Claiming Places: An Exploration of People's Use of Locative Media and the Relationship to Sense of Place

by

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Abstract

This dissertation explores the role of locative media in people's place-making activities and sense of place. Sense of place is a human need that entails people's meanings, memories, and feelings for a location. Recent technological and market developments have introduced powerful geographic information tools and place-related media. By identifying a user's location, locative media deliver geographically relevant content that enable people to capture and preserve place information, virtually append it to space, and broadcast it to others. Despite locative media's growing prominence, the influence on sense of place is not well understood.

A major finding of this research is that use of locative media can contribute meaningfully to a person's positive sense of place, including fostering existential connection. This study refutes scholarly and popular dismissals of the medium as only detracting from sense of place. Locative media was found to enable people to make spaces their own by offering geographic relevant information and experiences, recording and sharing place-related impressions, and presenting places in new and enjoyable ways, such as through defamiliarization and decommodification. This study demonstrates the importance of access to our hybrid spaces, unfettered by corporate restriction, to create meaningful place relationships. However, it was

also found that locative media can distract from sense of place through the loss of serendipitous discovery.

This study used qualitative field reports and semi-structured interviews with 22 people, predominantly from Ontario, Canada. Participants reported using 44 locative media applications in a variety of contexts and locations. Crawford's urban counter dynamics (2012) and Bott's sense of place work (2000) were employed as analytical frameworks. Methodologically, this study demonstrates the utility of Bott's sense of place framework and provides an effective mix of methods for future studies.

This research contributes to place theory and mobile media studies by examining the role of locative media in sense of place. From an information studies perspective, it offers evidence of the use and value of geographic relevance and vocality of information. Design guidelines are offered to aid the development of locative media to foster user engagement and conservation attitudes towards place.

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Glossary

The list below provides short definitions, written by this author, of key terms in this dissertation.

- **application** (app for short) – software on a mobile device that delivers a user interface and experience appearing as a distinct unit

- **check in** – the act of indicating one's presence at a specific location via locative media (it is a "check-in" in noun form)

- **decommodification** – the repurposing of commercial spaces beyond their intended commercial purposes

- **defamiliarization** – the process of making a familiar location seem strange

- **geocaching** – a recreational activity wherein one searches the physical world for caches containing a logbook and possibly trinkets using GPS coordinates and clues provided via online listings

- **geographic relevance** – a form of information relevance, it refers to the degree to which an item of information meets the geographic needs or context of a user

- **georeferencing** – the act of establishing the geographic location pertaining to a text or object, often via supplying metadata

- **geosocial networking** – similar to online social networking but mediated through locative media and often involving users' physical location as a central component

- **global positioning system** (GPS) – specific positioning technology that identifies precise physical coordinates on earth using satellite signals

- **hybrid space** – the blending of physical space with corresponding virtual space

- **letterboxing** – a recreational activity wherein one searches the physical world for boxes containing a logbook and rubber stamps using GPS coordinates and clues provided via online listings

- **locale** – a general area in physical space, imprecisely bounded

- **location** – a point in physical space with the boundaries determined by an individual based on perceived unifying traits

- **location-based game** – a form of locative media which offer gaming elements corresponding to a player's physical location and surroundings
- **location-based service** (LBS) – similar to locative media, LBS are digital media with a focus on industrial, corporate, or systems purposes
- **locative media** – mobile media applications that use the geographic position of the device to deliver, generally via Internet connectivity, geographically relevant information and experiences to the user
- **mobile device** – a portable computing and communications device with Internet connectivity that enables user interaction; includes smartphones, tablet computers and dedicated GPS navigation devices
- **place** – a physical location meaningful to an individual
- **place attachment** – a feeling of profound connection or emotional tie towards a place
- **positioning technology** – the software and hardware that determines a device's physical coordinates on earth, for example GPS
- **sense of place** – the meanings, memories, associations, and feelings a person ascribes to a location
- **spatial counter dynamics** – interventions and imaginaries people create or experience that enable people to claim or project their own spatial meanings
- **social navigation** – the act of determining one's choices in spatial routes or physical destinations based on the traces or accounts of others
- **social recommendation** – a system of providing and receiving advice, often in the forms of ratings and reviews, from other people (in the context of this dissertation, via mobile media) on locations to visit or do business
- **space** – the physical world irrespective of associated human meanings
- **vocality** – the number of content authors or creators which can be accessed within a medium simultaneously or in quick succession, from one (univocal) to many (polyvocal)

Chapter 1
Introduction

1.1 Motivation and Purpose of the Study

Feeling a connection to the spaces we inhabit is considered a foundational human need (Heidegger, 1996; Relph, 1976). The meanings, memories, associations, and feelings a person ascribes to a location are termed a *sense of place*. A positive sense of place for an individual leads to feelings of belonging and attachment to the world (Hay, 1998; Stedman, 2002) and can trigger protective and custodial attitudes towards a place (S. Gibson, 1981; Kaltenborn; 1997). Conversely, a negative sense of place can foster feelings of fear and detachment (Tuan, 1977). Scholars have long discussed the conditions that make establishing or maintaining a positive sense of place difficult. Relph (1976) and Jacobs (1992) were prominent critics of post-war urban development, which they believed ignored human needs. Instead of fostering a positive sense of place, Relph and Jacobs argued that much of modern urban development alienates people from their surroundings and fosters a negative sense of place. Connerton (2009) and Farman (2012) argue that our increasingly nomadic lifestyle has resulted in people not having the time to learn about or engage with a location long enough to form a positive sense of place. Others blame the increasing penetration of digital media into our lives (Kellerman, 2009), which prompted artist Robert Bateman to declare, "In our crazy, digital world, a sense of place is elusive" (quoted in Harrowsmith, n.d.). Yet the importance of a positive sense of place remains as crucial as ever, as place researcher, Bott, affirms, "With the challenges facing modem society, people look to their surroundings for connection, rootedness, affirmation of values, security, spirituality, and meaning" (2000, p. 4).

Compounding this situation, our economic and political structures may also work to restrict access to place-related information and representations (Harley, 2001; Monmonier, 1996). Debord asserted that forces of power attempt to create apathy in citizens by denuding spaces of non-sanctioned meaning (1983). Businesses and governments may also attempt to restrict one's sense of place both by imposing a singular sense of place in line with official interests (e.g., supporting land development, globalization, commerce) and by limiting

participation in place-making through discursive and visual forms of control (Stokowski, 2002; D. Williams, 2008).

Arising from these concerns, scholars asserted the need for open and egalitarian access to the power to define our spaces, such as Lefebvre and Harvey's notion of "the right to the city" (2008) and Soja's "spatial justice" concept (2010). Various scholars have proposed tools and tactics to open up place-making; exemplary in this regard is Crawford's 2012 work on "urban counter dynamics". Crawford argues that citizens use various tactics to understand and project their interpretations of their spaces. She dubs such place-making activities urban counter dynamics. I renamed these activities spatial counter dynamics to include a comprehensive range of spaces whether urban or otherwise. Crawford identifies four counter dynamics: 1) defamiliarization, 2) refamiliarization, 3) decommodification, and 4) collaboration (p. 84), which are discussed in detail in the next chapter.

Emerging digital, networked technology has recently sparked discussion on the role such technology may have in influencing sense of place. Although humans have used information and media for centuries to guide their experiences and knowledge of the world (Garfield, 2012), recent technological and market developments have given people access to new geographic information tools and place-related media. The advent of open-access geographic data and mapping software combined with distributed access to the Internet enables people to create and share their own place-related information and representations in new ways (Corbett, 2013). Through relatively new tools such as digital photography and videography, folksonomies, and online open-source maps, people are able to add locations or descriptive data to maps, share georeferenced narratives and reflections, and create autonomous spatial representations (Dunn, 2007; Giaccardi, 2012; Tulloch, 2007; Young, 2013). Geographic technologies, such as global positioning system (GPS) devices and geographic information systems, introduced powerful abilities to analyze and visualize human and physical geography. These technologies converged with mobile communication and computational devices, propelling innovations in geolocative functionalities (Farman, 2012). Current mobile applications can customize information based on a user's geographic position. By identifying a user's location, locative media applications and location-based services (the terms are closely related) can deliver geographically relevant content to users (Brimicombe & Li, 2009). Such locative media applications enable people to capture

and preserve a diverse range of information on space, virtually append it to that location, and broadcast it to others.

In 2010, motivated by the growing popularity, I began auto-ethnographic explorations of my own locative media usage, publishing my ongoing findings on my research blog (www.glenfarrelly.blogspot.ca). Shortly thereafter, my hometown of Toronto, Canada hosted an international summit for the Group of Twenty (G20), during which time I observed the locative media application Foursquare being used in fascinating ways. I found people using Foursquare to document incidents and events and to extend the protests beyond its geographic limits. Subsequently, I conducted quantitative and qualitative studies to examine how people were using locative media and its role in people's relationships to place (Farrelly, 2012; 2013; 2014; 2015). I found that although locative media applications may seemingly encourage a narrow, commercial view of the world, users' practices and norms demonstrate more diverse and contested relationships to place than accounted for in the literature. The literature tends to be polarized along utopian or dystopian lines (as elaborated in Chapter 3), provoking me to consider the need for empirical research on the interplay between people, locative media, and sense of place.

The backdrop to this study is the emergence of a new medium, locative media, with associated user practices and norms still in flux. This backdrop entails the continuing growth of usage of locative media and new applications that engage the public's time and attention. Locative media is growing substantially in adoption and usage worldwide. The global market for location-based services, which includes both consumer and business-to-business geolocative applications, is forecast to triple from $12.2 billion in 2014 to $43.3 billion in 2019 in U.S. dollars (Fennell, 2015). In a recent Pew Research Center study (Anderson, 2016), nine out of ten American smartphone owners used a form of geolocative functionality on their mobile devices. Within this backdrop, there is uncertainty and conflicting opinion in both popular and academic discourse on the role locative media plays in our relationships to space and place. For example, South Korea, a bellwether nation for its high level of new technology adoption, demonstrates this uncertainty through a seeming paradox. Forty eight per cent of South Koreans reported spending "too much time looking at my mobile device and not observing the world around me." Yet, in the same study, almost the same number of South Koreans, 46%, reported they were "better informed about the world around me" due to their use of mobiles (Gibbs, 2012). Although not exclusively addressing locative media, this highlights a complex relationship between mobile

device use and users' relationship to their world. Fundamental questions about the role of this new medium to our spatial relationships remain unresolved. Will locative media reinforce existing challenges to individuals forming a positive sense of place and instead further alienate us from our surroundings? Or, will locative media offer a way for people to make spaces their own and help enliven our everyday places? In an essay by Schwarzer, he considers the implications of locative media:

> Our sense of place is augmented by information wired from the World Wide Web. Part of the information comes from media conglomerates. Much of it streams at us from our social networks and online acquaintances. The information allows us to peruse unseen depths of the place we're in. We have the opportunity to gain a better or different sense of place anywhere we travel within the network's reach… We approach, apprehend and adjust to the world around us by carrying another world with us. We stroll with a docent at our side, answering our every query. Everyday place is curated like museum space, the most banal streetscape brought to comparative life… will we have the patience to wait for a place to reveal itself over a long time span? Won't they too hang on the highlights? Will we be diverted more than ever from happenstance? While we'll probe along the tracks of our individual interests in architecture, cuisine, entertainment or shopping, we'll probe really deeply only when we're motivated to produce some images and verbal impressions, contributions to transmit back to the network — our online community. And then, our observations will be calibrated to the network's conventions. We'll have to deal with Google Maps or Wikipedia or TripAdvisor, with their rules and systems. The more such sites coordinate our experience of place, the more they will make up its infrastructure (2010, part 2, para. 14-16).

