Location-aware mobile media and urban sociability

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Abstract

Location-aware mobile media allow users to see their locations on a map on their mobile phone screens. These applications either disclose the physical positions of known friends, or represent the locations of groups of unknown people. We call these interfaces eponymous and anonymous, respectively. This article presents our classification of eponymous and anonymous location-aware interfaces by investigating how these applications may require us to rethink our understanding of urban sociability, particularly how we coordinate and communicate in public spaces. We argue that common assumptions made about location-aware mobile media, namely their ability to increase one's spatial awareness and to encourage one to meet more people in public spaces, might be fallacious due to pre-existing practices of sociability in the city. We explore these issues in the light of three bodies of theory: Goffman's presentation of self in everyday life, Simmel's ideas on sociability, and Lehtonen and Mäenpää's concept of street sociability.

In 2009, Nicolas Nova and Fabien Girardin tested the influence of location-awareness on collaboration by comparing two interface types: mutual location-aware interface (MLA) and non-mutual location-aware interface (NoMLA). MLA users automatically saw each

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other's positions via Global Positioning System (GPS). NoMLA users communicated position via voice or text messages. Nova and Girardin (2009) found that NoMLA users exchanged more messages, were more articulate about strategy, and better recalled their partners' movements in space than MLA users.

These findings prompted us to question common presumptions about location-aware mobile applications, which assume such applications will (1) increase communication and ease coordination in public spaces, (2) facilitate aleatory (chance) encounters and mobility in the city, and (3) increase user awareness and experience of urban space (Campbell and Kelley, 2008; Licoppe and Inada, 2006, 2009; Mäyrä and Lankoski, 2009; Sotamaa, 2002). The purpose of this article is to take to task these common presumptions by deploying three sociological concepts borrowed from Erving Goffman, Georg Simmel, and Turo-Kimmo Lehtonen and Pasi Mäenpää to analyze several of the most prominent locative mobile social networking (LMSN), aka location-based social networking (LBSN) applications. To emphasize the specific forms different LMSNs take, we concurrently develop a taxonomy through which we classify LMSN interfaces as anonymous and eponymous. Such a taxonomy is necessary to developing more nuanced analytical approaches to understanding the sociocultural impact of these media and to highlight the marked differences in interface design and affordances.

There has been an unprecedented increase in LMSN applications available in the US, such as *Foursquare*, *Loopt*, *Brightkite*, *Whrrl*, *Centrl*, and *CitySense*.[1] With the popularization of these applications, we must ask how awareness of others' locations might influence sociability and navigation. Thus far, very few empirical studies have actually tested correlations between patterns of mobility in urban spaces[2] and location awareness. Likewise, there is a dearth of theoretical studies on LMSNs. Most theoretical studies on social locative media so far deal with two major topics: locative media art in urban spaces (Galloway, 2006; Hemment, 2006; Hight, 2006; Hudson and Zimmermann, 2009; Levine, 2006; Shirvanne, 2007; Tuters and Varnelis, 2006; Vollrath, 2007a, 2007b) and sociability within location-based mobile games (LBMGs) (de Souza e Silva, 2008, 2009; Licoppe and Gillot, 2006; Licoppe and Inada 2009, 2006; Sotamaa, 2002; Vogiazou et al., 2006). Although these studies often focus on sociability in relation to location, they (1) ignored the different coordination and communication affordances of different interfaces, and (2) did not frame the social implications of these interfaces within known sociological theory.

Therefore, we address three main questions: (1) How might different types of LMSN interfaces promote distinct types of communication and coordination in public spaces? (2) Does the spatial awareness of others necessarily mean increased coordination and communication in city spaces? (3) To what extent might LMSNs reproduce or challenge pre-established social norms and sociological theories that deal with sociability in urban spaces? To answer these questions, we first define LMSNs, after which we distinguish two types of locative interfaces: eponymous and anonymous. Finally, we show how each of these interfaces affords different types of communication and coordination among people and between people and spaces. Ultimately, we aim to theoretically understand the organization of social life, particularly focusing on how social organization occurs through LMSNs. We develop this analysis by re-purposing three social theories and

applying them to examples of LMSNs: Erving Goffman's (1959) presentation of the self in everyday life as it applies to a new 'presentation of place,' Georg Simmel's (1950) theory of sociability, particularly his writings on the metropolitan man and the stranger in the modern city, and finally Turo-Kimmo Lehtonen and Pasi Mäenpää's (1997) idea of street sociability.

