

Up close and impersonal: Locative media and the changing nature of the networked individual in the city

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Abstract

We investigate locative media apps – location-based apps on mobile devices – and their potential to change how individuals experience urban settings. We argue that locative media further lead toward networked individualism. Networked individualism describes a shift toward multiple, shifting social networks rather than belonging to closely-bounded and often geographically based groups. Because locative media apps draw on how a person moves through an urban space, these apps can have a significant impact on the ways in which people interact with their cities and with each other. They mediate users' relations with urban spaces by adding another layer to the sensorial overload common in urban spaces. They can also make visible formerly anonymous strangers nearby and facilitate ad hoc, transient relations. Locative media apps also have unintended social consequences linked to its location-based nature, such as heightened privacy concerns, negative experiences with strangers, invisibility through filtering, and a recalibrated sense of urbanity.

Keywords: locative media, networked individual, cities, urban, urban sociality, privacy

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Introduction

By 2050, three quarters of the world's population will live in large urban centers comprised of many municipalities of varying sizes (Castells, 2002), such as the Greater Toronto and Hamilton Area (GTHA) in Canada, with a population in 2016 of almost 7 million (City of Toronto, 2017) and the Pearl River delta region of China, with a population in 2010 of approximately 42 million (World Bank Group, 2015). Many of the people living in these urban centers were not born there, and so will not have any historical ties to them. In the GTHA, for example, approximately 40 percent of the population was born outside of Canada (City of Toronto, 2013). Within these urban conurbations, people may live in one city and work in another, and play in yet another, resulting in considerable mobility throughout (Castells, 2002). Within this context, we see the rise of locative media, mobile technologies that capture and deliver location- and time-specific content and connections to their users. Because locative media draw on how a person moves through these urban conurbations, enhancing and transforming the experience, they can have significant impacts on the ways in which people interact with these spaces and with each other. As location awareness becomes a standard feature of more and more mobile apps, the capacity for locative media to affect people's relations with the urban spaces they inhabit, as well as with the people they inhabit these spaces with, becomes increasingly significant.

In this chapter, we examine the role that locative media apps play in cities and urban life, and the ways in which people navigate and interact in these cities. The chapter starts by tracing the origins of locative media, and demonstrating how these tools differ from other information and communication technologies (ICTs). To show how locative media apps shape current structural changes, we discuss the move from group-based interactions toward diverse, unbounded networks and link locative media to the concept of networked individualism (Rainie & Wellman, 2012). We examine how locative media apps can further complicate networked individualism through supporting ad hoc, transient relations that further add to the fragmentation and declustering of individuals' social networks. We look at three main ways in which locative media apps insert themselves into people's daily experiences of urban spaces: wayfinding, accessing and sharing information in networked ways, and "seeing" and networking with people nearby. We also examine the social implications of locative media apps on urban sociability by discussing visibility, sensory overload, social accessibility, trust and familiarity, and finally privacy. As the field is still nascent, we are only starting to understand what privacy rights need to be in place to protect users. Our chapter also has important implications for designers of mobile technologies, as they can gain understandings of the social implications and structural transformations that locative media apps have in the context of urban life.

Locative media: Approaching the promise of ubiquitous computing

Locative media are a set of mobile technologies – hardware and software – that make use of an individual's spatial and temporal location to capture and deliver content specific to a particular moment in a particular place. At the device level, specific software applications, or apps, make use of the device's GPS (global positioning system) receiver, accelerometer, and compass, to identify where a person is in the world, and then capture and deliver content from the internet that is relevant to that particular place and time. A simple example of a locative media app is a public transit app that informs users when the next bus will arrive at the bus stop where they are currently located. An app that provides weather information about a specific city is not a locative media app because it obtains the weather information from a nearby weather station, and so the weather information is not based on the place where the individual is positioned. While this distinction may seem rather minute, it marks a shift in perspective from "anywhere, anytime" computing to "here and now" computing (Kitchin, 2014; Villi, 2015). Though locative media involve an interaction between hardware and software, in this chapter, we focus on the software end – on locative media apps.

Locative media apps challenge the ways we traditionally understand computing. In 1991, Weiser (1991) wrote about efforts underway at the Xerox Palo Alto Research Center “to conceive a new way of thinking about computers, one that takes into account the human world and allows the computers themselves to vanish into the background” (p. 94). Computers could weave themselves seamlessly into the fabric of everyday life, becoming part of that very fabric. Weiser (1991) was speaking of ubiquitous computing, a notion that would transform how we think about computers and mark the beginning of the data science movement of today. At the center of ubiquitous computing lies the idea that, rather than having to be in a particular location to use a computer, people can access computing capabilities “anywhere, anytime”. To highlight his point, Weiser (1991) contrasts the notion of ubiquitous computing with virtual reality. While virtual reality creates a world inside a computer, ubiquitous computing integrates into and enhances the real world, what Weiser and his colleagues call “enhanced virtuality”. But, to approach the full potential of ubiquitous computing, the computer needs to know where in the world it is (Weiser, 1991). Enter locative media.

