on LBSNs does not address how the presentation of self through location shifts as information is shared across multiple networks. In addition, the work on the presentation of self on SNS typically focuses on only one specific site and not how information sharing practices shift as people link one site to another. I found that all of my participants occasionally shared their location with their Twitter and Facebook networks, and the mediating effect of those social networks greatly affected the information they shared and how they present themselves to others through location. This contributes to the literature on SNS by examining the consequences of linking one SNS to another SNS.

- **Through my qualitative work, I was able to contribute to areas that were not expected based on the existing literature on location-based applications.** As I discussed in my methods chapter, my interviews partially followed a script based on areas I had identified in existing literature. However, I also allowed for issues to emerge in my interviews, which allowed me to identify topics I did not expect to find and contribute to understandings of location-aware mobile applications. These unexpected findings included how location information is shared among multiple audiences, how people can use mobile applications as memory tools, and the diverse ways in which people use Foursquare. Humphreys (2007) did mention Dodgeball users cataloguing their lives as a form of extensible memory, but it was not a prominent part of her analysis. These findings all contribute to understandings of the roles popular mobile applications can play in different parts of people's lives.
- **My work contributes to literature on both locational and social networking privacy.** In chapter five, I argued that to understand privacy on Foursquare, it is important to put literature on social networking site privacy and locational privacy into conversation. I then showed in chapter nine how the social dynamics of location privacy play out in Foursquare use. My findings detailing how people feel about Foursquare's design and the tactics they develop to protect their locational privacy contribute to the understanding of the privacy issues present in both location-aware applications and SNS. I also used my data to make suggestions about the design of future ubiquitous computing applications, arguing that it makes sense to design

“seams” into ubiquitous computing environments that serve as reminder that people are sharing information.

## **Limitations of This Study and Potential Future Work**

As with all research projects, my work with Foursquare users has limitations that affected my findings. The most obvious was that this is an exploratory study and I did not interview a representative sample of Foursquare users. I instead drew from theoretical sampling to focus on frequent users because they were better sources for interview data that helped me fill out my conceptual categories. This is not a weakness of my study; it is a common, widely accepted approach in grounded theory. But it is, nonetheless, a limitation, and it is not the only limitation of my work. In the list below, I detail other limitations of my exploratory work while also suggesting how future work can use different approaches to address these limitations:

- **My interview participants are not representative of all Foursquare users.**

Grounded theory approaches typically do not seek to make generalizable claims from data (Charmaz, 2006). They instead focus on collecting data to help build theory. In my work, I focused only on frequent Foursquare users to gain a better understanding of the potential impacts of using the application. The practices of frequent users are likely significantly different from the practices of people who use Foursquare only occasionally, so my findings should not be extended to all users. In addition, the mere fact that I was interviewing Foursquare users meant that they likely felt differently about issues like locational privacy than people who would never use an application

like Foursquare because of privacy concerns. My participants were all comfortable with sharing their location and approved of the check-in model, or else they would not have been using the application, meaning that my findings should not be extended to the general population.

- **I drew from a U.S.-centric data pool and took a Western perspective.** All of my research participants live in the U.S. Two of them had only recently moved to the U.S., one from Indonesia and one from England, but my does not include people from other countries who also use Foursquare. In addition, as I acknowledged in chapters five and nine, I operated from a Western perspective when discussing the privacy category in my data analysis. People using Foursquare in more collectivist societies would likely have significantly different views of locational privacy (Dourish & Anderson, 2006; Dourish & Bell, 2011), and future work should explore how cultural differences shape understandings of locational privacy, as well as how people from other cultures manage the issues of sociability and spatial legibility explored in my dissertation.
- **My work focused on urban Foursquare users.** I interviewed people from multiple regions of the country, including cities in the Northeast (Washington, DC; Boston, MA; New York, NY; Arlington, VA), the Southeast (Raleigh, NC; Chapel Hill, NC; Charlotte, NC; Atlanta, GA; Kennesaw, GA; St. Augustine, FL), the Midwest (Chicago, IL; Cincinnati, OH; Indianapolis, IN), and the Pacific Northwest (Seattle, WA; Portland, OR). However, only one of my participants was from a rural area (a small town in central Washington state), and it would be interesting to see if people

use Foursquare differently in rural compared to urban areas. This limitation is by no means unique to my work. Many locative media art projects focus on the urban at the expense of the rural ("Can you see me now?," 2001; Silverstone & Sujon, 2005), and many commercial location-based services are designed with urban audiences in mind. Nonetheless, Foursquare has become popular enough that it has at least some rural users, and the fact that I only spoke with one is a limitation of my research.