The reason for choosing these theories is three-fold. First, Goffman has been extensively used by mobile communication scholars to frame social interactions via cell phones (Fortunati, 2005; Ito and Okabe, 2005; Ling, 2004, 2008; Ling and Yttri, 2002). However, most of these studies focus on cell phones as mobile *telephones*. We extend those investigations by asking how mobile interfaces also foreground indirect forms of communication (via GPS). Similarly, Goffman's theory of sociability, which primarily focuses on 'unmediated' face-to-face interaction, has been frequently used to demonstrate how cell phones disconnect us from physical spaces (Gergen, 2002; Ito and Okabe, 2005; Kleinman, 2007; Ling, 2004, 2008; Ling and Yttri, 2002; Plant, 2001). Our research further expands Goffman into the mobile environment by focusing on how indirect forms of communication do not rupture the co-present, but may rather connect us to surrounding spaces and people. Scholars claim that mobile phones connect us directly to individuals rather than spaces (Ling, 2008; Wellman, 2002); however, location-aware technologies also connect us to places.[3] So, instead of applying Goffman's presentation of self to study the cell phone as part of users' identities (Fortunati, 2005; Ling, 2004), we introduce the new concept of 'presentation of place' to theorize location-aware technologies.

Second, Simmel's theories of sociability have likewise been used by mobile phone scholars to address issues of trust, freedom and anonymity in public spaces. For example, Fortunati (2002) argues that cell users feel comfortable exchanging intimate thoughts in public because co-present others remain anonymous. Tomita (2005) suggests that cell phones give users freedom in urban spaces, because users are not bound by location. However, instead of claiming that mobile interfaces disconnect users from locations, we argue that they actually work as a 'technological filter' (as much as the *blasé* attitude was a psychological filter) that helps users manage interactions with city spaces. We also expand Simmel's notion of punctuality and coordination of time as a necessary element of urban life to suggest that location-aware technologies replace the clock as a medium for coordinating meetings in space.

Lastly, Lehtonen and Mäenpää's *street sociability* is grounded on Simmel's theory. They do not specifically address mobile phones. Rather, they emphasize the playful nature of social interactions and the 'exciting tension of a controlled incalculability, with emphasis on the aleatory [chance] elements of the street' (Lehtonen and Mäenpää, 1997: 157). Although they use a shopping mall as a case study, their contributions are relevant for analyzing LMSNs. In sum, we repurpose three theories of urban sociability for our theoretical framework of LMSNs. Therefore, this article contributes to ongoing studies on new media, society and urban sociability by (1) proposing a classification for different types of LMSN interfaces, (2) challenging common assumptions that LMSN interfaces promote communication and sociability in public spaces, and (3) framing LMSN applications within existing sociological theories.

Defining LMSN applications

LMSNs map social networks on physical spaces. They might be compared to instant messaging (IM) software, such as AIM or MSN, but with one major difference: instead of showing friends who are simultaneously online, LMSN interfaces display friends who are nearby. The launch of *Loopt* in 2008 represents the start of widely available LMSN applications in the US. Since then, other LMSN applications have been developed, like *Brightkite*, *Whrll*, *Centrl*, *Latitude*, and *Foursquare*. All LMSNs have two common characteristics: (1) they use location awareness to automatically display a user's location, eliminating the need for self-reported position, and (2) they display real-time user locations on a map of the city.

Current LMSNs aim at different purposes. Some, such as *Loopt* and *Latitude*, require users to acknowledge each other as friends in order to participate in each other's social network. With these applications, users can only access the location of known contacts. Conversely, *LooptMix* allows users to locate nearby users who are strangers. *Brightkite* expands this function and allows a user to see the position of any *Brightkite* user within a block (200 meters), in the neighborhood (2 km), in the area (4 km), in the city (10 km), or in the region (100 km). Different than all of these, *Citysense*'s interface displays groups of people represented as hotspots, rather than individual users. The interface design of each application allows for different ways of experiencing urban social life.

A brief overview of these applications as shown above demonstrates that the majority of these interfaces are designed with two distinct purposes: they either allow users to find specific others in urban spaces, or they promote awareness of the location of unknown masses. We call these interfaces eponymous and anonymous, respectively.

Defining eponymous vs. anonymous interfaces

Anonymous interfaces do not identify users and some aggregate them into a particular metric related to location. Interfaces of this type include *Fwix* and *Citysense*. *Citysense* shows density-distributions of where people are, offering a 'heat map' of the city, where hotspots are higher-density concentrations of people. *Fwix* began as a social networking tool that tied news and media updates to particular locations in a city, showing where news and media 'hotspots' were located.[4]

Conversely, eponymous interfaces identify users in space, and potentially make users known to complete strangers or just to select friends. These applications include: *Whrrl*, *Brightkite*, *Latitude*, and *Loopt.* They all identify users by location and profile name. And they clearly distinguish between users, making those users identifiable and locatable, depending on privacy settings.