An important consideration in understanding the role of locative media apps in everyday urban contexts is the nature of the relationship between the real and the virtual. Locative media apps reverse the notion of virtual reality. Instead, they overlay the virtual overtop the real. That is, physical location becomes a fundamental organizing principle for digital information through locative media apps. It is not uncommon to speak of the relationship between the real and the virtual as a new, hybrid space. Sutko and de Souza e Silva (2011) understand the virtual as a separate space from real, physical space. Farman (2012) similarly sees this distinction, and proposes that people can have embodied experiences in both physical and virtual spaces. As an example of this, he describes an instance where a student receives a phone call during class. Rather than silencing the phone, the student takes the call, in the class. The student is physically embodied in the class, but also non-physically embodied in the virtual space where the conversation is taking place. Farman (2012) uses the term virtual in a very broad sense: “from chatting with a loved one via text or over video conferencing to playing a multiplayer online game” (p. 22). Farman (2012) sees locative media facilitating a transformation of physical space and virtual space into a hybrid space. In this hybrid space, according to Licoppe (2016), two different versions of the same here-and-now environment are available. These two different versions may present conflicting views of the same here-and-now, requiring a reconciliation on the part of the user.

In the case of locative media, the split between real and virtual is not a useful one. To understand this information as existing in a virtual space that can be inhabited does not move the discussion away from notions of virtual reality. As Leszczynski (2015) points out, the digital information that is accessed through locative media is not a virtual space that one can inhabit. As she suggests, a better way to understand the relationship is that digital information is anchored to the space where it is most relevant at the time when it is most relevant (Leszczynski, 2015).

Beyond reversing the notion of virtual reality, where the user enters into a virtual world through a computer, locative media also upend understandings of how ubiquitous computing works. As Farman (2012) observes, “[i]nstead of disappearing into the fabric of our lived experience, [ubiquitous computing] is something that is consciously interacting with our environments and offering a transformative experience of space” (p. 11, parenthesis added). Rather than working away, unnoticed in the background, locative media are visibly present through people’s mobile devices, and open a sort of access point to the systems working away in the background. In so doing, locative media provide additional layers of information to the spaces people inhabit at the times they inhabit them (Farman, 2012).

The everyday uses of locative media in urban spaces

Locative media apps can be used for a range of social and informational purposes. These apps are still a fairly nascent technology, but already three key uses are emerging that we will focus upon in this chapter: wayfinding, accessing and sharing information in networked ways, and “seeing” and networking with people nearby.

1. Wayfinding in urban spaces

Wayfinding is perhaps one of the more well-known and well-established applications of locative media. A common focus of study is the use of in-car and on-foot GPS navigation. Recent studies have found that use of this mobile navigation technology changed how people navigate through spaces. For example, a study on the use of GPS for navigation found that its use hindered participants’ cognitive mapping abilities (Willis, Hoelscher, & Wilbertz, 2007; Leshed, Velden, Rieger, Kot, & Sengers, 2008). Participants using GPS navigation followed the route-based commands of the system rather than relying on visual cues. Because of their focus on the system, they did not develop a sense of familiarity with the spaces they traveled through. In another study, travellers using GPS navigation showed an increased sense of confidence during travel because of a perceived reduced risk of getting lost (Leshed, Velden, Rieger, Kot, & Sengers, 2008). This confidence also gave participants a greater willingness to explore the spaces they were traveling through. Another advantage of relying on GPS navigation was the potential to discover new landmarks that were marked on the GPS map, but not visible from the road (Özkul, 2014). Wayfinding can distance people from their surroundings, hindering the development of feelings of familiarity, whilst also allowing them to get to know spaces in a different way and with greater confidence.

2. Accessing and sharing information in urban spaces

The ability to discover new landmarks marked on GPS maps leads to the second type of activities into which locative media apps insert themselves: accessing and sharing information. Digital information and location combine to provide individuals with enhanced ways of knowing a particular space at a particular time. Individuals and institutions (e.g., governments, businesses, and schools) can make available geotagged digital content that attaches to a particular location. This content becomes available for people to access in those locations using a mobile device such as a smartphone or tablet. Spaces around locative media app users turn into information interfaces and enhance information available in a physical space (Farman, 2012). Widely popular digital mapping services such as Google Maps combine with various information services and apps such as Yelp and Foursquare City Guide to provide a gateway for the crowdsourcing and delivery of context-relevant information, such as identifying nearby places to shop or eat (Leszczynski, 2015; Farman, 2012). These apps can identify places nearby that may go unnoticed by people who are otherwise unaware of their existence, affording people unfamiliar with the area a greater sense of what is available there (Leszczynski, 2015). The information available through these apps is generated by the users themselves. Users can add, rate, and review locations that they visit (Fekete, 2017). At the same time, these apps can also reduce individuals’ willingness to explore a physical place and limit where people go within a city (van den Akker, 2014) by creating what Pariser (2011) refers to as a filter bubble. As locative social media apps learn more about their users, the information available through them can become increasingly tailored to their interests, thereby limiting opportunities to explore beyond the familiar.