The purpose of this study is to explore these issues that Schwarzer so articulately raises to aid understanding of the role people's use of locative media may play in mediating or fostering relationships to place and sense of place. Specifically, this study examines the affordances and features of locative media, user practices and interventions, and people's sense of place. The following sections introduce the fundamental concepts of locative media and sense of place from which the research problem and questions arise. An overview of the study's research design and contributions follows.

1.2   Background of Study

The foundational concepts of sense of place and locative media both present challenges and opportunities for study. Locative media is both a new medium and one still developing based

on technological, social, and market forces. Thus, it is important to consider the characteristic qualities of the medium as of this moment in time. Sense of place has been studied for at least the past fifty years, yet, as it will be shown, it often remains a nebulous concept. Seldom studied in place scholarship is the role of information. This presents a challenge to structure a study of the role of locative media in sense of place with scant foundational literature to draw upon.

1.2.1 Fundamentals of sense of place

Sense of place arises out of an individual's experiences of the physical world, social and cultural forms, and his or her perceptions, senses, and emotions (Gustafson, 2001; Rodaway, 1994). The spaces of our existence are perceived directly through our senses and conceived indirectly through accounts or representations. Within a given space, we may see buildings and trees, hear the sounds of traffic and birds, feel the ground beneath our feet and the heat emanating from concrete, and smell flowers blooming and food cooking. Indirectly, we may talk about a popular new restaurant with friends, read a novel set in an exotic locale, watch a news program about a crime nearby, or view old postcards of our hometown. A person's knowledge of any of these components is called upon when he or she encounters (or re-encounters) a space and makes sense of the experience. Tuan, a leading scholar in articulating human relationships to their surroundings, notes, "What begins as undifferentiated space becomes place as we get to know it better and endow it with value" (1977, p. 6).

Sense of place is an internal state, but it is constantly in flux based on an individual's new experiences or information received (Smaldone, Harris & Sanyal, 2005). Whether a newcomer or a resident of a given location, experiencing a space in cognizant fashion can result in a sense of place. Possessing a sense of place can have profound individual significance and it has been found to entail "highly personal meanings and [places] were vehicles for learning and personal growth, they represented family continuity and provided places of spiritual significance and emotional regulation" (Rogan, O'Connor, & Horwitz, 2005, p. 147). Sense of place is not necessarily harmonious or singular; it can be diverse and contested (Bird, 2002; Falk & Webb, 2010; Ruotsala, 2011; P. Williams, 2006). However, sense of place has been found to foster custodianship towards places in individuals, and such protective attitudes and actions have

meaningful results for place-making, conservation, and heritage preservation efforts (Morgan, 2010; Stedman, 2002; Stewart, Hayward, Devlin, & Kirby, 1998).

1.2.2 Fundamentals of locative media

Prior to locative media, other forms of media existed for centuries that can present information about locations, such as engravings, graffiti, monuments, signs, maps, travel guides, pamphlets, and postcards (Garfield, 2012; McCullough, 2012). As an emerging medium, locative media has absorbed functionalities from prior media, such as mapping (Ballatore & Bertolotto, 2015), directory lookup, and photograph sharing. It remains to be determined, however, how locative media differs from other place-related media. Baym (2010) identifies seven characteristics that differentiate one medium from another. These are 1) interactivity, 2) temporal structure (synchronous versus asynchronous), 3) social cues of communicators, 4) storage of content, 5) replicability of content, 6) reach, and 7) mobility of medium usage. I believe that there are two additional media characteristics: vocality and geographic relevance. The vocality of a medium is the number of text authors able to be viewed within the medium simultaneously or in quick succession. Geographic relevance is a form of information relevance; it refers to the degree to which an item of information meets the geographic needs or context of a user. Assessing these characteristics based on my prior research on locative media (Farrelly, 2010; 2012; 2013; 2014) and review of the literature, I identify five differentiating characteristics of locative media. These are interactivity, reach, mobility, geographic relevance, and vocality. These criteria are clarified below to distinguish the unique and emergent properties of locative media.

Baym (2010) considers the *interactivity* of a medium to be the degree to which it enables *social* (interacting with other people), *technical* (interacting with the medium's interface), or *textual* interaction (interacting with the text available via the medium). With locative media, we can see all three forms of interaction. Users can interact socially with one another through the sharing of their physical location, spatial histories, or geotagged commentary and imagery. As a digital medium, locative media necessitates that users interact with the interface to function. Many locative media applications enable users to interact with the medium's text (also known as the content) by allowing the creation, editing, and sharing of content.

The term *reach*, in relation to media, indicates the extent the medium is available across populations or geographies. The physical extent that audiences are able to access the medium across a geographic area corresponds with the medium's *geographic reach*. If multiple people can access the medium, then it is also said to have a larger *population reach*. Reach is an important consideration with mobile media due to the desire of users to access content throughout the many spaces they traverse. Mobile carriers now have an infrastructure offering mobile network connectivity reaching 95% of the world's population (ITU, 2016). However, barriers remain that limit the reach of network connectivity in rural areas, wilderness, and developing countries. Even when content is available across geographic and population boundaries, there may be other barriers to access, such as roaming fees, which are extra fees mobile carriers charge when customers access their network beyond their "home" coverage area.

The *mobility* of a medium is considered by Baym (2010) to be its degree of portability, that is, its ability to be physically moved and accessed at various locations. Mobility can vary from no or low ability to be moved, such as a monument or a billboard, to highly portable, such as pamphlets and guidebooks. Through their small size and low weight (such that they can be carried in pockets or purses), smartphones provide a high degree of mobility, and thus, ready availability.

The easy portability and geographic reach of locative media, combined with the medium's positioning functionality, enables the medium to deliver *geographic relevance* of information across locations, which other media lack or have only limited ability to deliver. Relevance in information retrieval systems refers to the degree to which information returned to users matches their needs. Geographic relevance, specifically, encompasses several facets, but the most used form in locative media is spatial proximity, which is the degree to which the topical geographic footprint referred to in the returned information matches the physical location of a user (De Sabbata & Reichenbacher, 2012). The higher the match between the two, the higher the geographic relevance (Hill, 2006). Other forms of geographic relevance include temporal proximity (i.e., travel time), country or region (for geo-authentication or blocking), and visibility (e.g., if weather conditions affect one's ability to see a resource). Mountain and MacFarlane (2007) studied mobile device users and found that of the forms of geographic relevance, spatial proximity was the most valued by users. Geographically relevant information in locative media can range from a visual indication of where one is on a map to multimedia

texts about the user's location. Mobility and an extensive geographic reach of network access is not sufficient, however, to deliver the amount of geographically relevant content upon which some locative media rely, as the content itself must be extensive enough in its geographic topical coverage to be relevant for the locations where people want to access it. This remains a challenge for application owners; thus, they often rely on users themselves to generate the expansive volume of content needed for a sufficiently broad geographic topical scope.

Baym (2010) does not specifically address *vocality*, but I use the term to encompass the number of text authors, creators, or "voices" which can be viewed or heard within a medium simultaneously or in quick succession. Vocality ranges from one, univocal, to many, polyvocal (Chandler & Munday, 2016). The degree of vocality of a medium entails its ability to enable the creation and presentation of content by various creators or authors within a given time period. Digital media are readily able to present content created by multiple authors simultaneously (Farman, 2012). For example, a print book may have more than one author, but it is not possible for additional authors to be added to the book once the book has been printed. Vocality has become prominent with the advent of social media and user generated content, and entails the many-to many model of communications (Rutledge, 2013).

Although these characteristics do not comprise the totality of differentiating criteria for locative media, either generally or for specific instances, they indicate how this medium functions and differs from other media in relation to information and representations of locations. Yet as a new and emerging medium, locative media has not reached a stage of closure that traditional media have.

1.3   Research Problem and Research Questions

With the increasing ubiquity of locative media, its role in our social and spatial relations remains uncertain and even, at times, controversial. Despite the growth in adoption of locative media, and considering the importance of sense of place to the human condition, the role of such technology in our relationships to our environment has not been fully examined. Specifically, no empirical studies were found that examine people's use of locative media in relation to a comprehensive conceptualization of sense of place. Nor is it known what areas of sense of place

may be influenced by people's use of locative media, such as aesthetic appreciation of physical place or a spatially grounded sense of cultural history or personal identity.

To aid in understanding how individuals are using locative media to interact with and make meaning from their locations, I posed two research questions:

1) What forms of spatial counter dynamics are manifested in people's use of locative media and how do they relate to people's relationship to place?

2) In what ways does people's use of locative media influence the affective, environmental, or social aspects of their sense of place?

Both questions are interrelated; as it is my position that spatial counter dynamics, as manifested in people's locative media usage, could potentially contribute in meaningful ways to a user's sense of place. Addressing these questions provides useful insight into an emerging media form and the interrelationships between technology, people, and the varying aspects of sense of place. In devising this study, a broad conceptualization of locative media users was maintained in order to be open to the range of uses and contexts of the medium. In structuring this study, I employ analytical frameworks derived from the work of Crawford in urban counter dynamics (2012) and Bott in sense of place (2000). This dissertation represents the first research to utilize these specific frameworks to examine locative media. Guiding the entirety of this study is an overarching holistic approach to the mutually constitutive nature of people, space, and technology, drawn from the work of Graham (1998) and Feenberg (1991). The next chapter of this dissertation lays out my analytical framework in detail.

1.4 Research Approach

This section provides a brief overview of my research approach, which will be discussed in detail in Chapter 4. For this dissertation, I determined, in conjunction with my advisory committee, that a qualitative, exploratory study was required, based on insufficient preexisting research about sense of place and locative media to establish foundations necessary to structure quantitative research. The unit of investigation and analysis for this study is at the individual level. This study used two qualitative methods, field reports and semi-structured interviews of a

diverse array of locative media users. Participants were asked to use locative media applications as they normally do and report to me during their usage in the field. To provide a robust and rich account of their pertinent behaviours as well as ecological validity, it was crucial to enable participants to report on any and all locative media applications they used. I then conducted semi-structured interviews to explore their usage in-depth.

Data collection commenced in July 2015 with a pilot study and concluded in April 2016. In all, twenty two people, predominantly from Ontario, Canada, participated in the study. Participants represent a cross-section of varying backgrounds and types and contexts of locative media usage. Inductive data analysis was conducted to arrive at findings regarding participants' locative media behaviours in relation to the research questions.

1.5   Significance of Study

Findings from this study contribute to theory and praxis. At a theoretical level, this research contributes predominantly to the ongoing literature in the fields of locative media and sense of place. This research contributes to growing literature on locative media and mobile media by specifically providing empirical evidence on the role of people's use of locative media in relation to sense of place. As identified in the literature review in Chapter 3, this is an under-studied area. By investigating a diversity of locative media applications within various contexts of usage, from everyday tasks to leisure time activities, from commercial practices to counter-mapping, from local wayfinding to tourist explorations, from viewing content to creating it, this study provides a rich account of people's use of the medium and its ecology. Through my use of a comprehensive and operationalized sense of place framework, this study offers insight into the areas in which people's use of locative media appear to have influence upon their sense of place.