Examining rural users may be important in future research because it could potentially be a way to examine how location-based services are deployed differently based on where they are used. For example, many of the design elements I talked about would likely play out different in areas with low population density. If there are not many other users checking in, Explore would work differently because the algorithm would draw from a more limited data set, there would be less tips for Foursquare users to draw from, coordination may occur differently because of increased distance and lower density, and mayorships would likely be held by a select few users in a smaller town. As Dourish and Bell (2007) have argued, ubiquitous computing technologies will be deployed and used differently depending on where they are accessed. Foursquare, like many other mobile applications (Dourish, et al., 2007), tends to be designed with urban individuals in mind, and future research can examine how well it works and how useful a tool it is when used outside major metropolitan areas.

- **I relied on self-report interview data.** My research drew from an interview approach common in the social sciences. The problem with relying on interviews is

that the researcher relies on participants' views of their behavior rather than observations of their actual behavior. As many qualitative researchers have shown, different data collection methods can provide different perspectives on a phenomenon (Büscher & Urry, 2009; Büscher, Urry, & Witchger, 2011; Pink, 2009; Vannini, 2012). Future research could draw from different methods to generate different perspectives on Foursquare usage, including location-tracking logs, diaries, and alert systems asking people to reflect on use. In addition, the recent focus on mobile methods in the field of mobilities could provide novel ways to study Foursquare usage. For example, different forms of "walking with" methods have been explored in mobilities research (Jiron, 2011; Spinney, 2009; Vergunst, 2011). These methods involve researchers who travel with participants throughout the day and would be able to better take a less media-centric approach and conceptualize how Foursquare users integrate Foursquare into their other media usage. For example, in Jiron's (2011) study of transportation infrastructure in Chile, he accompanied a few research participants in their travels throughout the day. By moving with them throughout an entire day, he was able to see how they made different transportation choices in a way that would have been difficult in traditional interviews or site-based ethnography. For research on mobile applications like Foursquare, researchers could travel with a few research participants to examine why they choose to or choose not to check-in, how they react when they see friends checked-in nearby, how they actually use tips and the Explore feature, and how their behaviors are affected by gaming elements. This would severely limit the sample size to only a handful of participants, but by traveling

- with the participants, researchers would be able to provide a wealth of detail on how the different elements of Foursquare may be incorporated into daily routines. Also, Hine's (2007) work on "connective ethnography" could be an interesting way to study Foursquare use. In her work, Hines downloaded online discussions that took place among scientists on a collaborative team and brought them to her interviews. She then asked participants to reflect upon the chat logs, using the logs as a prompt in the interviews. In my work, I had a few participants provide me with their location histories, but they did so after we completed the interviews. Future work could draw from a connective ethnography approach and approach interviews with both location logs and a list of tips the participants has left. By beginning the interview with these prompts just as in Hines' work with chat logs, researchers could ask their participants to reflect on their actual location history and the digital record they have left through their mobile annotation. By linking their online data with their responses, researchers could approach their interviews with prompts that shape their participants' responses.
- **The perspective I took when analyzing my data was one of a number of different possible perspectives.** An interpretive approach to qualitative data analysis acknowledges that capital T Truth does not exist inside data. Instead, the researcher is an instrument who constructs believable interpretations of that data. For that reason, another researcher may have come to different conclusions than I did from the same interview transcripts. For example, I analyzed my data in chapter nine using boyd's (2011a) definition of privacy as the ability to exert control over social situations as the framework that shaped my approach to privacy. Shklovski et al. (2009), on the

other hand, argue that we should move past discussions of privacy and instead frame information sharing within a framework of power, and Dourish and Bell (2011) argue that we should consider replacing privacy with accountability. I could have analyzed my data in chapter nine inside either one of these frameworks, but I chose to follow boyd (2011a), Solove (2008), and others who do not abandon the concept of privacy. If I had chosen a different framework, both the analysis and discussion sections would have looked significantly different. This is not a problem with qualitative research (we all make choices), but it is important to be reflexive about the fact that my representation of my data involved multiple choices that could have been made differently by researchers drawing from different conceptual frameworks.