By enabling direct connections between people and locations, these interfaces provide different ways of navigating space and sociability. The individuality of the users is de-emphasized in the anonymous interface but paramount in the eponymous interface, so the central difference between these two is how each deals with anonymity. This should come as no surprise, because these interfaces are designed to navigate urban spaces, and the tension between anonymity and familiarity when walking through the city is central to the sociological theories discussed here.

For example, the anonymous map in *Citysense* positions the user in relation to strangers similarly to how Lehtonen and Mäenpää describe *street sociability*. 'The culture of street sociability is born out of the tension of anonymity and intimacy, the tension in which encounters are dictated by chance' (Lehtonen and Mäenpää, 1997: 158). Users share anonymity by virtue of being strangers in a city and intimacy through the shared interface. There is both difference in the sameness and sameness in the difference, which is how one might paraphrase Simmel's description of the stranger in the city. The stranger was a liminal wanderer, alternately fixed and displaced, connected to people through mutual anonymity while repelled by mutual differences. For Simmel, and Lehtonen and Mäenpää, anonymity provides a safe façade for the eponymous, individual self. This shared anonymity functions palliatively to alleviate threats to one's face (Goffman, 1997), and can sometimes create a more playful social environment, because anonymous individuals who are only temporarily collocated experience an unburdening of the social consequences of their actions. This is what Simmel termed sociability, or the play form of sociation, which is a precursor to Lehtonen and Mäenpää's *street sociability*.

In writing about meeting strangers, Goffman theorized that, because the 'reality' of each individual is inaccessible to others, 'appearances must be relied upon in its stead' (1997: 21). In short, people rely on the little they know about others to make judgments about the much they do not know. In Goffman's terms, we might be able to speak of the social experience of using an LMSN application not just as a presentation of *self,* but as a presentation of *place* in everyday life. Following Goffman, to speak of the presentation of *place* is to suggest a relationship between the nature and appearance of a place. Although the presentation of self involves an internal decision-making agent, Goffman (1959) specified that individuals manage two kinds of impressions: those *given* and those *given off*. For Goffman, there was little use in distinguishing intended from unintended impressions. Differently from Goffman, in our presentation of *place*, we have a multiplicity of agents giving and giving off impressions – impressions that collectively become impressions of a place. Although it would be silly to say that a place has intent, the agents within a place have intent, and the impressions given/off by them are nearly indistinguishable from the place itself. How do we get to know a place, anyway? At first we might know what the owner intends for us to know, through design, advertising, etc. We might conceive of this as the *given* impression of a place. Eventually, word of mouth gets around, and places develop recognizable character based on frequent customers. This is the *given off* impression of a place, over which the owner has rather less control. Meanwhile, those clientele themselves are intentionally *giving* and unintentionally *giving off* impressions. One part of the given/off impression of the individual is also the place (and the impression the interpreter has of the place) articulating itself to the individual, illustrating the recursive social production of space (Lefebvre, 1991) and spatial production of relations.

Thus, a place that is unfamiliar gains familiarity by virtue of the appearance of one or more friends. More friends equals a more inviting place. Conversely, unknown people who are in a known place may themselves be deemed acceptable based on a user's prior knowledge of that place. The eponymity of friends is transferred to the anonymity of places, or in other cases, the eponymity of places is transferred to the anonymity of strangers. Lehtonen and Mäenpää use *street sociability* to describe the pleasure

of experiencing a place with people and because of people. In combining this observation with presentation of *place*, we consider these interfaces in terms of the social navigation of space or the spatial navigation of sociability. The social network informs and influences the place, and the place informs and influences the social network. This observation is significant not because it is new, since philosophers of space have often pointed to the mutual co-construction of the spatial and the social (Lefebvre, 1991; de Certeau, 1988), but because LMSNs foreground connections between the social and the spatial. Similarly, the Canadian school of media theorists (Berland, 2009; Innis, 2008; McLuhan, 1995), with their focus on technology, spatiality, and sociality, can inform how we think about these media. Berland's term 'topophilia,' or the pleasure of the located body (2009: 239), relates to the concerns in this article. She observes how weather media frame our meteorological metaphysics to discipline behavior and subsequently educate us to internalize proper care of the self through the management of clothing, travel, and so forth. Likewise, LMSNs, by differently mediating the relationship between the social and the spatial, open up new territories for sociospatial disciplining. By extending the capacity for intervening in the social production of space and the spatial production of society, what are these media anaesthetizing, prostheticizing, or amputating (McLuhan, 1995; Virilio, 2002)? We can best observe connections between the social and the spatial in practices of communication and coordination.