3. Facilitating social interactions among strangers in urban spaces

A third way in which locative media apps insert themselves into everyday activities is through facilitating various types of social interactions such as location-based mobile gaming and dating. Both types of locative media apps present important complications for the ways in which people present themselves and interact in urban spaces.

Multiplayer, location-based mobile gaming is an example of locative media apps that facilitate social interaction. Mogi is a location-aware mobile game that was launched in Japan in 2003. People played by using their smart devices to collect nearby virtual objects. A significant component for many of the players was social interaction with other players. While collecting virtual objects was a key goal of the game, for most players an important objective was to meet other players and interact with them (Licoppe & Inada, 2006). For many players, the social aspects of the game made it fun and motivated continued engagement.

Pokémon GO is a mobile gaming app that launched in various countries in 2016 (Humphreys, 2017; Hamari, Malik, Koski, & Johri, 2018). Similar to Mogi, the main purpose of the game is to collect virtual objects – in this case, Pokémon – that can be found in various locations throughout a city. Players can also form teams and engage in virtual battles with other players. Though these battles are virtual, they nevertheless take place in physical locations designated as “Gyms” (Zach & Tussyadiah, 2017). While not specifically intended to foster social interaction, the game’s team functionality has facilitated group play. Colley et al.’s (2017) study of Pokémon GO players, for example, found that as much as 70 percent of respondents play with others (Colley, et al., 2017). In addition to playing with friends, Pokémon GO players regularly interact with strangers while playing, resulting in a process that Humphreys (2010) calls parochialization, that is, the development of a sense of commonality among strangers (Humphreys, 2017).

Three popular locative media dating apps also facilitate social interaction. Tinder is a dating app used predominantly, though not exclusively, by cisgender heterosexuals; Grindr is a dating app used predominantly by gay men; and Scruff is a dating app used predominantly by a subculture of gay men who self-identify as bears. These apps are designed to identify people nearby who may be available and interested in meeting up with one another. All three apps are typically understood to be hook-up apps, that is, apps whose sole function is to provide connections for possible sexual encounters. However, their use is more complicated than that. Studies of all three apps have identified other uses beyond hooking up. For example, some users are looking to find friends, others are looking to find a long-term romantic relationship, and others simply want to meet new people (Sumter, Vandenbosch, & Ligtenberg, 2017; Mason, 2016; Crooks, 2013; Blackwell, Birnholtz, & Abbott, 2014). These apps all work in relatively similar ways: they display information about other users nearby. Each app approaches this task in different ways. Tinder typically employs a user’s Facebook profile to identify potential matches, and then displays information about these matches. Users can then select which users they might be interested in. With Grindr and Scruff, users set up their own profile and preferences, and nearby potential matches are displayed based upon complementary profiles.

How locative media are changing computing

Locative media become an integral part of the interface between physical space and the digital technology anchored in those spaces. In short, they serve to reveal the presence of digital information that is related to a particular space at a particular time. In this context, locative media *mediate* among the various actors engaged in the production of place including people, objects, images, and information (Leszczynski, 2015; Farman, 2012; Urry, 2000). With the purpose of showing how locative media reconfigures our notions of computing, McCullough (2006) outlines five central shifts in focus:

1. *From virtual to embodied*: Locative media make location a central organizing principle of digital information and connections, despite the many claims over the years about the irrelevance of place. Rather than visiting a website to find generalized information,

locative media apps such as Yelp and Foursquare City Guide can provide information specific to the particular location where a user is standing. Locative media apps that facilitate social interaction (such as mobile dating and gaming apps) move beyond the virtual connections of the PC desktop to facilitate potential physical encounters embedded in time and space.