- **I studied one specific LBSN.** As I noted in the introductory chapter, I chose to focus on one LBSN rather than LBSNs in general. By interviewing only Foursquare users and analyzing Foursquare's design elements, I was able to speak with a specificity that would have been lost in a more general approach, so this is a strength as well as a limitation. As Hargittai (2008) warns, researchers should be careful when extending findings from one SNS to discussions of other SNS. This is likely true for my research as well, and it is likely that my findings on how people use LBSNs may be significantly different from a similar study on an application like Latitude. Future researchers could work with users of different platforms to develop a comparative analysis of how different design elements enable different uses and how people may have different reasons for using other LBSNs.

## Final Reflections and Possible Futures

When I began thinking about my dissertation topic, there were no assurances that LBSNs were going to gain in popularity. Applications like Loopt, Foursquare, and Gowalla had begun to receive attention in tech blogs and in the technology section of the *New York Times*, but Foursquare had less than 5 million users, Gowalla had less than Foursquare, and other LBSNs like Loopt, Whrrl, and Brightkite were struggling to expand their user base. Back in mid-2010 when I was settling on a research topic, there were no assurances that any of those LBSNs would be around two years later.

Complicating matters even more was my decision to do qualitative work with LBSN users. I had to choose one or two LBSNs and then interview users and hope that the LBSNs I chose would still be in business by the time I finished my dissertation. At first, I planned to interview Foursquare and Gowalla users so that I would not be focusing too heavily on a single application. Then I read an article by Hargittai (2008) that warned researchers about taking findings from one SNS and applying them to other SNS. I took her warning to heart and decided to focus on a single application, which allowed me to write with a specificity that would have been difficult if I was analyzing multiple LBSNs. I then had to choose between interviewing Gowalla and Foursquare users. I chose Foursquare; I was lucky I made that choice. Foursquare now has over 20 million users and 2 billion individual check-ins. Gowalla is now out of business.

Along the way, there were moments in which the future of Foursquare seemed to be in doubt. When Facebook released Facebook Places in August 2010, some thought it was

going to kill Foursquare (Cashmore, 2010). Facebook already had hundreds of millions of users and Places was clearly modeled after the check-in design of Foursquare. And yet, Foursquare survived and Facebook Places did not, at least not as a separate service. There are many reasons I could point to for Foursquare's continued, surprising success, ranging from Dennis Crowley's previous experiences with location-based services like Pac-Manhattan and Dodgeball to the seeming ubiquity of Crowley and other Foursquare representatives like Tristan Walker in the tech press. There are so many factors that go into the success or failure of a small startup that I cannot hope to fully document or even understand the reasons why Foursquare is growing quickly while Loopt has stagnated and Brightkite, Whrrl, and Gowalla have failed. However, while predicting or diagnosing success was not a goal of my dissertation, some of my findings do suggest why Foursquare has been successful and have possible implications for future LBSNs.

For one, the issue of audience is important to understanding why some people would rather check-in on Foursquare than use an application like Facebook Places. For my participants, their Foursquare networks typically contained less people they are close to than Facebook, and because the application is built around check-ins, people expect others to share their location. Facebook does not work that way, and it features much more of the "context collapse" detailed by Marwick and boyd (2010), meaning that people might have to be more discerning about the locations they share because they are sharing them with family, friends, co-workers, and so-on. This suggests that building an application expressly around sharing location may be a better design choice than just adding a locational layer to already existing SNS like Facebook and Twitter. In addition, unlike other LBSNs like Loopt and

Brightkite that focused almost solely on sharing location to promote sociability, Foursquare includes a number of different elements that spur use. My participants used it for social purposes, but they also used it as a game, as a spatial search engine, and as a memory tool. As I detailed in chapter eight, my participants only rarely met up with others directly because of their check-ins. If the entire application had been designed only around promoting social serendipity, it is likely that many of the people I spoke with would not have kept using Foursquare.