A brief review of the websites for these applications reveals that they are intended to facilitate coordination. *Citysense* asks 'Where is everybody' and answers 'Find out where everyone's going next.' *Brightkite* claims that 'in real time you can see where your friends are and what they're up to.' *Loopt* markets itself as 'a social compass' that can help you 'discover the world around you,' by showing you 'who's around, what to do, and where to go,' and *Latitude* helps you 'see your friends on a map and get in touch.' Central to all of these claims is the act of coordination. With the exception of *Latitude* – 'quickly contact them [friends] with SMS, IM, or a phone call' – communication is either not mentioned or only alluded to, such as *Brightkite's* 'see where your friends are and what they're up to,' which presumes that someone is letting you know what they are up to unless you can infer what they are up to from their location information. These interfaces cause us to question whether we can understand communication and coordination as separate entities, and might even push us to rephrase the question 'can one not communicate?' and ask 'can one not coordinate?,' presuming that coordination indicates avoidance as much as it indicates seeking out. Using interfaces that increase our awareness of others' location profoundly affects the way we might experience serendipitous encounters. LMSNs would seem to problematize the perhaps false, though culturally ingrained, ontological split between serendipitous and intentional encounters. Simply having access to others' locations may change how we move through space and how we relate to others. For Berland (2009), the articulation of television and weather prediction was also an ontological shift, with the television functioning as a disciplinary apparatus, and our response being to internalize that disciplinary mechanism. Likewise, LMSNs function to discipline our mobility in space, and we internalize that disciplinary mechanism (Foucault, 1986). This really is not so far off from Goffman's observations about how we operate in social environments. The point here is that these media expand how we may think of coordination. If your friend walks into a café and you know they have

access to your location, will you question whether their appearance is serendipitous or not? What about an acquaintance, or perhaps someone who has been asking you on a date lately? Goffman's observation that impressions are impressions whether they are *given* or *given off* bears repeating here. Goffman's answer to the question 'can one not communicate?' would likely be a 'no,' as he put the onus of interpretation on the receiver, rather than the sender. So, in light of this, we ask again, 'can one not coordinate' when using LMSNs? Each of these interfaces promotes different modes of indirect or direct communication and different ways of coordinating with people and spaces.

Communication within eponymous and anonymous interfaces: direct vs. indirect forms

Different interfaces allow for differing degrees of directness in communication. Broadly, we might align the directness of communication as ranging from active to passive, or from voice to SMS to GPS, a division roughly similar to Nova's observation that MLA prompted less and NoMLA prompted more direct user interaction. The most direct form of communication would be collocated vocal communication, which is temporally synchronous and spatially collocated. A less direct form of communication would be SMS, which is asynchronous, but also directed at one or multiple specific people. A similar but less direct form than SMS would be a post on a message board, or in the case of locative media, a post tied to a specific location (e.g. digital annotation), in which case the message is asynchronous and the recipient unspecified. Finally, perhaps the least direct form of communication is a non-specific status update (just alerting 'whomever') or a broadcasted GPS signal.

The relative directness or indirectness of communication is not solely dictated by anonymous vs. eponymous interfaces, but each interface predisposes the user some way. Anonymous interfaces predispose the user to very indirect – and thus passive – forms of communication, such as using GPS in *Citysense* to see a social heat map of the city. In *Citysense*, there is no way to IM a group of people, so it mainly affords indirect communication. Conversely, eponymous interfaces provide more options for direct and indirect communication. *Brightkite* users can set their location to be visible, update their status, or – more directly – IM a friend.

To study direct vs. indirect forms of communication with relation to information-seeking and wayfinding behavior, Bilandzic et al. (2008) developed an application called *Cityflocks*. Users ('raters') uploaded recommendations of locations (such as restaurants) tagged with GPS coordinates. The goal was to provide newcomers to the city with local information, so the raters could also provide contact information a newcomer could use to contact them. Results indicate that newcomers were more likely to get location information via indirect (e.g. downloading site-specific information), rather than direct (e.g. asking information from a stranger) communication methods and actually preferred indirect communication for questions about everyday tasks. Findings also showed that the more recommendations there were of a place, the more users trusted the relative rating of that place. So, in this sense, *Cityflocks* operates very much in a crowdsourcing manner. Although crowdsourcing is a term associated with new media, similar behavior has been long engaged in, such as simply looking around

to see which bars are most popular. This also exemplifies the presentation of *place*, whereby an unknown place is judged by the clientele.