2. *From macro to micro*: Focus shifts from the fast, global flows of data, information, money, goods, entertainment, and so on, to the flows of these same things in the area immediately surrounding the user. This shift is from the fast-and-far to the close-and-slow. Here, locative media information apps can move beyond information generated through global patterns and trends, to reveal the particular quirks and diversities of individual urban spaces, such as local street vendors, pop-up stores and events, local flea markets, and so on.
3. *From universal to situated*: Generic, one-size-fits-all, centrally-produced and distributed content is replaced with locally-produced – often user-generated – content, relevant to a specific user in a specific space at a specific time. Here, the economies of scale give way to the economies of relevance. Locative media apps can combine an individual’s interests and needs with the individual possibilities of a particular neighborhood, street, or street corner of a city.
4. *From behaviour to intent*: As situational context becomes more important, designers of locative media apps focus less on how users behave in a space and more on what they want to accomplish in a particular place at a particular time. Given the propensity of locative media apps to reconnect users with the physical spaces they inhabit and with those around them inhabiting the same spaces, locative media app designers must consider “sociological staples such as presentation of self, tacit boundaries, and ad hoc networks” (McCullough, 2006, p. 28) in their understanding of how users will deploy their apps. A dating app, for example, must be prepared to allow for an idealized presentation of self that can withstand the realities of imminent in-person meetings.
5. *From pushing to posting*: The broadcast model where users consume a few large-volume generic messages is replaced by the chaos of the myriad small, diverse daily messages of day-to-day life at street level. The move here is away from the passive consumption of generalized information, to the active production and sharing of activities in the moment. In the realm of social interaction, we see a move away from the promotion of connections among like-minded people back to the messy diversity of the urban street, and interactions among people in the here and now. Apps like Yelp and Foursquare move information sharing away from carefully managed corporate websites to an ever-changing exchange between nearby businesses and other points of interest, and their customers and, perhaps more importantly, among customers and potential customers.

McCullough’s (2006) points of differentiation of locative media offer a good starting point for understanding how they bring a range of digital information to “the messy multiplicity of the street” (p. 26). He succinctly captures the defining features of locative media, specifically that they facilitate an embodied, spatially- and temporally-situated experience with digital information.

Networked individualism in the city

The study of social structure and its relation to modernization, including the spread of digital media, has been a topic of much concern. Simmel (1922 [1955]) analyzed social structure through group affiliation and saw in traditional societies membership to groups as largely overlapping. That is, a person who belonged to one group most likely also belonged to other groups with similar status and affiliation. The consequence is a society where groups are closely knit and those who belong know each other and are linked in more than one way. In modern societies individuals continue to belong to various groups, but group affiliation is scattered. This leads toward sparsely-knit and fragmented networks, where groups show little or no overlap (Cosser L. A., 1975a; Cosser R. L., 1975b).

With greater penetration in the 1990s of networked computers and related technologies for a range of educational, business, and entertainment purposes, Wellman (1999; 2000) introduced the concept of networked individualism. Before the industrial revolution, people's social networks were shaped by space and a limited set of social ties, wherein they often shared similar backgrounds, status, and beliefs (see also Hampton & Wellman, 2018). For Wellman, networked individualism represents a shift in communication, as individuals are available for interaction independent of place. Communication moves from door-to-door to person-to-person communication, as mobile technologies facilitate reaching a specific person, rather than a specific place. Building on the concept, Castells (2001) proposes that the internet provides the material substance for networked individualism to emerge, becoming the "dominant form of sociability" in the future (p. 132). Rainie and Wellman (2012) build on the concept and outline how society is undergoing a structural transformation.

For Rainie and Wellman (2012) three key developments have transformed communities and neighborhoods since the 1990s. First, individuals are no longer embedded in bounded, village-like settings – or urban neighborhoods -- but rather they are members of multiple, diverse social networks that are often based on shared interests (Quan-Haase, Zhang, Wellman, & Wang, Forthcoming). Secondly, connectivity via networked computers has become widespread, providing flexible communication and information exchange over great (and small) geographic distances. Finally, mobile devices have diffused widely in societies around the globe leading toward personalized and ubiquitous communication and information.

To what extent has the shift to networked individualism, with its emphasis on fragmented networks, made location obsolete? ICTs afford different network structures that can transform how people form and maintain community as well as gain access to information and social support (Hampton, 2016). For example, a study of older adults in Toronto, Canada, shows that ICTs can help overcome constraints of mobility by facilitating access to social support at a distance with a range of social ties (Quan-Haase, Mo, & Wellman, 2017). This suggests that ICTs provide opportunities to form supportive social relations in multiple contexts that do not strongly overlap: family at home; colleagues in the workplace; and friends in the neighborhood, church, and voluntary associations (Rainie & Wellman, 2012; Quan-Haase, Zhang, Wellman, & Wang, Forthcoming). The concept of networked individualism suggests that social ties are no longer confined to preexisting social groupings that organize social relations, such as family, religion, ethnicity, and potentially location. In this way, networked individualism opens up opportunities to connect individuals based on new dimensions, including through shared location.

Locative media apps add a new social dimension to networked individualism in the context of urban space, leading toward additional connections that are based on colocation. ICTs, such as email, instant messaging, and video chat, are mostly used for keeping in touch with existing strong and weak social ties of kin, friendship, co-workers, and shared interests (Mesch, Talmud, & Quan-Haase, 2012). While locative media apps can facilitate existing connections, it favors the establishment of ad hoc, transient connections among strangers. These ad hoc connections are formed with particular aims or common interests in mind including dating, gaming, and other activities linked to a particular space. As a

result, locative media apps can further intensify the fragmentation and declustering of social networks by adding non-overlapping ties that are of short duration and purpose, and directly linked to a place and time.