This research offers a contribution to place theory by examining the role of locative media in sense of place. Collecting qualitative data on people's actual use of locative media and then examining this data within a comprehensive sense of place framework, contributes to the literature by documenting the interplay between people, space, and technology. Additionally, this study also contributes to the fields of human computer interaction, information studies, and media studies by demonstrating the value of geographically relevant information. Geographic

relevance is increasingly embedded in information delivered via mobile devices due to geolocative technologies, yet I found no studies which explored information usage of geographically relevant information delivered via locative media. This study offers evidence of the value of embedding – even improving – geographic metadata in information resources.

This study also offers a methodological contribution to ongoing studies of sense of place by demonstrating the usefulness and challenges of using Bott's (2000) sense of place instrument. It is unfortunate Bott's work is seldom cited, as it represents possibly the most comprehensive sense of place instrument published. It is my hope that this study will bring renewed attention to Bott's significant contribution to place studies. An additional methodological contribution is also produced from this study based on providing an effective mix of methods with which to investigate this phenomena.

Finally, this study contributes at a social and praxis level. Since having a positive sense of place can foster feelings of custodianship and actions that aid conservation and advocacy efforts of natural or heritage sites in individuals (Kaltenborn, 1997; Stedman, 2002; Stewart et al., 1998; B. Taylor, 2009), insight gained from this study can be applied to develop locative media applications to aid organizational efforts to these ends. Efforts to foster a positive sense of place have also been found to have economic and development benefits (Kelly, Ruther Ehresman & Nickerson, 2016; Yuksel, Yuksel & Bilim, 2010). Additionally, this dissertation offers design guidelines and empirical insight for developers of locative media to encourage and guide development of applications that offer citizens a greater ability to share their stories of the world.

1.6 Dissertation Overview

Including this chapter, this dissertation is comprised of seven chapters and five appendices. This chapter, the *Introduction*, provides the motivation and background of the study, poses the research questions, and highlights the contributions of this study.

In the next chapter, *Chapter 2 – Analytical Framework and Key Concepts*, the operational definitions and key concepts which ground the study are explained, specifically sense

of place, spatial counter dynamics, and locative media. A glossary is also provided at the beginning of this document to assist in clarifying additional terminology.

In *Chapter 3 – Review of the Literature* foundational and noteworthy literature regarding sense of place, spatial counter dynamics, and locative media is identified, drawing out key concepts, pertinent scholarly debates, and unresolved issues to position the need for this study.

In *Chapter 4 – Methodology and Research Design*, the methodological underpinnings of the study are discussed, as well as details regarding methods, instruments, sampling, recruitment, data collection, and data analysis. Details are also provided on my process to ensure ethical and trustworthy research.

Chapter 5 – Findings provides information on the study participants, locative media applications, locations of usage, and user behaviours. Findings are summarized as they address the two research questions, first addressing spatial counter dynamics and participants' use of locative media, and then sense of place and participants' use of locative media.

In *Chapter 6 – Discussion*, the findings are positioned in relation to the research questions and analyzed and interpreted through a discussion of four key themes.

Finally, in *Chapter 7 – Conclusion*, the dissertation culminates with a summary of key findings, design guidelines, and contributions of this study, as well as identifying limitations of the study and suggesting future directions.

Appendices of this dissertation provide the references, data collection materials, code definitions and samples, and screenshots of the locative media applications studied.

Chapter 2
Analytical Framework and Key Concepts

2.1   Chapter Overview

The literature examining sense of place is rich and extensive, if at times contradictory. Additionally, locative media as an emerging medium has terminology and concepts still coalescing and also used in conflicting manners. To provide conceptual clarity for this study, this chapter defines and differentiates key concepts. I also provide analytical frameworks derived from the work of Bott (2000) and Crawford (2012) for examining sense of place and spatial counter dynamics, respectively. As locative media is an emerging medium with uncertain boundaries and forms, background information is therefore provided on the history and technical nature of locative media. While this chapter defines key terms only, further definitions of frequently used terms in this dissertation are provided in a glossary on page xiv.

2.2   Sense of Place Definition and Operationalization

The concept of sense of place has been considered in the West since as early as Hellenistic Greece, with Plato and Aristotle providing foundational theories (Creswell, 2004). In the twentieth century, the seminal works of philosophers Husserl (1962), Heidegger (1996), Deleuze and Guattari (1987), and Lefebvre (1991) offered ontological and epistemological dimensions to place theory. Sense of place is considered a fundamental human need (Heidegger, 1996; Relph, 1976), an essential component for feelings of belonging or attachment to the world (Hay, 1998; Stedman, 2003), and a trigger for protective and conservation attitudes towards the environment (Kaltenborn; 1997; Tuan, 1977). With such a rich scholarly history, it is understandable how the term and concept of sense of place has a varied and nebulous meaning. The following subsections draw distinctions between conflating place conceptualizations, followed by a definition and operationalization of sense of place.

2.2.1 The need to define sense of place

The term *sense of place* is utilized in scholarly and popular usage to describe any and practically all forms of human relationships to place. The term is used in so many ways and contexts that it has become almost de rigueur to begin studies of sense of place by acknowledging the varied and inconsistent uses of the term (e.g., Antonsich, 2010; Kyle & Chick, 2007; Stedman, 2003). A search on July 16, 2016 of Amazon.ca for books with "sense of place" in the title returned books on the following topics (in order returned): cartography, art history, travel writing, geography, literature studies, ecology, anthropology, landscape studies, crafts, media studies, music, gardening, interior design, urban planning, and fictional stories among just the first in-stock 20 titles. Indeed, it is not even agreed upon by all scholars that only humans can have a sense of place, as the term is applied to machines with the ability to locate their position (Schiestl, 2004), to food such as wine or cheese imbued with terroir (Barritt, 2012; Gelfand, 2010), and to animals and their spatial sense (Philo & Wilbert, 2000). The bulk of sense of place research, however, arises from the fields of human geography, environmental psychology, forestry and resource management, and tourism and leisure.

Scholars in the varying traditions studying sense of place defined the term to fit their disciplinary and individual purposes. Sense of place is conflated with other concepts, such as *place attachment*, *place identity*, and *sense of community*. Many scholars lament the ambiguity of the term sense of place, which Antonsich calls "the most elusive, ill-defined and controversial" of all place constructs (2010, p. 123). Pretty, Chipuer, and Bramston (2003) add that even within disciplines the term is inconsistently applied and imprecisely operationalized. It is therefore essential to disambiguate the term to avoid conflation of phenomena and for operational clarity. Based on my ongoing review of the literature, the sections below offer among the most comprehensive itemization and clarification of place-related terminology in the literature.

2.2.2 Foundational concepts of place and space

The terms *space* and *place* are foundational concepts to sense of place. The concept of *place* is generally agreed upon by scholars as being the social construct of a given space. Cresswell succinctly defines place as a "meaningful location" (2004, p. 7). In contrast, the term

space is often used to denote a physical spot on earth omitting consideration of human meaning or cultural associations (Cresswell, 2004). The term *location* is similar to space, but it is more geographically precise as it refers to a point in space identifiable by geographic coordinates (Cresswell, 2004).

2.2.3 Concepts associated and conflated with sense of place

Various other terms are often conflated with sense of place; the most common of which is *place attachment*. Place attachment entails a deep sense of belonging to place often based on substantial familiarity and emotional connection with it (Trentelman, 2009). Drawing upon attachment theory in psychology (Morgan, 2010), the term place attachment entails a deep emotional attachment to a place, that is not necessarily present in sense of place. Place attachment is often described as intense and positive, such that removal from the place (as with immigration) can result in feelings of despair or grief dubbed *place loss* (Trentelman, 2009).

Sense of place also overlaps with the concept of *spatial cognition*, the latter term focusing on how humans understand the world from a Euclidean perspective. Spatial cognition theory groups geographic knowledge into three primary types, 1) declarative (i.e., facts about a location, such as Ottawa is the capital of Canada), 2) procedural (i.e., directions, such as the CN Tower is north of Lake Ontario), and 3) configurational (i.e., map-like knowledge that enables geometric or topographical relationships between locations) (Mark, 1993). Although in theory the concept of *declarative spatial cognition* overlaps with elements of sense of place, in practice, however, studies of spatial cognition tend to centre on wayfinding and navigation (Ellard, 2009) rather than on meaning-making more associated with sense of place. Similar place terms, such as *place familiarity* and *place knowledge,* entail a sense of knowing about a place more so than the feelings and meanings more associated with sense of place.

Another concept conflated with sense of place is *sense of community* (e.g., A. Williams, Kitchen, DeMiglio, Eyles, Newbold, Streiner, 2010). Sense of community often refers to an individual's positive relationships with the residents and merchants of a location, arising from social and communal activities occurring therein. An important distinction is that one can have a sense of place without any knowledge or dealings with its residents or visitors, but a sense of

community is not similarly possible. A sense of place can occur in uninhabited places, but a sense of community is predicated on human presence.

The term sense of place is also used to denote the image or character of a location. Such usage assumes places offer a consistent meaning that can be represented and communicated (e.g., Bidwell & Browning, 2010). Arising from ancient beliefs that each location had a unique protective deity, the term *genius loci* was coined by Romans (Cresswell, 2004) to distinguish a unique *spirit of place*. Although a prominent image of a location, its genius loci, may affect how one interprets and feels about a location, it does not necessarily entail the sense of place a person will have of a location and should thus be considered distinct from sense of place. Conceptually related terms include *place image* (e.g., Fazel & Rajendran, 2015) or *place brand*, which are often used within the fields of tourism and marketing (e.g., Müeller & Schade, 2012).

The term *place identity* is used in two ways. In one way, the term is used essentially to be synonymous with genius loci. Secondly, place identity can refer to how place-based experiences and attachments contribute to an individual's identity (e.g., Antonsich, 2010; Morgan, 2010). This conception of place identity implies that one has a profound relationship with a place that may not apply to all place experiences. Sense of place encompasses the personal meanings one attributes to a place without claims that this necessarily affects an individual's identity.

Finally, sense of place can also relate to the concept of *place-making*, wherein the qualities or representations of a place are deliberately altered to improve the experience of the place. Place-making efforts can occur at an individual or collective level.

These terms demonstrate the multifaceted components of human relationships with place. Although there is a consensus amongst those studying place that the above concepts are related and may be mutually constitutive, there is not agreement as to which concepts comprise sense of place or are distinct phenomena. Some scholars consider sense of place an umbrella concept (Stedman, 2003) and thus include other place concepts in their definition of sense of place. My work maintains conceptual distinctions between place terms to clearly distinguish my findings amongst the diversity and richness of human spatial relationships.

2.2.4 Sense of place definition

Although scholars have not reached consensus on a definition of sense of place, I draw from leading place literature (specifically, Bott, 2000; Cresswell, 2009; Jorgensen & Stedman, 2001; Kyle & Chick, 2007; Relph, 2001; Steele, 1981; D. Williams & Stewart, 1998) to arrive at an operational definition. Thus, I define **sense of place as the meanings, memories, associations, and feelings a person ascribes to a location**.