By accessing locative information created by others, users might feel more intimate with city spaces. Connections with other users may lead to connections with others places. For example, in *Citysense* users see hotspots of popular places in the city and make judgments based on the movement of people. Because users seem to prefer interacting via an interface that excuses them from exchanging direct messages, anonymous interfaces may play an important part in helping users find locations, rather than people, within a city. In both *Cityflocks* and *Citysense*, the users remain anonymous by choice or by design, indicating that anonymity continues to play a significant role in navigating the city. So Simmel's and Lehtonen and Mäenpää's sociological observations about the importance of anonymity are also evidenced by new LMSNs.

Similar tendencies can be observed in eponymous interfaces. Like Bilandzic et al., Humphreys' (2007) *Dodgeball* study[5] found that people are more willing and ready to engage in *indirect* communication. Participants noted the low social stakes of sending or receiving *Dodgeball* messages, since these messages were broadcasted to many, rather than direct one-to-one texts or voice calls. The (im)personal announcement of location, communicated to a group of people was seen as more passive – some might say less face-threatening (Goffman, 1997). The ability to remain anonymous as part of the mass is one reason why anonymity is so central to urban sociology and one reason why LMSN applications seem so threatening to privacy. 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. Put differently, the 'blasé' attitude and accompanying anonymity help create a social shield whereby people's faces are perhaps less frequently threatened when living and navigating the urban environment. Nevertheless, LMSNs afford new opportunities for face threats.

In a case study of a perceived stalking situation in the LBMG *Mogi*, Licoppe and Inada (2009) describe a player who was individually identified on the game map but remained anonymous despite queries from a nearby female player. The fact that the player was unknown, but at the same time visually located on the game map was considered threatening by the female player, who eventually sought help from *known* player friends. This mirrors the experience of walking alone at night and finding safety in the masses of many anonymous people yet danger in the presence of one anonymous person spotted in an alley. According to Licoppe and Inada, close proximity, when communicated through the interface, can be interpreted as stalking when the anonymous individuals' identity and intentions remain uncorroborated despite active queries through SMS. The female player used SMS to query the anonymous player about his or her intentions. When the anonymous player ignored this more direct form of communication, the female player interpreted these actions as antisocial. So, an anonymous individual within close GPS range occupies a different social position than other anonymous individuals on the street. As mediated through the interface, individuals become part of a smaller social sphere in which identification becomes more salient. To a more limited and much less dramatic extent, this situation parallels the social norms of exchanging greetings.

Therefore, we must also consider how passive forms of communicating location create tension with social norms based on proxemics, such as acknowledging another's

presence. For example, if two people are acquainted and one passes by the other on the street without acknowledgment, isn't he rude for not stopping? One becomes socially vulnerable by waving, and the other – by not reciprocating – challenges the former's social vulnerability. This social challenge was termed a 'face threat' by Goffman (1997), but Goffman studied direct forms of communication, as opposed to the indirectness of LMSNs. What we are suggesting here is not that face-challenges are less severe when announcing location through an LMSN; but, we are asking whether, if locative applications become the norm, people will be required to stop by a restaurant simply because they 'see' friends in there. This question highlights one of the central issues that LMSNs bring to the fore, which is understanding coordination in the city.

Coordination: connecting (un)familiar places and people

Time and punctuality were, for Simmel, the cohesive elements that held together social life in the city. Punctuality, or the coordination of time, also coordinated the ever-increasing masses in the urban environment. Time coordinated the 'activities and relationships' of the city: in short, the social space. So, the coordination of time was for Simmel, as for Carey (1988), also a way of coordinating space. To further expand on Simmel's theory, we suggest that the increased size of cities, both in geography and population, has made even the clock, with its punctuality, an inadequate method of organizing social life. With LMSNs, people may increasingly rely on the visualization of space rather than the management of time to coordinate appointments and hence social life. We venture that, as coordination becomes more direct, communication becomes less direct. No longer is time needed as a medium for space.[6] Note that one of the consequences of using time to coordinate space is the notion of punctuality, a concept which first described one's etiquette and respect for social formalities, which we now use to describe one who is 'on time.' Yet what is left unsaid and consequently forgotten is adding 'in space' to 'on time.' One is only on time insofar as one is also in the proper space. So, two people with differently calibrated watches will not meet in space because they are on different times, therefore the calibration of the watch – the space interface – affects coordination (Carey, 1988). Likewise, the use of eponymous or anonymous interfaces encourages different types of coordination.