In the period in which I was writing my dissertation, some of the design elements of Foursquare changed. For example, designers added additional metadata to improve the application's efficacy as a memory tool,<sup>72</sup> developed new merchant platforms, altered the ways badges are rewarded, and released the Explore function to position Foursquare as an important player in the future of spatial search. We can expect to see more changes in the future as new LBSNs are developed and Foursquare's designers attempt to find new ways to boost the popularity of the application. Regardless of how design elements shift, the core areas I focused on throughout my dissertation will remain important areas of research. People will continue to use location-aware mobile applications to mediate their experience of physical space, they will continue to share their locations with others, and they will continue to develop ways to manage their locational privacy. Foursquare may continue to grow; it may fail to monetize and go out of business. No matter what happens, however, there will

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<sup>72</sup> When people used to check-in to events (such as movies and concerts), they would simply check-in to the venue. Foursquare changed that to allow people to check-in to the venue as well as a specific event. For example, if someone goes to a movie, they can check-in to the theater as well as that specific movie. They can then go back and see which movie they saw rather than just seeing that they were at a movie theater.

continue to be services that merge mobile communication and social networking, and through my exploratory work my dissertation has contributed to the understanding of what happens when locational information becomes central to how people interact with surrounding spaces and members of their social network.

As the popularity of LBSNs continues to grow, we can also expect to see many more published studies examining LBSNs. Future research will likely employ multiple methods to understand Foursquare and other LBSNs, including quantitative methods to paint a more generalizable picture of LBSN users and qualitative methods to explore in detail some of the issues addressed in my dissertation. As I discussed in my limitations section, there are opportunities to apply innovative methodological developments, particularly the mobile ethnography methods that have arose in the field of mobilities I discussed above, to the study of LBSNs. There are also issues I did not address in detail, such as the reward system and structure of Foursquare's Super User system, that will make for interesting future research. As a relatively new application that has now passed the 20 million user mark, it would not be surprising to see research on Foursquare grow exponentially in the next few years. As an early contribution to what promises to be a growing body of literature, my exploratory work has contributed to the understanding of mobile social applications, and how they relate to spatial legibility, sociability, and privacy. It will be exciting to see how these ideas are expanded upon and altered as more and more scholars focus their attention on the study of applications like Foursquare.

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## Appendices

## Appendix A: Original Interview Script

### General questions

1. What kind of phone do you have?
2. Is it your first smartphone?
3. What kind of applications have you downloaded?
4. Which are your favorite?
5. What different type of LBSNs do you use?
6. How long have you been using \_\_\_?
7. Why did you start using \_\_\_?
8. Do you have a lot of friends that use \_\_\_?
9. How often do you use \_\_\_?
10. Starting broadly, what do you tend to use \_\_\_ for most frequently?

### Place and physical mobility

1. How often do you use services (not just LBSN) that provide information about your location? I'm talking about Yelp, Google maps, etc.
2. Do you feel these services change the way you see the city? Do you make decisions (what route to take, what restaurant you go to), based on the information you find in these applications?
3. Do you take the points thing seriously? Badges?
4. Do either system ever affect where you go?
5. How about things like mayorships? Do you ever find yourself consciously choosing to go somewhere for a mayorship?
6. How much thought do you put into your check-ins? Are there places you don't check-into? If yes, why?
7. Have you found yourself using \_\_\_ differently over time? Do you think your check-in patterns have changed?
8. The tag line for \_\_\_ talks about encouraging users to explore the city. Do you find yourself exploring more because you use these services?
9. Do you record your location history? Do you ever go back over it as a way to remember places you've been?
10. Have you ever decided to go somewhere because you see that there are a bunch of \_\_\_ users checked in there?