Sense of place can be seen as a sensemaking process along the lines of Weick (1995) and Dervin's (2003) theories. The formation of sense of place shares characteristics with Weick's theory as both begin by a person "noticing" unfamiliar data in the external world (Weick, Sutcliffe & Obstfeld, 2005) or having a cognitive "gap" in their understanding of their world (per Dervin, 2003). This is followed by "bracketing" information received from the world based on preexisting mental models (Weick, 1995). Sensemaking entails interpretation of stimuli into mental categories through identification, differentiation, and labeling (Weick, 1995). Yet, sense of place differs from Weick and Dervin's sensemaking process in that sense of place is not necessarily task-oriented or resulting in action.

Sense of place arises out of the interplay between three elements: 1) the physical world, 2) sociocultural accounts and representations of the world, and 3) an individual (Bott, 2000; Gustafson, 2001; Speed, 2010; Steele, 1981). Individuals receive data from and about a location from their senses based on observations and experiences of the physical world and any interactions with other people in the location. In addition, they may receive data about the location through accounts or art works accessed via media. Their perceptions of the location are guided by prior knowledge, psychological traits, culture, and personal values. From this, a sense of place is formed.

A sense of place may change, however, as the individual reflects on the experience, receives new information, or re-encounters the place. Sense of place does not result from all spatial encounters. Rather, Seamon (1979) argues that sense of place results from a cognizant perception and consideration of a space. When such an activity occurs, Seamon and Tuan (1977) refer to it as a pause in our spatial movement. These pauses may be in time, in thought, or both – but they are instrumental in the formation of a sense of place.

My definition considers sense of place to be a process – that is an individual's internal state that is constantly in flux based on new experiences or information (Smaldone, Harris & Sanyal, 2005). This notion of sense of place arises in part from the work of Deleuze and Guattari (1987). They refuted prior conceptions of place as fixed and were foundational in conceiving of place as a continual process, always in a state of becoming. Although these scholars discuss place broadly as a social construct, their theories apply at the individual level of sense of place, for it is the collective power of individual sense-making that result in their subjective and fluid notion of place. Based on an interview study Smaldone, Harris and Sanyal conducted, they concluded that sense of place was a process of "ever-shifting points of meaning that mark changes in people's lives in response to a variety of influence" (2005, p. 397). Massey was an early proponent of this line of thought, as she felt it allowed for the "inherent dynamism of the spatial… release[ing] the spatial from the realm of the dead" (1994, p. 4). Thrift, in his non-representational theory (2007), conceives of place as a site of constant performance with the act more critical than the representation.

Although my study focuses on sense of place arising from direct, individual engagement with physical spaces, my definition is robust enough to encompass various forms of sense of place. For example, research has found people can have a sense of place for portable structures, such as ships or annual fairs (Kyle & Chick, 2007; McNeill, 2007) and fictional or historical settings (Ryden, 1993; Seamon, 2008). As the latter settings are beyond the purview of locative media, they are not addressed in my study. Similarly, a shared or cultural sense of place is identified in scholarly literature, although it is not examined in this study.

The scale of what determines a place in sense of place is often vague in place literature. For Tuan, place can be a country or a corner of a room (1977). Cresswell (2004) noted that place is a spatial unit perceived by an individual as bounded by unifying traits. These boundaries can be shared and precise or individual and fuzzy, but should be sufficiently mentally distinct for one to distinguish a location from others. It is not necessary for a person's conceptualization of a place to follow the official or commonly accepted boundaries of known geographic entities. Instead, as Relph states, "a place is not just the 'where' of something; it is the location plus everything that occupies that location seen as an integrated and meaningful phenomenon" (1976, p. 3). Thus the scale of place in sense of place is an unresolved but not crucial issue (C. Gibson,

Luckman & Brennan-Horley, 2012; Qian, Zhu & Zhu, 2011; Relph, 2001). Considering this, the scale and boundaries of a place for this study are therefore determined by individual participants.

Similar to scale, the intensity and valence of sense of place can vary by individual (Axford & Hockings, 2005). According to some scholars, sense of place can be negative or based on fear (Tuan, 1977) or used for exclusion and discrimination (Massey, 1994). Tuan calls such negative feelings topophobia. Some scholars have followed his lead in examining this aspect as a distinct phenomenon from sense of place. My research maintains an open stance on the valence of sense of place in order to fully explore the phenomenon. The intensity, or amount, of sense of place was assessed by Shamai (1991), who formulated a scale to measure the amount of sense of place present in an individual per place. Yet, the notion of intensity of sense of place is problematic, as intensity has not been shown by Shamai or other researchers to correlate with how personally meaningful a place is to someone. My study therefore does not seek to impose a set amount of intensity of sense of place that must be present. My research does not seek to legitimize or prescribe a specific sense of place; instead, I seek to understand sense of place in its open and pluralistic forms (D. Williams, 2008). Nonetheless, the works of Shamai and Tuan are helpful in envisioning sense of place as a continuum of intensity and valence.

2.2.5 Bott's domains and items comprising sense of place

A challenge with studying sense of place lies in determining how to ascertain when a person has a sense of place and to understand its base components. Various models, frameworks, and typologies have been used to examine sense of place (e.g., Canter, 1985; Eyles, 1985). Yet these works offer little assistance in assessing the presence of sense of place, either due to their structure more as a theoretical springboard than as an instrument for empirical research or due to their incompleteness. The failure of much of place scholarship to completely identify and accurately reflect the totality of sense of place was identified by Stedman (2003) and confirmed by Lewicka (2011). A possible reason for the limitations of scholarship to provide a comprehensive and robust means to examine sense of place is that scholars often utilize a single theoretical framework, often existential phenomenology or social constructivism. However, these theories in isolation fail to account for the interrelationships and totality of sense of place, a concern raised by Antonsich (2010), Dovey (2010), and Sack (1997).

In overcoming these limitations, the work of Bott (2000) is exemplary. Bott bridges traditional disciplinary preoccupations in the study of sense of place and provides a holistic, integrative, and highly granular research instrument to identify aspects of sense of place. As Bott intended her instrument to be used for quantitative assessment of the presence and type of sense of place, the structure of the instrument is designed for use in surveys; however, I found her work to be adaptable for the qualitative purposes of this research. To devise her sense of place assessment instrument, Bott conducted literature reviews and convened focus groups. She analyzed her findings using grounded theory and then refined concepts based on advice from an expert panel. Bott arose at a grouping of the overarching concept of sense of place broken down into individual criteria, which she calls "items", within three "domains": physical setting, cultural, and individual / personal. These domains are similar to Gustafson's poles of "environment", "others", and "self" (2001) and other prominent sense of place research (e.g., Steele, 1981). Within these domains, Bott identifies 90 individual items that indicate the presence of sense of place. These items are grouped under categories, which she called "scales", such as natural and built environment, sociocultural, existential, memory, well-being, informational, and utilitarian. Table 2.1 shows Bott's domains, scales, and items of sense of place. Each item can be measured by a seven-point Likert scale, which Bott also provides.

Table 2.1: Bott's sense of place instrument

This table is reproduced unaltered from Bott, 2000 (pp.57-58). Bott developed this instrument to assess the presence of sense of place in individuals by domains and types ("scales") of sense of place with associated criteria ("items").

Domains and Scales	Items
Physical Setting Domain	
Natural Setting Scale	natural, sunny, has good lighting, has a good amount of trees
Built Environment Scale	made of materials which are appropriate in color, made of materials which fit the setting, has attractive buildings
Character Scale	clean, alive, peaceful, distinctive, harmonious, balanced, well-maintained, simple, spacious, open

Cultural Setting Domain	
Inherent Sociocultural Scale	historic, authentic, has a spirit of the people, fits within the larger context of CSU[1], supports the activities of CSU, feel a sense of history
Transactional Sociocultural Scale	offers a sense of belonging, provides opportunities for interaction with others, offers civility, generates respect for the individual, has a distinct energy, feel a part of the community, feel a sense of belonging
Affective Individual / Personal Domain	
Significance Scale	meaningful, significant, interesting, valuable
Existential Scale	feel a sense of connection, feel a sense of my own identity, feel a sense of attachment, feel a sense of ownership
Memory Scale	familiar, well-known, memorable, feel a sense of connection, feel like I know it well, feel a sense of nostalgia
Aesthetic Scale	beautiful, aesthetically pleasing, pleasing to look at, generates a positive sensory experience, feel a sense of awe, feel a sense of appreciation
Transcendental Scale	inspirational, magical, sacred, a spirit of place, feel alive, feel inspired, feel connected to a higher power, feel fulfilled, feel a sense of romance, feel strong emotions
Functional Individual / Personal Domain	
Purposive Scale	meets my expectations of a campus setting, supports my role at CSU
Informational Scale	understandable, provides a sense of direction, has distinct landmarks, is easy for me to find my way around in, makes way-finding seem intuitive, provides information
Prospect Scale	feel like there are opportunities here for me, feel like exploring, feel like I have options, feel a sense of mystery
Refuge Scale	non-threatening, has obvious boundaries, offers shelter, feel a sense of refuge
Well-being Scale	safe, comfortable, warm, serene, reassuring, revitalizing, feel in control, feel peaceful, feel comfortable, feel calm, feel a sense of comfort, feel serene

Bott's work is not without limitations. Bott customized her items based on a specific place (the site of her study – the campus of Colorado State University) and thus she recommends

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[1] Bott designed her scales to study locations at the Colorado State University campus, which she shortens to "CSU".

that researchers adopting her work approach it with a degree of site-specific flexibility. As with much of place literature, Bott's work focuses on positive sense of place. Additionally, at times her items seem to be studying the characteristics of a location more so than the feelings, emotions, and meanings that arise from people in response to these characteristics (e.g., "has good lighting" and "provides a sense of direction"). In my opinion, there are also some organizational issues. For example, she groups feelings of well-being under the functional domain, when it might better fit under the affective domain and the item "safe" under well-being, when it might better fit under the category of "Refuge". However, Bott verified the validity of her instrument through field trials and tests of statistical significance. Despite its limitations, Bott's work nonetheless remains the most ambitious and clear work to date to identify and organize the multiple aspects of sense of place.

For this study, I use Bott's work (as presented in Table 2.1) as the analytical framework through which to examine sense of place. My research does not impose a preferred type of sense of place, but rather explores the components of sense of place. Bott's work, through her domains, embeds the dominant lenses in research on place of existential phenomenology and social constructivism (as discussed in the next chapter). This approach addresses concerns raised by scholars, who note the limits of studying sense of place through only one lens. Sack argues that using one lens lacks sufficient analytic depth to understand the phenomenon:

> Indeed privileging the social in modern geography, and especially in the reductionist sense that "everything is socially constructed," does as much disservice to geographical analysis as a whole as has privileging the natural in the days of environmental determinism, or concentrating only on the mental or intellectual in some areas of humanistic geography. While one or other may be more important for a particular situation at a particular time, none is determinate of the geographical. (1997, p. 2)

My use of Bott, however, does not imply that the sense of place domains are silos; instead, my framework enables me to explore these dimensions holistically and to identify the interplay and intersections among them. By using Bott's work as an analytical framework, a more complete and richer account of sense of place is provided. Scholars such as Antonsich (2010), Dovey (2010), Entrikin (1996), and Sack (1997) argued for the importance of holistic approaches to understanding sense of place. My approach neither reduces humans to structuralist automatons nor to insular free agents, but instead provides a nuanced view of the components of

sense of place. The study does not seek to discern or study sense of place at its moment of formation or tease out originating sources, as such a study would be difficult, if not impossible, to stage. Instead, with sense of place positioned as a holistic, continuous, and multi-source process, my study explores participants' sense of place in relation to their use of locative media in and about a place.