Returning to our appropriation of Goffman (1997), the presentation of *place* (through the interface) performs important coordinative functions for the user, so different presentations of *place* and of the people within that place, afford different relationships between the user and the place and between the user and others. For example, in the case of *Citysense*, when many people are concentrated in a familiar location, such as a favorite park, a user can infer that strangers there are people she might like to meet. This logic inverts the crowdsourcing model of *Cityflocks*, where the amount of people validates a place. Here, the user infers characteristics about people based on place, because she already knows something about that place (that it is pretty or has good music). The eponymity of the place is transferred to the anonymity of the people. So, the anonymity of the people is rendered benign by the mass of which they are part and made intriguing by the place where they amass. Given a crowded, less familiar location, the user may assume there is safety in numbers and visit that place to see why so many people

gathered there. In this case, the anonymity is still rendered benign by the mass but not necessarily made attractive by prior spatial knowledge. In the first example, the user used known qualities of place to make qualitative judgments about people. In the latter example, the user relies on the quantity of people to make qualitative judgments about what is happening in a place. In eponymous interfaces, such as *Brightkite*, *Loopt*, and *Wrhll*, users are identifiable, so they know who is where. Results from Humphreys' *Dodgeball* study indicate that known people in even an unknown place will make that place more attractive to a user. The user sitting at home will feel more compelled to visit a new location, provided friends are there.

In both the anonymous and the eponymous interface styles, the friends become a location in some sense, or the location becomes 'friendly' in another. Humphreys found that people using *Dodgeball* visit locations based on the presence and quantity of friends, which are correlated with one's motivation to go to a location. In this case, and in similar studies of LBMGs, a user's geographical territory can become expanded through the use of these interfaces. For example, players of *Botfighters* reported seeking more opportunities to play the game by traveling to unfamiliar locations to find other players (de Souza e Silva, 2009). Similarly, Licoppe and Inada (2006) documented a type of *Mogi* player who explored Tokyo with the primary goal of finding virtual objects, often making excursions with other players, so the game physically brought players together and encouraged them to explore the city.

There are clear distinctions between how anonymous and eponymous interfaces afford different modes of coordination. The anonymous interface affords coordination with strangers and places, which can develop into a chance personal encounter of the street sociability type (Lehtonen and Mäenpää, 1997). This would be an unexpected event or interaction that violates one's expectations enough to thrill without threatening, such as going to a favorite place and meeting a new stranger or following a group of people only to discover one's favorite local band playing unannounced. The anonymous interface is used when one does not much care whom they might meet, leaving much relatively open to chance.

A different situation occurs with the eponymous interface. When using the eponymous interface, a user sees the location of nearby friends, which is itself a sort of playful and chance encounter. The point we are trying to make here is that acts are playful when things are left up to a certain degree of chance (Lehtonen and Mäenpää, 1997). When acts become too structured or goal-oriented, they lose their playfulness. However, it seems that a chance encounter can become a teleological and hence less playful endeavor when the goal of coordinating with a specific person or group of people becomes paramount. Therein lies the potential for a shift from autotelic playfulness to teleological navigation. It would be presumptuous to assume this is the case every time and that a user might not simply just play with the interface in order to facilitate repeated chance encounters; however, the very use of the eponymous interface still presumes, in a sense, that a chance encounter will ultimately turn into a goal-oriented seeking-out of another person.

The relationship between chance encounters vs. teleological navigation is very well exemplified in the distinction between LMSNs and LBMGs. As the first types of LMSNs, LBMGs also connect players, and players to places, but only as far as they are playing

the game. For example, *Botfighters* players reported having found new places in Stockholm while searching for other 'bots' (de Souza e Silva, 2006). Similarly, Licoppe and Inada (2006) discovered that *Mogi* players would take detours from their usual route to work in order to find virtual creatures and objects and complete their game collection. More recently, *Foursquare* encourages players to repeatedly 'check in' in different places in order to accumulate points and badges. Players also win travel bonus points if they check in in two or more different places during the same day. Given this framework, we suggest that both LMSNs and LBMGs are designed to encourage players/users to visit new places and meet new people. However, they do that in opposite ways. On the one hand, LMSNs (e.g. *Loopt*, *Brightkite*, and *Wrhll*) encourage users to communicate and coordinate with other people as the end goal of using the application. As a consequence, they might also become familiar with places. On the other hand, LBMGs' goals generally include exploring different places in order to play the game. Eventually players might bump into other players and potentially socialize with them. So, while LBMGs are also types of LMSNs, their focus is primarily on transforming urban spaces into a playful experience – communication and coordination with other players might be a consequence of game play, but not necessarily its primary goal. LBMGs and their implications for sociability and our experience of urban spaces have already been extensively studied elsewhere (de Souza e Silva, 2006, 2009; de Souza e Silva and Sutko, 2008, 2009). In this article, however, our focus is primarily LMSNs – locative applications in which the main goal is communication or coordination. These applications are indeed playful, but they are not games.