Locative media's implications on city and citizen

Locative media can alter people's relationships with both the cities they inhabit and with the people around them. For networked individuals in the city, locative media reintroduce physical location as a relevant factor, but not in the same way that Simmel (1922 [1955]) noted in traditional societies. People's relations with their cities are influenced by their use of the wayfinding and information functionalities of locative media apps. In these instances, these apps can foster a fragmented understanding of the city, but also enable a sense of security and even adventure. Locative media apps affect networked individuals' relations with their fellow urban dwellers in a variety of ways: visibility; sensory overload; social accessibility; trust and familiarity; and privacy. In the next section, we discuss the relationship between cities and their inhabitants, and then we look at the effects of locative media apps on urban social relations.

Implications of locative media on relations with the city

1. Fragmented city

As Rainie and Wellman (2012) observed, networked individuals in urban spaces have become unbounded by physical location, and this remains the case with the introduction of locative media apps. In fact, it may be accelerated. As we mentioned earlier, people who rely on the wayfinding capabilities of locative media tend not to develop a sense of familiarity and understanding of the urban spaces they travel through, leading to a sense of detachment from these spaces (Willis, Hoelscher, & Wilbertz, 2007; Leshed, Velden, Rieger, Kot, & Sengers, 2008). As Özkul (2014) discusses in her study of locative media users in London, UK, much of the city is for them an unknown space. One participant remarked that he almost never asks people for directions, because they are unlikely to know: "nobody is from this place. So whenever you ask somebody in London 'Where is this street?' they have no idea" (p. 106). Before the introduction of locative media, networked individuals in the city may have, over time, developed a cognitive map of the spaces they frequented, and therefore some degree of familiarity, this activity can now be relegated to the wayfinding functionality of locative media.

This is, however, an incomplete picture. Both the wayfinding and information sharing capacities of locative media afford networked individuals in the city a capacity to move through the city as if they were long-time locals (Özkul, 2014). Apps like Yelp and Foursquare City Guide provide their users with information about the businesses and other points of interest that are around them. What's more, users can consult the crowdsourced ratings and reviews to get a sense of which businesses and points of interest to visit, and which to avoid (Fekete, 2017). One area of concern here, however, is the very real potential for business owners and others to create fake reviews (Luca & Zervas, 2016).

Once deciding on a destination, users can make use of their smartphone's GPS navigation to find their way right to the door, irrespective of any lack of familiarity with the area they are in. Even though networked individuals may not develop a personal familiarity with their urban spaces, they can nevertheless move through them as a local, much in the way that the inhabitants of traditional societies that Simmel (1922 [1955]) described may have done in their towns and cities. As cities continue to increase in size, and more and more newcomers move into the city, these functionalities afforded by locative media have the potential to be ever more important.

2. Security and adventure

While locative media use does not typically result in a sense of familiarity with urban spaces, it can foster a sense of security in unfamiliar areas (Leshed, Velden, Rieger, Kot, & Sengers, 2008; Özkul, 2014). Even when users are in a part of the city that they've never been in before, they don't tend to feel lost. Even when they do feel lost – or when they are genuinely lost – they feel safe because they know

that they can use their mobile device to guide them back home. One participant in Özkul's (2014) study remarked that, before she had a smartphone, she "felt so disempowered" (p. 106) when she got lost in London. After she got a smartphone with locative media capabilities, she felt more confident: "I want to navigate through the space myself, because then I get empowered" (p. 106). This sense of security arises from an ability to find the way back to a familiar space, such as home or work. It can also lead to a sense of adventure within the city. In their study, Leshed et al. (2008) found that locative media app users were often more willing to explore unfamiliar spaces because of this ability to find their way back. Some of Özkul's (2014) participants used apps such as Serendipitor "to get lost willingly and explore new aspects of urban spaces" (p. 107). Some participants would use a different route to get from one place to another simply to explore new parts of the city (Özkul, 2014). These adventures are not without their risk, however. In Colley et al.'s (2017) study of Pokémon GO users, for example, some players reported venturing into spaces where they felt unsafe. One player in Finland was confronted by someone with a knife (Colley, et al., 2017). This sense of security and adventure has the effect of further unbounding networked individuals from the urban neighborhoods with which they might be familiar.

Implications of locative media on urban sociality

Urban spaces have distinct characteristics from non-urban spaces that lead to an "urban personality" (Wirth, 2011 [1938]), including: the size, diversity and density of a population, together with the objects, institutions and built environments. The juxtaposition of various elements makes up the key components of the urban personality (Wirth, 2011 [1938]; Amin & Thrift, 2002; Pile, 1999; Massey, 1999): "social detachment", social engagement beyond family and kinship, and a tolerance for difference.