2.3   Spatial Counter Dynamics

Having extensively reviewed locative media literature, I found no work that provided the conceptual tools required to enable this study to examine the diverse ways people use locative media to make spaces their own. Within the field of study that can be roughly described as DIY urbanism (discussed in the next chapter), scholars have begun in recent years to itemize the various ways people are reimagining, repurposing, and re-presenting their physical environments for their own purposes. A leading theorist in this area is the urban planner scholar Margaret Crawford. Based upon her ethnographic research about people and their spatial relationships and practices, Crawford posed her theory of "everyday urbanism".

In 2012, she presented a framework, which she calls *urban counter dynamics* (2012). In this brief but inspiring paper, Crawford argues (a position with which I agree based on my own review of the literature) that prior scholarly frameworks were not effective for assessing various urban intervention and spatial engagement efforts. She poses her urban counter dynamics framework as a starting point for examining the ways people intervene in the openings of capitalism to create their own meanings and representations of their spaces. She builds upon Lefebvre's notion of the right to the city (1991) - that is that citizens should be free to make and remake our environments for the collective good. Crawford argues that citizens use various tactics and media to understand and project their interpretations of their spaces. These dynamics offer possibilities for people to work within existing geopolitical structures to achieve their own ends "that are not so much anticapitalist as they are noncapitalist" (Crawford, p. 84). They are counter not in that such efforts necessarily strive to remove the hegemony or assert definitive counter-hegemonic goals, but rather in that they provide a means for citizens to mount their own forms of resistance against hegemonic control of their spaces. Crawford's work here has

conceptual similarities to Deleuze and Guattari's (1987) discussion of deterritorialization and reterritorialization – yet Crawford's work offers more practical clarity for empirical analysis.

Crawford framework provides the necessary conceptual toolkit to examine the ways in which locative media developers, content creators, and citizens are able to create a multiplicity of spatial imaginaries and interventions that empower people "to claim their rights to their city and to freely project alternative possibilities for urban life" (p. 84). However, Crawford's term urban counter dynamics implies that such efforts are only applicable to people who live in urban areas. She thus excludes people in non-urban areas even though the ability to generate meaning from one's spaces is not limited to spaces of large population. Therefore, I have coined the more inclusive term *spatial counter dynamics* and will use this term throughout this dissertation. I define **spatial counter dynamics as interventions and imaginaries people create or experience that enable them to claim or project their own spatial meanings**.

Crawford identifies four ways for her urban counter-dynamics: 1) collaboration, 2) decommodification, 3) defamiliarization, and 4) refamiliarization (p. 84). Additionally, I add the concept of familiarization to Crawford's concepts to offer a comprehensive scope of this process. A brief definition of each dynamic is offered below.

2.3.1 Collaboration

A "new politics of collaboration," argues Crawford, underlies many urban counter-dynamics, wherein people assume collaborative roles and responsibilities to create crowd-sourced or mutually-beneficial projects (p. 85). Not all collaborative efforts necessarily entail a counter-hegemonic objective, however, but Crawford is highlighting the potential of such efforts to facilitate grassroots efforts to achieve communal benefit that might not otherwise be attained through traditional means.

2.3.2 Decommodification

"Commodification is the process of transforming things valued for their use into marketable products that are valued for what they can bring in exchange" (Mosco, 2009, p. 127).

In spatial terms, this refers to commercial efforts to construct and maintain rules and representations of locations to promote capitalists' interest and limit people's free use of the land. Through decommodification, Crawford argues that spatial actions and interventions offer alternative representations and experiences that can "remove land from its market context and question its status as a commodity" (p. 85). Such decommodification processes can reconfigure or hijack spaces for purposes other than those officially sanctioned.

2.3.3 Defamiliarization

Defamiliarization is the process of making familiar spaces strange, as Crawford relates, "unlikely insertions or juxtapositions of uses can unsettle our existing perceptions of urban life and space, opening up new possibilities and invigorating the idea of what a city can be" (2012, p. 84). With its roots in literary theory, defamiliarization is a process wherein familiar things are presented in new, possibly challenging ways to solicit fresh thinking (G. Bell, Blythe & Sengers, 2005). For people already familiar with a location, locative media interfaces or content can serve to break down their prior conceptions and create room for people to create new or alternative or spatial meanings. Farman argues that defamiliarization through locative media applications may result in a "deeper sense of place and a stronger understanding of our own position within that place" (Farman, 2014, p. 5).

2.3.4 Refamiliarization

In refamiliarization, new conceptions or elaborations of a space are absorbed by people, with the effect that, "This can dramatically alter urban situations, making what were harsh places feel more like home" (Crawford, 2012, p. 84). The process of coming to know a space is not linear (Smaldone, Harris & Sanyal, 2005) and encountering new representations of spaces does not eradicate prior notions, but instead, as Crawford acknowledges, builds upon existing conceptions (Veronesi & Gemeinboeck, 2009) through continuous refamiliarization.

2.3.5 Familiarization

As the term refamiliarization limits the concept to only those spaces where one has already a degree of familiarity, I believe a new concept must be added to more fully understand the overall phenomenon. Based on Crawford's concepts of refamiliarization and defamiliarization, I add the spatial counter dynamic of familiarization. I thus define familiarization as a process through which a person either learns of the existence of a location or distinguishes a space as a discrete location. For example, one may be familiar with a downtown street, but not know any of the businesses on that street.

This study will examine how these spatial counter dynamics are manifested through people's use of locative media. The next section provides background material to help clarify and define this medium.

2.4   Locative Media

Considering the newness of mobile, locative technology, consensus has not been reached on terminology (Oppegaard & Grigar, 2014). It is generally agreed that the term *locative media* was coined by Karlis Kalnins at a conference in 2002 (e.g., Lemos, 2011; Tuters & Varnelis, 2008). Early locative media writers and practitioners envisioned the term locative media as focusing on using location-aware mobile devices to create place-based art more so than the broad functionalities the medium encompasses today.

2.4.1 Definition of locative media and mobile device

The term locative media is applied broadly to media used for the "representation and experience of place through digital interfaces" (Chang & Goodman, 2006, p.1). This definition misses the central element of geolocative functionality – that is, locative media's ability to use positioning technology to "actively create and sense a reciprocal awareness between people and their environment" (Shirvanee, 2006, p.1). Chang and Goodman's definition allows for the term

locative media to encompass various digital forms, such as interactive kiosks and digital signage. More recently, Frith (2015) defines locative media as "any form of media – ranging from in-car GPS, displays, to RFID [radio frequency identification] tags – that feature location awareness, which is a device's ability to be located in physical space and provide users with information about their surroundings." Frith implies that the term applies exclusively for digital interfaces. Using scholarly and common usage of the term, I provide a synthesis definition: **locative media are mobile media applications that use the geographic position of the mobile device to deliver, generally via Internet connectivity, geographically relevant information and experiences to the user.**

The term *location-based services* (LBS), lately often shortened in trade literature to just location services, overlaps considerably with locative media and is often used interchangeably. Yet, the term location-based services often connotes a systems focus on mobile, locative technology with a corresponding focus on the integration of enabling technologies and systems. Use of the term location-based services can encompass corporate and industrial purposes, such as fleet management, package tracking, mobile advertising, and crisis coordination (Location Based Services, 2016). The term locative media, however, generally connotes mobile media applications with an individual user focus. As the term locative media is more applicable for the parameters of this study, I will use this term in this dissertation.

To examine the use of locative media on mobile devices, it is also important to clarify what is meant by the term *mobile device*. As with locative media, the term does not have a consistent definition. Building upon the definition offered by Smura, Kivi and Toyli (2009), I define mobile devices as at least having 1) the ability to connect to the Internet, 2) user input and interaction mechanisms, 3) visual and/or audio output, 4) internal memory capacity, and 5) the physical size of 21 by 36 centimeters or smaller. In addition, mobile devices may access various networks (telephony, Internet, Bluetooth), multimodal methods of input and output (e.g., cameras, speakers, haptic interface, or keyboard), environmental sensors (accelerometers, gyroscopes, light and noise meters), and computational power. Mobile devices therefore include smartphone, tablets, networked portable media players, and personal digital assistants (e.g., iPod), and dedicated GPS navigation devices (e.g., TomTom, Garmin).

When discussing locative media, the term *mobile application* (or "app" in common parlance) refers to the software program that runs on a mobile device to deliver the user interface and experience of locative media. An application is a specific instance of locative media and generally has a unique name, interface, and brand identity. Locative media applications can take the form of software that runs as a standalone program on the mobile device either as a native application (i.e., pre-installed on the device when a person buys it), or as a downloadable application (i.e., a person makes a conscious decision to download it from a central application repository, such as iTunes or Google Play). Applications may be free, have a one-time fee, or have various pay-for-use fee structures. Locative media can also be offered via the World Wide Web in the form of a mobile-friendly website, also known as a mobile web application. This study does not seek to examine the differences between these forms, therefore for the purposes of this dissertation, the term mobile application is used to describe all forms of applications accessed on a mobile device.

Locative media applications may offer a suite of features beyond any relationship to place. For the purposes of this study, an application is considered to be an instance of locative media if it has geolocative functionality. Features beyond those that make use of geolocative functionality or are not place-related are not addressed in this dissertation.

Locative media interfaces offer a variety of perspectives ranging from an aerial "disembodied voyeur" view to a street view "situated subject" view (Farman, 2012, p. 45-46). Labrador, Perez and Wightman (2010) divide locative technology into two types – reactive or proactive. Proactive applications run automatically or in the background and may trigger pop-up windows or application events based on meeting certain conditions, such as arriving within a certain proximity or within a geofenced area. Reactive applications rely on users to initiate requests for content and possibly to indicate or refine their location.

2.4.2 Use cases of locative media

To demonstrate the core functionalities of locative media, the following section relates two use cases I devised to highlight typical functionality and usage of locative media. In the first use case, a user opens an application on a mobile device and submits a query. Queries may be

general, such as "What happened here?" or "What's here?" or more specific, such as "parks" or "architecture." This query, along with the user's geographic coordinates, which have been automatically or manually identified, is sent via networks to an information system. The system then queries its database to determine which entries match the search criteria and the geographic location of the user. Automated indexing, manual classification, or author-supplied metadata can be used to determine the geographic footprint of an information object (Hill, 2006). An algorithm then determines the match between georeferenced information objects and the user's query. Algorithms sort the results, using geographic relevance, keyword analysis, information retrieval relevance factors, or a combination (see De Sabbata & Reichenbacher, 2012; Hill, 2006; Mountain & MacFarlane, 2007). A search for "park", for example, could return information about parks in the vicinity of the user's location.

In a second use case, rather than a user querying the application, a user arrives at a location, opens a locative media application and automatically sees a list of proximal points of interest. Points of interest can be businesses, attractions, landmarks, public spaces, etc. To see these points of interest, users may directly provide or refine their location to the system or have it automatically determined (e.g., via cell tower triangulation or GPS). A user then sees information concerning the point of interest, such as facts (e.g., contact information, address) or user generated content (e.g., reviews, ratings). Users may elect to add their own content about the point of interest.

These examples simplify usage scenarios, but they do provide a picture of how locative media users receive information tailored to their needs and location.