LMSNs allow us to 'run into' people without being collocated, thus creating a previously unexperienced qualitative middle ground of running into a non-present someone. For example, if a user turns on *Loopt* and sees that there is a friend in the coffee shop next door and another good friend ten blocks away, both are chance encounters insofar as the user is aware of her friends' presences, as with IM, but as opposed to IM, the ability to meet, that is coordinate with, either of these people in physical space is afforded in part by the locative technology. Which friend the user chooses to engage will obviously be determined by a variety of contextual factors (which is the closer friend? seen less frequently? busy with errands?), but LMSNs can extend one's social radar, allowing for a greater berth of social engagement. We might say that LMSNs increase the likelihood of chance encounters by increasing the radius of the user's social perception. Yet, if the user decides to find a friend, the user must still engage in goal-oriented behavior to find that friend. Although eponymous interfaces allow for chance encounters, use of that interface may tend towards an experiential shift towards the teleological, or purpose-driven, rather than the autotelic.

Although LMSNs may extend our social radar, Humphreys found that people used *Dodgeball* to meet existing friends out on the town and did not necessarily connect to *unknown* others, 'thus leading to a kind of social molecularization' (2007: 356). She affirmed that even when users 'did meet new people through *Dodgeball*, these people were fairly demographically similar' (Humphreys, 2007: 356). In other words, the diversity of the urban may become masked by these technologies. Rather than chance encounters of difference, this suggests that *Dodgeball* facilitated chance encounters of sameness. However, one question we might ask is: Aren't LMSNs just reproducing already

established social norms? Aren't we always looking for homophilious environments when we choose places to go out: bars, restaurants and clubs? Some eponymous types of LMSNs, such as *Brightkite* and *Loopt*, might be reinforcing these social norms because they primarily facilitate connections with known friends. Ling (2008) speculates that this is also the case with mobile phones. He observes that people are using mobile phones to intensify their 'bounded solidarity,' or connections with close family or friends, sometimes to the detriment of collocated relationships (e.g. strangers on a street). This tendency for 'selective sociality' has been identified in other mobile phone studies (Habuchi, 2005; Ito and Okabe, 2005; Matsuda, 2005), but homophilious connections are not a consequence of cell phone use or LMSNs. This unresolved tension between novelty and sameness has been already described by Simmel's and Lehtonen and Mäenpää's theories of sociability. Simmel theorized that the *blasé* attitude of the metropolitan man was a cultivated appearance of indifference in order to psychologically and socially protect the self from the masses of strangers, who are different from each other yet similar because of their mutual difference. Likewise, Lehtonen and Mäenpää suggest that the fun of street sociability derives from the uncertainty of events coupled with the certainty that those events will fall within a particular schemata of known types of events. In short, these theories of sociability hold that people balance out difference with sameness for stability, but pleasure is found in that which is just different enough.

Implications for communication and coordination

One of the unfortunate and obvious side effects of these interfaces is the potential for a different type of social divide between those who have access to the interface versus those who do not. Now, it is perhaps no longer simply location that is a determinant or marker of class, but also location-awareness. One of many questions we must ask is: Will LMSN applications contribute to creating types of communities that share a particular technological connection and exclude those who do not? The sameness of having such software vs. the difference from those who do not may itself be enough of a common bond to allow two strangers to connect. Simmel's *blasé* comportment of the modern metropolitan man may itself be found or mediated in a different way through LMSN interfaces. The *blasé* attitude is a form of social non-recognition. To make an anachronistic metaphor: an urbanite is *blasé* because he does not recognize you on his 'social radar.' Now with LMSN applications that literally function as a social radar, our ability to be *blasé* also has a technological imperative. It is even possible to be *blasé* in entirely new ways. If the *blasé* attitude is a form of social non-recognition, then in one way an urbanite can be *blasé* by simply not recognizing people who do not have similar applications. However, through those applications, she can also ignore or take a reserved attitude towards others that are socially co-present through the interface.

We thus argue that these technologies increase the potential for communication and coordination among their users, but mitigate the potential for spontaneous new sociability with more diverse non-users. According to Lehtonen and Mäenpää, sociability in urban environments is created by a balance between trust and unpredictability: urban spaces are places where non-expected things 'might happen.' However, the intrinsic trust in others based on the unspoken rules of street sociability allows us to comfortably walk

on the streets, even if those around us remain anonymous. This trust is generally based on the assumption that others are like us and will therefore behave like we would. That is why people generally avoid going to places where they might encounter a more diverse population, since it would be harder to understand the rules of their sociability. 'If the implicit rules of street sociability are not followed, the aleatory elements, the feeling that "something unexpected might happen," starts to generate fear' (Lehtonen and Mäenpää, 1997: 161). Therefore, LMSNs, by making homophilous tendencies explicit and visible, can turn urban spaces into familiar environments. If you know there are people like you around, you might be able to trust that place and feel more comfortable in it. Likewise, LMSNs can also encourage heterophilous tendencies, by allowing users to infer qualities about anonymous strangers based on a place. The trust one has in and about a place can transfer over to the strangers amassing in that place. To conclude, one might say that anonymous interfaces emphasize the space and deemphasize the users, whereas eponymous interfaces highlight users rather than the space. Trust, prior knowledge, and sociability are mediators of the relationship between anonymity and eponymity, connecting the familiar with the unfamiliar and people with places and with each other.