As Knopp (1998) notes, urban space happens "at a density and scale at once sufficiently large and complex as to feel overwhelming and almost incomprehensible, yet which remains navigable and meaningful in many particular respects from the vantage points of people's daily lives" (pp. 150-1). For Simmel (1997), the density and scale of urban spaces bring forth a greater intensity of sensory stimulus which, in turn, gives rise to a key characteristic of the urban personality – the *blasé attitude*: "There is perhaps no psychic phenomenon which has been so unconditionally reserved to the metropolis as has the blasé attitude. The blasé attitude results first from the rapidly changing and closely compressed contrasting stimulations of the nerves" (p. 178). This blasé attitude becomes an essential tool in contending with the difference that has long been a key characteristic of the modern city. This difference manifests through "gender, race, ethnicity, age, life course, sexuality, or any other referent" (Fincher & Jacobs, 1998, p. 5). What's more, difference will be present in any of a number of combinations of these referents. The result is that different citizens experience the city differently from one another, even differently from their next door neighbors.

Social relations in urban spaces are most often relations among strangers. Rather than face-to-face interaction, the urban social relations of strangers are characterized by side-by-side relations (Young, 1986). The urban social relations of strangers take place in public spaces such as parks, streets, bars, cultural venues, etc. In these spaces, "the diversity of the city's residents comes together and dwells side by side, sometimes appreciating one another, entertaining one another, or just chatting, always to go off again as strangers" (Young, 1986, p. 21).

A central characteristic of the urban relations among strangers is *indifference* (Tonkiss, 2005). In successful urban environments, where there is a great degree of difference in terms of ethnicity, gender, sexuality and so on, there is a lack of interest or concern – an indifference – toward this difference. It is not that these urban dwellers do not notice the difference. On the contrary, as Tonkiss (2005) notes, "alongside an active politics that recognizes differences...there lies an ordinary urban ethics that looks straight past it" (p. 10). She recognizes that this indifference may be "fragile, grudging, uneven", but where it exists, it provides a greater possibility for the expression of individual difference (Tonkiss, 2005, p. 10). The daily interactions of urban strangers are comprised of myriad inconsequential interactions among strangers – greetings, small talk, etc. – in public spaces such as city streets. When added up, these

small interactions recognize the “public identity” (Jacobs, 1969, p. 56) of people, and serve to build a web of trust and respect among urban strangers – an indifference to difference – without demanding more intimate connections that are typically reserved for friends, colleagues and family.

As we mentioned earlier, locative media use complicates the urban social relations of networked individuals by supporting an additional layer of interactions that are ad hoc, ephemeral connections of short duration among nearby strangers. But these connections are not straightforward. We see locative media use in the city impacting urban social relations among networked individuals in five key areas: visibility, sensory overload, social accessibility, trust and familiarity, and privacy.

1. Visibility

While the main purpose of mobile dating apps is to make users aware of other users nearby, the filtering functions of these apps can make some people who are visible in the physical space disappear in the app. Some apps, such as Grindr, allow users to filter people out based upon characteristics such as ethnicity, age, and so on. As Mason (2016) observes, “racism often functions as ‘preference’ and neoliberalized choice in online dating sites, especially on dating sites and apps targeted to gay, bisexual, and other men who have sex with men” (p. 826). Expressions of racism are not unique to locative media apps, nor to ICTs more generally. Instead, they reinforce existing racisms. However, these manifestations of racism may be more insidious since, particularly in the case of filtering options, the erasure itself is invisible (Mason, 2016; McPherson, Smith-Lovin, & Cook, 2001; Noble, 2018).

By contrast, Blackwell et al. (2014) describe a case where locative media can make people visible in spaces where they might otherwise be invisible. Apps like Grindr and Scruff effectively make all spaces “gay spaces”. For Jim, one of the participants of Blackwell et al.’s (2014) study of Grindr users, Grindr provided him with “a gay bar in my pocket” (p. 1126). Jim spoke of one time where he was in “a very very straight feeling space” (p. 1126). Grindr identified another gay man at another straight bar down the road, and the two met up. Grindr, Scruff, and other such apps have the capacity to make gay men visible to other gay men nearby, while remaining invisible to others who are not using these apps. As both Blackwell et al. (2014) and Roth (2014) point out, it can be inadvisable and even dangerous for queer people to be visible in some spaces at some times. Being aware of other queer people nearby can be reassuring, even if the users of the apps have no particular interest in hooking up (Blackwell, Birnholtz, & Abbott, 2014; Roth, 2014).