2.4.3 Typology of locative media applications

To understand the range of user experiences and information locative media applications deliver, it is helpful to first categorize the various forms of locative media. Raper, Gartner, Karimi, and Rizos (2007) conducted a review of location-based services and grouped them into the following types: mobile guides (e.g., travel information), transportation (e.g., navigation), location-based gaming, assistant technology (e.g., for disabled people), location-based health, and applications yet to come. Based on my ongoing monitoring of the field, I expanded and

refined their classifications. The classifications below represent a simplification of an application's primary focus as it pertains to geolocative functions. Applications often offer a suite of features, so applications may contain qualities from the multiple classifications below:

- **Art** – applications with a dominant focus on creating or sharing artistic works, such as photographs, often created by users and geotagged with the location

- **Commerce and Marketing** – applications with a dominant focus on facilitating the finding and purchasing of goods or services or receiving commercial promotions through proximal alerts

- **Coordination, Communication, and Safety** – applications with a dominant focus on facilitating interpersonal digitally mediated communications (such as crisis response), planning of get-togethers, or maintaining one's own safety or that of a child, often achieved through automated location tracking and sharing

- **Fitness** – applications with a dominant focus on helping people with their exercise routines, such as outdoor walking, running, or cycling; often achieved through automated location tracking, route recording and sharing

- **Geosocial Networking** – applications with a dominant focus on enabling people to interact with a social network or collocated strangers, such social interactions can take the form online conversations, location sharing, or facilitating meetings for dates or sex

- **Health and Disability** – applications with a dominant focus on maintaining a healthy lifestyle, alerting of health risks, indicating nearby health or disability focused businesses or points of interest, or informing of accessibility issues, often achieved via automated location tracking and georeferenced content

- **Hyperlocal Information** – applications with a dominant focus on helping users find out about a specific area, possibly via proximal news, events, or weather, often achieved through a geotargeted search feature or presentation of georeferenced content

- **Location-based Games** – applications with a dominant focus on play using one's physical surroundings as mediated by geotargeted content

- **Personal Efficiency and Organization** – applications with a dominant focus on helping users perform their daily routines and errands, often achieved through automated location tracking and proximal reminders

- **Place Discovery** – applications with a dominant focus on helping users (either tourists or locals) learn about specific locations or locales, often achieved by geotargeted search features and identification of proximal points of interests

- **Social Recommendation and Navigation** – applications with a dominant focus on offering crowdsourced recommendations, reviews, and directions to proximal businesses and points of interest

- **Wayfinding and Transportation** – applications with a dominant focus on presenting users with aids to find the address of a specific location, receive directions or optimal transportation routes, or receive real-time alerts of hazards or delays, often achieved through automated location tracking, geotargeted content, and proximal alerts.

I believe this typology offers the most comprehensive and up-to-date categorization of locative media available at present in academic or trade literature.

2.5 Guiding Principles – Critical Theory of Technology and Social Shaping Theory

In exploring the interactions of people, technology, and space, I do not propose either causal or siloed relationships. Instead, my research assumes a mutually constitutive relationship between people and technology (per C. Gibson, Luckman and Brennan-Horley, 2012; Graham, 1998). My work follows C. Gibson et al.'s concept of a "creative negotiation" between people, technology, and space that forms "a part of the complex and mutually dependent assemblages… which together structure contingent understandings of place" (p. 136). The work of Graham was pivotal in this conceptualization, as he posited that people, technology, and place are linked in a co-evolutionary relationship (1998). Adopting a mutually constitutive approach avoids two prominent limitations of studies of new technology and space, as identified by C. Gibson et al: 1) "the end of geography thesis" – wherein physical space is rendered no longer important due to the abilities of mobile media to transcend distance and to unite a global community and 2) "triumph of geography thesis" – wherein the physical world is enlivened by locative media and gains newfound prominence in everyday life. This approach also avoids the "digital dualism"

fallacy of viewing the physical world as the real world and digital spaces as merely virtual (often deemed inferior) spaces (Jurgenson, 2012).

A holistic conceptualization is consistent with a contemporary body of scholars who no longer view place and technology as separate but rather as mutually constitutive (e.g., Cuff, 2003; Dovey, 2010). Although the literature review in the next chapter examines the characteristics of sense of place separately, they are interconnected and irreducible. I am neither advocating technological or environmental determinism nor suggesting human agency is free of any influences or structures. Technology is made by people based on their goals and values, the resulting technology influences people in ways both anticipated and unanticipated (Adams, 1997), but ultimately people are active in creating their own experiences and meanings. It is this holistic perspective upon which my research is based.

Adopting such a social shaping perspective allows one to examine the bidirectionality of technology and society relations (Baym, 2010). Thus, my position is that technology is made by people based on their goals and values, and the resulting technology is used by people in both sanctioned and alternative ways for their own ends and with possible intended and unintended effects. C. Gibson et al. articulate this premise when they state:

> All manner of human technologies (from railways to email) warp both our material experiences and discourses of space and time, just as those technologies emerge and operate within assemblages of human power, cultural proclivity, and commercial imperative… mobile media emerge from, and dialectically transform places in complex ways (2012, p. 124).

This approach has the benefit of being able to account for the agency of humans to create individual meanings while enmeshed in the social context, structures, and affordances of a medium (Adams, 1997; Dahlberg, 2004).

This line of thought is also consistent with Feenberg's notion of critical theory of technology (1991). Feenberg advises researchers to consider not only the commercial interests that develop and launch technology, but also the social and cultural process whereby people shape and adapt technology to their own ends. Feenberg, while resisting technological determinism, is careful not to supplant one structuralist force with another, such as notions of omnipotent, hegemonic media and technology companies, and thereby fail to account for individual agency in creating meaning through technology use (Lievrouw, 2012). Lievrouw

praises Feenberg's framework as a way to account for the variety and complexity of forces and counter-forces surrounding technology adoption, use, and repurposing, which is often lacking in many studies of technology and digital media:

> Media researchers have tended to underestimate or even disparage the avenues and opportunities for resistance, democratic participation, and emancipatory change available via new media, and to overstate the ability of powerful institutions to block or constrain the ways that people use and reconfigure the technologies (p.vii).

From this perspective, my study examines the bidirectional relationship of technology and people – although the unit of analysis is at the individual level (opposed to the sociocultural level). Using a grounding in critical theory of technology (Feenberg, 1991), this study explores the social and existential forces at work that influence people's sense of place, specifically the relationship between individuals, environment, and space (Bott 2000; Gustafson, 2001) as mediated through locative media. I seek to uncover if and how people's use of locative media contribute to a person's sense of place by using a comprehensive sense of place instrument (Bott, 2000). The opportunities and challenges presented by people's user practices with relation to locative media in the form of Crawford's (2012) spatial counter dynamics is used to understand how such practices may influence relationship to place.

2.6   Chapter Conclusion

This chapter expands on the key concepts of this study as introduced in the previous chapter by providing operational definitions and elaborations on sense of place, locative media, and spatial counter dynamics. The work of Bott (2000) and Crawford (2012) were detailed to position their work on sense of place and spatial counter dynamics, respectively, as suitable analytical frameworks for this study. Considering the newness of locative media, details, use cases, and a typology were provided to clarify and differentiate the medium from other mobile media. The chapter concluded by stating the overall lens of critical theory of technology and social shaping theory will guide the investigation of the human, technological, and spatial elements of this topic. With the central concepts of sense of place, spatial counter dynamics, and locative media defined in this chapter, the subsequent chapter, the Review of the Literature, expands on these concepts by covering the scholarly research in each of these areas.

Chapter 3
Review of the Literature

3.1 Chapter Overview

In this chapter, the literature review, I identify and discuss the major works of literature and conceptual foci of the research pertaining to sense of place, spatial counter dynamics, and locative media. I begin by using Bott's work (2000) and Gustafson's work (2001) as an organizing structure from which to examine place literature. This structure is comprised of the physical world, the individual, and the sociocultural aspects of sense of place. Subsequently. I examine spatial counter dynamics through literature regarding people's counter hegemonic and do-it-yourself (DIY) urbanism spatial practices. In the final portion of this chapter, I examine locative media literature. I begin by providing background information on locative media, followed by a discussion of the research on locative media and its role within our relationships to space and place. This leads to a discussion of the scholarly debate regarding whether locative media adds to or detracts from our relationship to place. This chapter concludes by identifying the gaps in the literature and then highlighting the contributions this study makes to the literature.

The topics of locative media and sense of place are actively studied by scholars in a range of disciplines. Although I continue to follow the literature, publications on these topics arise monthly. Statements in this dissertation regarding the state of the literature are accurate as of the time I prepared the literature review.

3.2 Sense of Place

It is important first to restate my use of a social shaping and holistic perspective, as discussed in the previous chapter, to clarify that my organizing structure for examining sense of place literature does not entail a siloed approach to this topic. It is used only as an organizational aid from which to examine the components of sense of place as explored in research.

3.2.1 History of conceptualizing place

The conception of place, as distinct from space, is credited as beginning with the classical Greeks, particularly Aristotle and Plato (Cresswell, 2004). Plato developed the notions of "chora" (i.e., regions) and "topos" (i.e., physical features) from which arose the modern western fields of human and physical geography. However, it was Aristotle who was fundamental in conceiving of the notion of place as a site of being and the foundation of our existence. Subsequent related work in the area of human geography focused largely on descriptions of regions or touristic accounts rather than attempts to form general theories or an overall epistemology related to place. This changed in the early twentieth century in what is dubbed the "quantitative turn" when researchers used statistical analysis to attempt to form universal laws of human geography. Embracing the scientific method of research and the positivist paradigm, scholars tended to look for common patterns and used place as a cultural unit of human settlement. An example of this tradition is central place theory as developed by Christaller in 1933 (Getis & Getis, 1966). Christaller's theory holds that human settlement, and thus the formation of "places", can be determined by identifiable factors such as proximity to markets, transportation, and government.

Such positivist work was thought by some scholars to reduce place to indistinguishable units of analysis and failed to account for the human experiences and unique histories of place. Places were thus denuded of individual experience and the notion generalized. Geertz addresses the limit of such an approach as "No one lives in the world in general" (1996, p.262). In reaction to the perceived dehumanizing effects and limitations of such conceptualizations, scholars in the late 1960s and 1970s began to examine people's lived experience of place. Inspired by the philosophers Husserl, Heidegger, and Merleau-Ponty, scholars such as Tuan (1977), Relph (1976), and Buttimer and Seamon (1980) focused on the experiential basis of place, founding the tradition of humanistic geography in the process. Scholars in other traditions such as architecture, anthropology, and sociology would draw upon this notion of place to examine built structures (e.g., Doesinger, 2008; Dovey, 2010), culture (e.g., Bonnemaison, 2005; Ryden, 1993), and urban planning (e.g., Jacobs, 1992; Whyte, 1980). During this time, positivist studies of place continued, particularly in the fields of cognitive and environmental psychology (e.g., Canter, 1985; Ittelson, 1978), yet these works increasingly adopted a more humanistic notion of place.