Conclusion

This article proposed an understanding of LMSN applications based on the differing communication and coordination affordances of eponymous and anonymous interfaces. Through Simmel, Goffman, and Lehtonen and Mäenpää, we explored the sociological tension between anonymity and intimacy, or strangeness and familiarity, particularly as it relates to urban life and LMSNs. We find that this tension is an interplay not just among people but also between people and places, an observation that is particularly salient to theorizing location-aware mobile media. We suggest that some of the common assumptions made about LMSNs, namely their ability to increase one's spatial awareness and meet more (new) people in public spaces, might be fallacious due to the practices of sociability in the city. On one hand, LMSNs do nothing more than support established social norms. On the other hand, they do challenge traditional sociability, particularly in how we coordinate and communicate in public spaces. There may thus be a tradeoff in which LMSNs' users engage in more direct coordination but less direct communication. However, this tradeoff can also lead to unexpected and perhaps pleasant social and spatial experiences.

We hope that the taxonomy we elaborated on in this article provides a heuristic for beginning to think about the sociospatial implications of LMSNs. In considering how LMSNs intersect with urban sociability, our contribution is a theoretical elaboration of interfaces as informed by sociology. Future research on LMSNs could start from this theoretical framework in order to empirically study these technologies via ethnographic and ethnological methods. As we have shown in this article, the brunt of literature on mobile phones generally highlights the capacity for these technologies to reinforce the bonds among existing social ties. But we might be witnessing a technological and social shift towards the ability for location-aware media to help build and connect with new ties. Future studies should take this line of inquiry into consideration. Some research questions that might be raised include: What are different social,

spatial, and temporal contexts for using LMSNs? Do people from diverse cultures and different socio-economic backgrounds use LMSNs differently? And because location-aware media are primarily used to interact with local spaces, future research should also take into consideration: (1) different social and spatial contexts (such as cafes, bars, or markets); (2) difference in geographical scale and cultural settings (such as smaller towns, big cities, different countries), and (3) situational effects or special times (like a sports event or holiday). Cross-contextual studies over different locations, types of social networks, and times would illustrate how these technologies impact our sociability, and our perception of public spaces.

Funding

Endnotes

1. The number of subscribers of LMSNs is still significantly lower than online social networks, like *Facebook* and *Twitter*, which have around 500 million and 145 million users, respectively. As of August 2010, *Loopt* has about four million users worldwide (www.loopt.com)*, Foursquare*, three (www.foursquare.com)*,* and *Brightkite*, two (www.brightkite.com) (Miller and Wortham, 2010). But ABI Research (2009) predicts that location-based services comprise the fastest growing sector in web technology businesses with a forecasted profit growth from $515 million in 2007 to $13.3 billion in 2013.
2. MIT's *Scalable Location Aware Monitoring (SLAM)* (http://nms.lcs.mit.edu/projects/slam/) and *SenseNetworks* (http://www.sensenetworks.com/) are two of the major projects to date to analyze large amounts of mobile location data in real-time.
3. The fact that location-aware technologies help us connect to specific locations complicates Castells' (2000) original concept of the space of flows. Castells' analysis subordinates the importance of places (the space of places) to the idea of flows and movement (the space of flows). For him, places are created by flows (of information, people, and goods). However, location-aware technologies' ability of attaching information to places and finding people around us influence how we interact with localities. While we do recognize that people and goods are still mobile, we also acknowledge the importance of locating oneself and others within the spaces of flows. At the more local – and located – urban level of analysis, the specificity and uniqueness of places may determine their position in the network and – sometimes – a cause, rather than effect of flows.
4. Recently, the *Fwix* interface changed to show news as pins on a map. The user can distinguish more specifically between particular news and media items, but still receive visual cues similar to a heat map in that multiple pins denote greater concentration.
5. *Dodgeball*, although similar to LMSNs, did not use location-awareness and is therefore not quite an LMSN application. Nevertheless, studies of the social practices of *Dodgeball* users are still useful to understanding LMSNs.
6. Though, this is not to say that time ceases to matter. Time is still an important site of intervention for cultural theorists.

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