11. Have you ever decided to go somewhere because you see on your phone that a place has special deals to offer \_\_\_ users?
12. Do you write many location-based messages on \_\_\_? (explain what I'm talking about)
13. What kinds of places do you write messages for?
14. What do you say?
15. Do you take other people's advice seriously when they attach messages to a certain place?
16. Does the ability to map your friends make you engage with a place any differently? In the broadest sense, does it make you feel any differently about the places you go to?
17. Are you more likely to go to a place that has a lot of reviews? Does that play into your decision making process?
18. Do you ever use LBSNs or other location-aware applications when you travel? Has owning a smartphone affected the way you deal with cities you've never been to?

### **Sociability**

1. Are you a frequent social media user (Facebook, Twitter, etc.)?
2. What social media platforms do you use?
3. Do you find a big difference between those forms of social media and \_\_\_?
4. Do you link \_\_\_ to the other social media you use? (explain...also relates to privacy)
5. Do you have friends who link \_\_\_ to other social media?
6. Do you have many friends on \_\_\_?
7. Do you have different friends on \_\_\_ than on other social media platforms?
8. If yes, why? In what way? Do you choose who you'll accept as a friend on \_\_\_ differently? (also...privacy)
9. Do you end up using \_\_\_ to coordinate with friends? Has \_\_\_ change the way you plan with friends?
10. Do you ever find yourself changing what you were doing/where you were going because someone checks in nearby?
11. What do you think the social expectations are of the nearby check-in? If you see a close friend check-in right down the street, is it ok to ignore it or is there an expectation that you say hi? How about if the situation was reversed? Would you expect someone to contact you?
12. Do you still check-in to places if you don't want to be bothered (on a date or something)?

13. When you're using one of these services, how do you feel about being able to map where your friends are? Do you feel more familiar with a place when you can see that friends have been there or friends are nearby?
14. With the ability to find the location of your friends, do you find yourself engaging less with other people you don't know?
15. Do you ever find yourself planning less? (explain concept of Ling's idea of "cell phone time") Do you find you can go somewhere without making plans and find people using LBSNs?
16. Have you ever participated in a Foursquare storm? If yes, why?

### **Privacy**

1. Is privacy something that concerns you a lot when you use other forms of social media (Facebook, Twitter, etc.)?
2. Do you think privacy as a concept has changed now that people post so much information online?
3. When you began using \_\_\_\_, were you worried about privacy? Why? Why not? What concerns did you have?
4. Have you heard of the site *Pleaserobme*? If yes, what do you think about it?
5. Are there places you don't check-in to because of privacy concerns? Do you ever get surprised by some of the places your friends check-in to?
6. How do you manage your privacy with \_\_\_\_? Do you think about privacy when you're using \_\_\_\_ or do you not care?
7. Are you super selective of who you allow to see your check-ins? Where you check-in?
8. Did you read the privacy policy for \_\_\_\_? Do you care if they record your location information? If they share your location history with other companies for advertising or government?
9. How do you feel about location based advertising? Have you ever received a location based ad?
10. Have you explored the different privacy options of \_\_\_\_? What are your current privacy settings? Did you change them from the default? How about your privacy setting in online social media?
11. Survey studies have found that the majority of LBSN users are male. There are many possible explanations for that, but do you think privacy may play a role? Do you think men and women can use these services in the same way? If you were a man/woman would you change any of your behaviors when using \_\_\_\_?

## Appendix B: A Tabular Representation of My Categories

Below I include a tabular representation of the frequency of my different categories. Note that these numbers do not necessarily show the depth of each category because in my coding scheme a single piece of data could be a single sentence or a long description of a behavior.