Beginning in the 1980s, some scholars would refute the grand narratives and universal claims that were central to both the positivist and humanistic place scholars. These post-modernists and post-structuralists, among them Massey (1994), Pred (1983), and Thrift (2007) rejected grand narratives and structures and promoted a fluid, multifaceted, and dynamic notion of place. Deleuze and Guattari (1987) were early proponents for conceiving of sense of place as a process. More recent theorists argued that space, humans, and technology are inseparable and mutually constitutive. Graham (1998) was pivotal for developing the line of thought that people, technology, and space are linked in a co-evolutionary relationship. Subsequent scholars advanced the notion of place as entanglements or assemblages combined with people and technology, such as Cuff (2003), Dovey (2010), Gordon and de Silva (2011), Kitchin and Dodge (2011), and Shepard (2011). Responding to the increasing ubiquitous use of technology and digital media in and about physical spaces, theorists developed neologisms related to the phenomenon, such as "cyburgs" (Cuff, 2003), "everyware" (Greenfield, 2006), "metaspace" (Humphreys, 2012), and "networked locality" (Gordon & de Silva, 2011) – although the term *hybrid space* appears to be becoming the de facto standard term (see de Souza e Silva, 2006; Doesinger, 2008; Frith, 2015; Kluitenberg, 2006; Phillips, 2011).

Throughout this time, place studies have grown increasingly multidisciplinary, and the cross-pollination of ideas from various fields continues to advance the understanding of sense of place (Patterson & Williams, 2005).

3.2.2 Literature related to the physical aspects of sense of place

As humans occupy and live in physical space, the physical setting is central for our sense of place, as posited in scholarship from Heidegger (1996) to Farman (2012). Our world is populated by material objects both natural (e.g., mountains, rivers, flowers) and human built (e.g., buildings, roads, furniture). This physical world or environmental domain of sense of place is centered on our initial multi-sensual perception of the physical world (Ittelson, 1978). These aspects of place are often studied in the fields of architecture, landscape design, tourism and recreation, environmental psychology, forestry, and urban planning. Scholars pursuing this avenue of study seek not only to better understand our relationship with our environment, but often also to create optimal human experiences of the built or natural world. They may seek to

devise interventions or plans to improve or protect our experiences of the physical world. The work of Whyte (1980) and Jacobs (1992) is central to such place-making and preservation work.

Studies show the vital role one's physical setting plays in forming sense of place (Ittelson, 1978; Rogan, O'Connor & Horwitz, 2005). For one, the aesthetics of a setting are important in providing a cue to guide one's interpretation and meaning making of a place (Stedman, 2003). Stedman criticizes the notion that the environment is a blank space upon which humans are free to create any meaning or that sense of place is conceived of in a vacuum: "Space is never truly 'blank' because the physical setting contributes important raw material to place meanings" (p. 823). Kennedy and Zube (1991) and Hunter (2008) examined the role of vegetation, such as trees or flowers, as contributing to one's sense of place. We also respond to the unique features of our built world (Tuan, 1977).

Scholars, particularly from the humanistic geography tradition, cautioned that modern built settings can prevent a sense of place from developing. Relph (1976) is among the most vocal of critics in this regard, arguing that much of modern urban development and architecture exhibit "placelessness," that is, a location lacking any capacity to foster place attachment or sense of place. Relph did not break ground with this critique, as people have declared space and place to be annihilated since at least the nineteenth century for various reasons – among them the arrival of trains and railroads (Schivelbusch, 2014) and telegraph communications (Frith, 2015).

The belief that modern human-made environments are often lacking in meaningful physical qualities was extended prominently by Augé with his "non-place" theory (2009). Both Relph and Augé are inspired by Heidegger's model of an ideal place for formulating a meaningful connection to a location (a "dwelling") which was his old, rustic farmhouse in the Black Forest (1996). Heidegger admired its fit with the natural environment, its non-pretentious utilitarianism, and its harmony of design. Relph and Tuan, in building upon Heidegger's work, idealize the aesthetic appreciation of classic (or often European) architecture and urban design at the expense of giving sufficient weight to the human experiences that give spaces meaning. Humanistic geographers are often critical of suburban development and theme parks. Disney World, for example, is often held as the epitome of a "placeless" location (e.g., Cresswell, 2004; Relph, 1976), so inauthentic in its pastiche simulation of other cultural structures that no sense of place could develop there. This privileging of classic and European tradition is criticized by

scholars (Dent, 2004; Soderstrom, 2008) who found that sense of place can develop in settings that Relph would decry (including Disney parks, see Gabillet, 2015). Relph, however, has more recently (2007) modified his original position to acknowledge that meaningful human experiences of space can occur in a diversity of types of physical spaces.

The overall aesthetics of an environment are important, but scholars believe it is the presence of unique objects or qualities that is central to forming sense of place (Ittelson, 1978). Ittelson argues that our environment is only consciously considered when it differs from the norm. Tuan (1977) noted the importance of monuments (official or otherwise) towards creating a unique sense of place. For example, unusual roadside architecture, although often deplored by architectural critics, was found to foster a distinct sense of place (Sebak, 2004). In addition, the purpose and usage of the environment also guides how we perceive place (D. Williams & Patterson, 1999). A workplace is conceived of differently than a park, for instance. That same park may be conceived of differently if it is used for recreational purposes versus conservation purposes (D. Williams & Patterson, 1999).

In assessing the literature, it is clear that the physical world plays a vital role in shaping an individual's sense of place. As prominent place scholars, such as Stedman (2003), argued, it is important not to relegate the specific attributes of a physical space to a mere background for the individual and social processes of sense of place. The qualities of a place are central to how a sense of place develops, yet we should be critical of a priori assumptions, with hints of elitism, about the qualities of what can possibly constitute a place or dismissals of certain types of locations as impossible sites for sense of place to develop. One must also be careful not to position the physical environment as paramount (i.e., environmental determinism) to the exclusion of the individual and sociocultural aspects, as I now review.

3.2.3 Literature related to the sociocultural aspects of sense of place

The sociocultural aspect of sense of place is often the domain of anthropologists, sociologists, cultural studies, and communication and media scholars seeking to understand the social dynamics in and of place. A common theoretical framework for studies of the sociocultural elements of sense of place is social constructivism. Social constructivist scholars

would argue that places are socially constructed rather than having a fixed identity or an entirely individual meaning (e.g., Buser, 2012; Kyle & Chick, 2007; Stokowski, 2002). Thus sense of place is seen as socially shaped rather than being derived entirely by individual interpretation. Lefebvre (1991) pioneered the notion of social construction of place. To Lefebvre, social construction refers not only to the human processes that create or shape our physical world and the social interrelations and media that inform our sense of place, but also to the social structures that create the entire notion of place and the lenses one brings to observations and experiences of the world. Harvey represents this view when he states, "Place, in whatever guise, is like space and time, a social construct. This is the baseline proposition from which I start. The only interesting question that can then be asked is: by what social process(es) is place constructed?" (1996, p. 293).

Place literature, particularly work from humanistic geographers, is criticized for positing a more open concept of place than exists and for failing to account for the social and cultural structures that constrain participation and interpretation of the world (Pred, 1983; Stokowski, 2008; Thrift, 2007). Pred is critical of such work, believing it suffers

> from either total neglect or inadequate treatment and conceptualization of context and contextual processes.... Although the new humanist geographers writing on sense of place sometimes make reference to society, to intersubjective communication and consensus of meaning, to social position, and to social conditioning, those terms are only employed as mere backdrops… An individual's sense of place cannot come into being on its own (p. 50).

Cresswell gives an example of the societal factors that comprise a place through a snapshot of a neighbourhood in New York City:

> The way we experience that place, the meanings we ascribe to it, come out of a social milieu dominated by Western cultural values and the forces of capitalism. They are produced by the media, by politicians and by people who live there. We might have read in the paper about riots in Tompkins Square Park and be (unreasonably) afraid to go there. We might see the graffiti, murals, cafés and shops and think it's an invigorating and diverse place to be. Whatever meaning it appears to have there is little doubt that it comes from "society" (2004, p. 30).

The social construction of place is comprised of sociocultural structures, media texts, and social discourse of a location. The sociality of place is also created through discursive structures and relationships. Accounts and media texts related to locations can include verbal

conversations, printed material, digital media, photographs, and films. An examination of the literature pertaining to social structures and accounts and sense of place is now offered.

3.2.3.1 Structures

Social constructivist place literature is criticized for failing to account for the structures that constrain our participation in and views of the world (Pred, 1983; Thrift, 2007). These theorists would argue that we, as members of society, do not freely create our own notions of place and sense of place, but that social structures create the entire notion of place and provide us with the only lens through which to understand our world. Social structures, such as language, culture, and political economy, are "pregiven" to an individual upon being born into this world. Scholars such as Massey (1994) also examined how structures of gender, economics, and immigration affect our relationship to place. Through her observational research, she cautions that much commonsensical notions of place adopt the dominant vantage point and neglect conflicting notions of place that arise from the marginalization of women and minorities. Her work is an important contribution for showing how the same place, such as a home, can be felt as a refuge for a man but a prison for a woman. She also provides useful explorations into McLuhan's notion of the global village (1994) by showing the external linkages that people carry with them that help define a place as "the global as part of what constitutes the local, the outside as part of the inside" (Massey, 1994, p. 5). The role of culture as a social structure that directs one's sense of place is documented by anthropologists such as Basso (1996), Bonnemaison (2005), Geertz (1985), and Ryden (1993). Their work examines the role of genres, symbolism, and social ties in establishing shared senses of place, although they suggest a more harmonious adoption of a shared sense of place than likely exists in every situation.

Oral histories and cultural traditions have been shown to create shared narratives of place that simultaneously unify and ostracize people (Bird, 2002; Falk & Webb, 2010). Cresswell (1996) has shown how heteronormative notions of place marginalize and displace people based on sexual orientation. Similarly, a contested sense of place can be seen at both a local and national level (P. Williams, 2006). Sumartojo found differences between majority and minority perspectives, noting that such differences "may coexist with little friction, they may be negotiated, or they may come into open, even violent conflict" (2004, p. 104).

Literature in this tradition can be seen as reductionist at its most extreme, by simplifying people into groups with sense of place flowing based on shared group traits and thus not allowing for individual variance or contrary experiences even within such groups. It removes any possibilities for individual agency as well as sub or counter cultural relations. Thrift and Pred, however, pointed out that social structures are themselves socially created and can be renewed or refined through individual and social action.

3.2.3.2 Accounts and media texts

Accounts, for the purposes of this dissertation, are second-hand and undocumented information about locations. They can be received while one is within a location, before visiting it, or after an encounter with a location. In one study, people were found to value the accounts of others related to place and wanted to draw upon "the experiences of others rather than starting from nothing. In this way they are adding to the continuity of other people's stories as well as enriching their own" (Paay & Kjeldskov, 2007, p.288). A study by Williamson and Roberts (2010) found people use various media for information that was used in forming a sense of place, but relied most heavily on direct communication with people, followed by newspapers and signage. Gay believes there is demand for such social information:

> In the physical world, people observe the behavior of others all the time to determine where to go, what to do, or how to behave. However, without the presence of other people, or the traces they leave behind, users cannot benefit from what others have done.... A system that includes social maps and annotation of space with notes allows users to leave traces in physical space that would otherwise have no record of who was present and what went on before (2009, p. 13).

Gay's appraisal is consistent with the findings of Pay and Kjeldskov (2007) and Stewart, Hayward, Devlin, and Kirby (1998), with the exception that the latter study found that some people do want such information and some people do not.