The various filters used by locative media apps have the potential to restrict the ways in which their users express themselves through these apps. Scruff, for example, asks users to voluntarily assign themselves to various labels that are used to organize and filter Scruff’s users. As Roth (2014) notes, “users who do not label themselves are automatically excluded from grids that filter users on the basis of those labels” (p. 2123). These labels, along with the other information requested (height, weight, hairiness, etc.), constrain the many possible body expressions that do not conform to these labels.

2. Sensory overload

Locative media apps can further complicate urban social relations by increasing the already overloaded sensorial stimulation by increasing urban inhabitants’ awareness of the people around them. Rather than passing through the city relatively anonymously, exchanging little more than pleasantries with strangers, locative social media can increase the amount of information people know about these strangers. The strangers become what Licoppe (2016) calls pseudonymous strangers: People “with whom one may never have interacted or talked about before... but who are not complete strangers either for the locative app usually makes available some info about them” (p. 108) through their online profiles. Of course, a person who does not want this constant stream of information about nearby strangers can turn off these apps. However, the nearby strangers may have the apps turned on still, and may therefore recognize this person, without that person’s knowledge. Such a situation may amount to nothing. But it

may equally amount to unwanted attention, challenging a much-needed distance among urban dwellers (Licoppe, 2016).

3. Social accessibility

Urban life is filled with opportunities for sociability, creating great relevance for understanding how people negotiate social accessibility, understood as the ability to be reached by others (Simmel, 1922 [1955]; Weber, Gerth, & Mills, 1946). With the modernization of cities, potential contact among city dwellers increased (Wellman & Leighton, 1979), leading to new understandings of social accessibility and norms prescribing contact (Milgram, 1970; Zerubavel, 1979). Milgram (1970) describes how city dwellers in New York City experience social accessibility. He notes, for example, how overload precludes individuals from taking in all information available in a city. Individuals cope with the large number of inputs by establishing priorities in terms of what individuals, cues, objects, and images are relevant to them at various times and locations. Milgram (1970) also identifies a series of strategies that help urban dwellers adapt, such as spending less time on each social interaction, prioritizing social interactions by formulating a set of principles based on selectivity for important relationships, and blocking unwanted encounters (see also Quan-Haase & Collins, 2008).

Similarly, the use of mobile devices adds further layers to social accessibility by making individuals potentially accessible wherever they are in a city, adding stimuli to the urban environment. Locative media apps further complicate the issue, because they do not increase people's social accessibility to their personal networks, but rather to other urban dwellers located nearby. Locative media apps expand our social accessibility in the city to strangers by facilitating new interactions. They allow individuals to connect based on shared interests that only become visible through the app. At the same time, these apps also work to deal with overload as already described by Milgram (1970). They make others in the environment invisible and thereby preclude social interactions. This further increases communicative selectivity and narrows the scope of individuals we encounter while navigating the city.

4. Trust and familiarity

Locative media apps may well contribute a sense of trust, familiarity and safety amidst the characteristic diversity of an urban environment. As Sutko and de Souza e Silva (2011) note, locative social media apps may make urban inhabitants aware that there are "people like you around". This homophilic awareness may foster a sense of trust and familiarity within an otherwise unfamiliar space full of strangers. Sutko and de Souza e Silva also suggest that this trust may spill over onto the surrounding strangers, thereby facilitating an openness to the surrounding difference. This scenario is in evidence in the situation mentioned earlier where a Grindr user was able to locate nearby gay men in a "straight" environment in which he felt uncomfortable. This awareness gave him a sense of security in this potentially unwelcoming space. As well, Leshed et al's (2008) participants experienced a similar confidence using the GPS wayfinding functionality of locative media (Sutko & de Souza e Silva, 2011; Blackwell, Birnholtz, & Abbott, 2014; Leshed, Velden, Rieger, Kot, & Sengers, 2008).

5. Privacy

Privacy is a much discussed topic in the context of mobile technologies and is particularly relevant when it comes to locative media. Privacy is defined as a basic human need and considered an important policy and research topic, gaining much attention in the wake of the Cambridge Analytica and Facebook scandals (Bartsch & Dienlin, 2016; Kezer, Sevi, Cemalcilar, & Baruh, 2016; BBC, 2018). Not all individuals share the same privacy concerns and there is considerable variability in terms of how much and what kinds of personal information people feel comfortable sharing with companies, governments, and institutions (Elueze & Quan-Haase, 2018). In addition to interindividual differences in privacy attitudes, attitudes toward privacy also vary by technology and platform. Individuals often report a high degree of privacy concerns on platforms where it is difficult to control the message such as on Facebook. By contrast, newer interactive platforms such as Snapchat have built-in features that help individuals

protect their privacy to a greater extent by not only controlling who views a photo or message, but by also automatically removing the content permanently (Piwek & Jonson, 2016).