<b>Category Name</b>	<b>Number of occurrences of the category</b>
The Foursquare Explore feature as a spatial search engine	21
Digitally endorsing locations through check-ins	24
Revealing the unseen through the reading of space	31
Reading branded spaces	11
Writing space	24
Scoring points, competing over the everyday	17
Digital ownerships and mayoral competitions	31
Badge hunts and rewarding mobility	27
Check-ins and coordinating sociability	47
Engaging difference, meeting strangers	14
Presenting an idealized self to others	48
Presenting the present self to the future self	31
Network as privacy tactic	34
Foursquare as an open network	11
Varying views of locational privacy	46
Control as protection	42
The relational nature of social networking privacy	26
Unintended consequences of information sharing	10
Micro-practices and managing locational privacy	34

**Table 1: The frequency of my categories**

## Appendix C: A Sample Vignette

Ainsley is a social media professional who lives in Queens and works in Manhattan. She recently graduated from Syracuse and moved down to work for a major social media firm. She got into social media as an undergraduate because she had an internship with the firm she works for now. That's also why she got into Foursquare in April 2010. She also got into Foursquare because Dennis Crowley is a Syracuse grad who ended up giving some speeches that she attended.

Ainsley is a frequent Foursquare user, checking in at least once a day (most of the time more). She uses Foursquare for a bunch of different reasons: coordinating with friends, the 'surprise and delight factor' (this kind of language is big with her social media firm) of points and badges. A quote helps explain what she means by 'surprise and delight': "Well, just getting random badges for doing things like going to baseball game. Just the surprise and delight factor that you never know how many points you'll get. So, like I got extra points yesterday because it was summer solstice. Father's day is another one. So it's just the random rewards. That is something we tell our clients to do on social media. That's one of our strategies and I think Foursquare does an excellent job of it"

She likes the surprise of the point system, but she's not super into points. She doesn't go to places for points, but she will go to places for mayorships and she definitely goes to places for specials. The mayorships are something she doesn't care that much about, except for the mayorship of her office. Because she works for a social media firm, almost everyone uses Foursquare, and the office mayorship is hugely competitive. She says that other

mayorships are just way too competitive because there are so many Foursquare users in NYC. She doesn't have a chance to really get a mayorship with most places. She's also big into tips and reads tips for everywhere she checks in to. She says tips have never steered her wrong and she uses them all the time to choose where to go.

Ainsley also introduced me to 4sqandsevenyearsago, a site that emails you to tell you where you were on that day exactly one year before. She loves the site and loves using Foursquare as a mnemonic device. Interestingly, there's a huge amount of sentimentality that goes into her Foursquare memory because she recently made the major life shift from college to NYC and professional life. She reports that she gets sad sometimes when she gets reminded that this time last year she was going to all her favorite college bars.

Ainsley doesn't have too many good Foursquare friends, though she does have 158 Foursquare friends overall. She's friends with most of her work colleagues, but she doesn't hang out with them much outside of her work. She does have a few good friends on Foursquare. "I'd say 50% are professional friends. 20% are personal friends. And about 30% are people I met in real life or know through Twitter." While she does accept some friend requests from Twitter, she turns down a lot of requests (she has a ton of Twitter followers because she leads a prominent social media Twitter chat). If she hasn't had some kind of direct interaction on Twitter, she'll turn down the friend request. She thinks request from people she doesn't know are just weird.

She says she'll check-in just about anywhere cool, but she doesn't check-in everywhere because she doesn't find it interesting. She would check-in on a date, but she often doesn't because she thinks it's rude to pull out her phone when she's supposed to be

talking to someone. She says it's a matter of manners. She also pushes some check-ins to Twitter, but not all of them because she recognizes that people follow her Twitter handle because of her professional status and she doesn't want to flood their timeline. But... when she's doing something really interesting like going to the NBA draft, she pushes the check-in to Twitter.

Ainsley is concerned about social media privacy. She's out there on Twitter, but her Facebook account is totally blocked and she goes to great lengths to keep her info private. She wasn't all that concerned when she started using Foursquare though. She is a big fan of the control allowed by the application. She only shares what she wants, when she wants, and she praises Foursquare for making its different options easy to use. She says that her location isn't all that private, but she still wouldn't want it being shared with everyone and notes that she never has to do that with Foursquare. She does note that some of her friends have done stupid things with their information like getting caught in lies. So, for example she had a friend who told her she wasn't going out and then checked into Foursquare late one night at a bar. She doesn't blame the application for that misguided sharing of information. There's nothing Foursquare can do to stop people from making mistakes, but she does note that people sometimes do silly things like that.