Mobile phones pose unique privacy challenges. This is linked to two features of the technology. Mobile phones are equipped with microphones and cameras, posing difficult to evaluate risks if misused by third parties. Another risk comes from the possibility that location can be established. Shilton (2009) discusses how surveillance via mobile phones allows companies, governments, and potentially third parties to collect personal information about a person's "regular locations, habits, and routines" (p. 1). For example, it is possible to broadcast one's whereabouts to a select network of contacts throughout the day, as Sam Liam, the designer of an app called Placement, did through his phone (Farman, 2013). Perhaps the greatest risk is that location data could be collected and used without the user being aware of the misuse (Shilton, 2009). Google provides opportunities for users to manage their privacy by turning location information off. Yet, an investigation by the Associated Press revealed that Google continued to track users' location data even when they had turned location history off. Google misleadingly states that when Location History is turned off, "the places you go are no longer stored. When you turn off Location History for your Google Account, it's off for all devices associated with that Google Account" (Dreyfuss, 2018). This demonstrates that privacy breaches in the collection and use of location-based data are widespread among tech companies. It also demonstrates that even when users actively try to protect their location-based data and turn location off on their devices, the data may still be recorded and shared without their consent.

The data collection and analysis of locative media can serve multiple purposes and is a valuable data source for companies. Companies can make use of the data to better understand purchasing behaviors as they happen in the moment. They can also improve services provided to clients or identify niche markets based on how city dwellers interact with their urban environments. Yet, the purposes of locative media are not always linked to corporate interests, nor do they necessarily serve surveillance purposes. The data recorded for research purposes is often referred to as "participatory sensing". The purpose of participatory sensing is to collect and make use of data that is otherwise underutilized. Shilton (2009) stresses that the goal is to "avoid surveillance or coercive sensing by emphasizing individuals' participation in the sensing process" (p. 1). Some of these applications collect anonymous data, while others link data to places. Some projects collect personal data about how a person moves within a city while others collect aggregate data to learn about patterns and flows at a larger scale.

Apps based on locative media rely on fairly detailed location-based data to facilitate experiences and interactions in the moment. There are risks associated with the use of these kinds of services and the broadcasting of personal information via the apps. It is important to realize though that risks also exist when navigating urban settings and interacting with strangers. So far there is little research assessing potential additional risks associated with the use of locative media, but this kind of research will be important as locative media evolve and become more widely used.

Conclusions

Locative media are playing an increasingly important role in the daily lives of networked individuals in urban conurbations. As more and more people move into cities, this role is likely to increase. Even in this early stage of locative media use, it is clear that they have a profound effect on people's relations with their cities and with the people they inhabit their cities with. Reliance on the wayfinding and information sharing capabilities of locative media apps inhibits the development of a sense of familiarity with the urban spaces that app users move through. At the same time, these apps can provide users with a sense of security, and even adventure within unfamiliar areas, and with information about what's going on around them. For networked individuals, locative media result in a further unbounding from the neighborhoods in which they live, work, and play, becoming able to move throughout the city as a long-time local, without necessarily building a sense of familiarity with the spaces they move through.

Social relations in urban spaces become further fragmented and declustered for networked individuals by the introduction of short, ephemeral connections with nearby strangers in complicated ways. Locative media apps make more information available to people about the strangers around them, turning them into pseudonymous strangers (Licoppe, 2016). Some apps, such as Grindr and Scruff, can make people virtually visible in spaces where they might otherwise be physically invisible. They can also make people virtually invisible in spaces where they are physically visible. These affordances raise questions about who can and ought to be visible, where, and when. Affordances are understood as opportunities and constraints provided by a system through features and functionalities (Wellman, et al., 2003). Locative media apps can increase our accessibility to the strangers immediately around us, but this increased accessibility can also lead to an increase in sensory overload, and add new dimensions to privacy concerns. But within all of the information available through locative media, patterns can emerge that can reveal to users that there are people who are in one way or another like them around them, thereby facilitating a sense of trust and confidence in unfamiliar spaces. This trust can have a knock-on effect of increasing users' tolerance of the differences that surround them.

As location awareness gets added to more and more mobile apps, the capacity for locative media to affect people's relations with the urban spaces they inhabit becomes increasingly significant. Licoppe (2016) asks us to imagine "a future in which the use of locative media becomes so commonplace that all urban denizens are digitally connected and location-aware" (p. 113). In such a scenario, the issues examined in this chapter have the capacity to become magnified manifold. What happens, for example, if every store we pass wants to convey information to us? What happens if everyone is sharing their profiles with everyone around them? In this sea of information, who will decide what is relevant to whom? How will these decisions be made? Who will benefit? At what cost, and to whom? These are issues and ethical questions that designers of locative media apps can and should consider when developing their apps and services. Urban planners and others concerned with the growth and development of cities can and should consider the ways in which locative media are already changing urban spaces and social relations among urban dwellers.

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