No studies were found that specifically examine how accounts or media texts impact sense of place. There are studies that attempt to demonstrate how sense of place can be discerned through media texts. The role of newspapers to provoke a certain sense of place was specifically examined through content analysis of newspapers (Buchanan, 2009; Lindgren, 2011; Rantanen,

2003). These studies demonstrate that reporters' use of terminology and imagery related to specific locations can directly and indirectly create or perpetuate a specific notion of a place. Content analyses of music (Stratton, 2007), television shows (Gwyn, 1997), and movies (Seamon, 2008) found similar results to the newspaper studies. It is also not uncommon for artists and authors to state that they are attempting to depict or provoke a specific sense of place through their works (e.g., Alexander, 2011; Lombard, 2009). Such notions are predicated on the belief that readers or viewers gain the desired and singular sense of place from these media texts. However, the above research is based on hermeneutical or content analysis, without confirming that others reading or viewing the texts form the same sense of place as the researcher found. Thus, the above literature promulgates the notion of place identity or genius loci rather than sense of place. It seems likely that accounts and artistic works one reads or views affect one's sense of a place, but research examining this was not found.

To some theorists, media pose a threat to authentic place encounters and the ubiquity of digital media even more so, as cautioned by Malpas:

> Thus, inasmuch as new media threatens our sense of place, so it also threatens our sense of cultural heritage; as it threatens place itself – threatening the distinction, as Heidegger puts it, between the near and the far – so it also threatens heritage as such – threatening the very means by which our own identities, and so our differences, are articulated, a threat most immediately evident, perhaps, in the homogenization of cultural experience and its oft-times commoditization or "Disneyfication" to which new media seems to contribute (2008, p. 201).

This view, however, posits a more direct encountering of the world than likely exists for most people. Much of the literature criticizing digital or new media as deteriorating or even eliminating authentic relations with place tends to romanticize the past and fails to acknowledge humanity's long history of media use regarding place.

Information and mediation of our physical world has a rich and invaluable role in human history (Garfield, 2012). Since the advent of language, humans had the potential to experience a location both directly and indirectly. Learning of the land and its resources was essential for early human survival and this knowledge was shared through oral tradition (Corson & Palka, 2004). Later, the innovation of map-making was central to our conceptions, exploration, and utilization of our world (Garfield, 2012). Subsequent representational technologies were developed to enable us to share and learn of locations, such as books, photography, film,

television, and websites (Garfield, 2012). In situ media (such as plaques, signs, and graffiti) and mobile media (such as books, GPS devices, and verbal communications), developed that allow us to represent, share, and receive information about a location while in that location. Whether prior knowledge of a place is attained through news, entertainment, or word of mouth, or through mediated experiences (e.g., signage, discussions with friends, mobile applications used in situ) sense of place often arises via a degree of mediation (Brighenti, 2012; Cunningham, 2010; Giuliani & Feldman, 1993). Considering the pervasiveness of all this, it seems to follow that finding a person who has formed a sense of place entirely through direct spatial interaction and free of the influence of any sources of mediated information would likely be quite difficult.

Social constructivists established that sociocultural factors influence a person's sense of place. Although a place can exist with only one person apprehending it, the influence of sociocultural forces and texts in forming a sense of place is always present through one's culture, language, and other social structures that frame our understanding and meaning-making processes. Yet social constructivism does not account for individual variance in meaning-making and simultaneous diverse or contested senses of place.

3.2.4 Literature related to the individual and sense of place

Literature related to the individual or personal aspect of sense of place is often conducted by scholars in the disciplines of environmental psychology, cognitive psychology, philosophy, and human geography. This section begins by discussing the work of humanistic geographers and their predecessors, who are responsible for forming foundational theories in this area and for providing key concepts often used in the study of place, such as authenticity, perspective, placelessness, and insideness. Following this, literature related to the individual and sense of place from empirical studies is discussed.

3.2.4.1 Humanistic geographers

Studies considering the internal processes of sense of place are often rooted in phenomenology and offer a philosophical worldview of place and methodological tools to

understand our ontological and experiential relationships to place. Phenomenology was founded largely by Husserl in the early 1900s (Beyer, 2015). Husserl believed that individual experience was at the root of our understanding of the world (Husserl, 1962). The world of experiential knowledge Husserl dubbed the "lifeworld", a concept subsequently central to phenomenology. One's individual experiences of the world, along with shared culture, create our lifeworld. Husserl's student, Heidegger, refined concepts of phenomenology and provided further insight into human's spatial understanding. Heidegger argued, particularly in *Being and Time* (1996) that our existence is framed by space – we can only know the world through our existence in it. To encapsulate this ontological and epistemological basis, Heidegger used the term "Da-sein", which roughly translates to existence or being-in-the-world. He continues the line of thought from Husserl of the experiential basis of spatial knowledge but believes it is more foundational:

> Space is neither in the subject nor is the world in space. Rather, space is "in" the world since the being-in-the-world constitutive for Da-sein has disclosed space. Space is not in the subject, nor does that subject observe the world "as if" it were in space. Rather, the "subject," correctly understood ontologically, Da-sein, is spatial in a primordial sense (1996, p. 103).

Heidegger argues for the primacy of direct experience of the world as the main way to know it and ourselves. He states "space can only be understood by going back to the world" (p. 105). Heidegger's work was instrumental to the emerging field of place studies in the 1970s and is cited by early place scholars such as Tuan (1977), Relph (1976), and Seamon (1979). The work of these scholars was foundational for the humanistic geography movement and inspirational for much of the subsequent studies of place.

I argue that Heidegger's view on the primacy of direct experience of the world provides the experiential bias for Relph and Tuan and subsequent place scholars. Both Relph and Tuan acknowledge the influence of culture and second-hand information about a place in forming sense of place, but follow Heidegger's lead in privileging direct experience in the formation of sense of place. Relph, in his early works, argues that direct engagement with locations leads to "authentic" relationships with place and outsider or mediated encounters lead to superficial or "inauthentic" relationships. Improving one's sense of place for Relph and Tuan arises only out of greater, direct engagement with place.

Relph's work also addressed how the perspective of an individual affects his or her sense of place. Relph argued for a simplistic dichotomy where it is either one's status as an "insider" or "outsider" that is central to how sense of place is formed. Insiders are people very familiar with a place, usually long-term residents. Outsiders, such as domestic and foreign tourists, do not have a sustained engagement with place and thus Relph believed their relationship to it is superficial. Relph believed that an insider perspective is essential to build attachment to place. Tuan's notion of "field of care" also derives from the position that only a protracted and profound engagement with place can lead to significant understanding or attachment to place. It should be noted here that Relph and Tuan's work does not adequately address the depth or emotional involvement in forming a sense of place, rather they both focus narrowly on quantity over quality.

Whether perspective or field of care, these notions assist in illuminating how sense of place is not necessarily shared or a cultural norm, rather it is shaped by the experiences and background of an individual. Steele's 1981 work is helpful here in outlining the individual factors that can affect one's sense of place, such as one's attitudes, emotions, values, interests, experiences, and aesthetic sensibility. These characteristics result in a sense of place that varies from one person to the next. Steele adroitly notes the variance of sense of place for any single location due to individuals' characteristics by noting the difficulty in ascertaining "what kind of place is this? It depends on whom you ask" (p. 4).

Although these scholars did much to contribute to the understanding of the internal processes and ontological depth of sense of place, their work in its initial stages, from the 1970s to the 1980s, is problematic. A difficulty with Relph's work is the inherent privileging of insiders over outsiders and comprising an implicit scale of sense of place to determine external, a priori points where sense of place is genuine and meaningful. The humanistic geographers' work is also problematic for its failure to acknowledge the role of information (whether in oral or textual forms) and mediation in our experiences of place.

3.2.4.2 Empirical studies of the individual and place

Much of the research on sense of place inspired by phenomenology is introspective and theoretical in approach, although there are a few empirical studies. A notable study was

conducted by Hay in 1998. The study involved interviews with long and short term residents of a New Zealand town. Hay found deep individual bonds to the places the participants inhabit and frequent (particularly long-term residents), a term he called "rootedness". For Hay, rootedness is a profound existential connection to a place, which Hay develops from Relph's concept of "insideness", which in turn has its roots in Heidegger's notion of "dwelling". Building upon Relph's notion of insideness, Rowles' study of elderly Appalachians found similar place ties, which he termed to be "autobiographical insideness" (1983). By observing elderly people, Rowles was able to show how people mentally ascribe their life stories to places - major and emotionally significant life events become deeply connected with the sites of these events. The role of memory and nostalgia was examined by M. Bell (1997); he determined that such past associations are like persistent "ghosts" that haunt and guide our reencounters with place. Through focus groups across Europe, Antonsich (2010) found similarly deep personal meaning and individual connection to places. Work along this line blurs the distinction between places as sites of meaning and of emotional attachment, hence the frequent conflation of the terms sense of place and place attachment. It is clear from both quantitative (e.g., Jorgensen & Stedman, 2001; Nanzer, 2004; Qian, Zhu & Zhu, 2011; Raymond, Brown & Weber, 2010; Vorkinn & Riese, 2001; D. Williams & Vaske, 2003; Yuksel, Yuksel & Bilim, 2010) and qualitative research (e.g., Fazel & Rajendran, 2015; C. Gibson, Brennan-Horley, Laurenson, Riggs, Warren, Gallan & Brown, 2012; Lynne, 2005; Moores & Metykova, 2010) that the meanings and emotions we ascribe to locations are closely linked and that locations can foster deep individual connection.

This importance of individual perspective and the resulting implications for the use of information about locations was studied by Jones, Grandhi, Whittaker, Chivakula, and Terveen, (2004). They used a diary study to examine how one's familiarity with place affected one's information needs. They found that people's information needs were affected by the frequency of visits to a location and the stability of information related to the location. They were thus able to determine that information needs were greatest for those people who visit a place infrequently, and when the information related to that location changes rapidly. Other scholars have examined how the information needs regarding location differs from locals to tourists (Wilson, Bertolotto & Weakliam, 2010).

The above literature has shown that sense of place is the result of an internal process based on our perceptions of the world and shaped by our past experiences, values, and

psychological traits. Sense of place is also influenced by internal factors, such as individual attitudes, memories, interests, and aesthetic sensibility (Steele, 1981). Yet, possibly due to a tendency of much place research to privilege direct, unmediated spatial encounters, research has not fully explored sense of place with regard to locations of a more banal or everyday nature, as well as the role of information and mediation in sense of place (Brighenti, 2012).

3.3   Spatial Counter Dynamics

Although this dissertation draws extensively from Crawford's 2012 work on urban counter dynamics (which I renamed spatial counter dynamics), as discussed in the previous chapter, there is a longer history of scholarship examining the ways people resist hegemonic forces and create their own spatial imaginaries and interventions. This section provides background context on the development of hegemonic and counter-hegemonic forces with regard to people's relationships to place. It then examines current literature outlining practices related to spatial counter dynamics.

3.3.1 Theoretical background on hegemony and counter-hegemony

The concept of hegemony is associated with Italian theorist Gramsci (2011) due to his significant expansion of the concept through his work in *Prison Notebooks*, first published in Italian and translated into English in the 1950s. Gramsci identified the social and cultural practices capitalist governments and ruling classes use to exert social control over the populace. Rather than establish control through brute force, hegemony instead uses persuasive social and cultural practices, which may be invisible and unnoticed, yet nonetheless exert influence at a cognitive and affective level (Littlejohn & Foss, 2008). Hegemony strives to naturalize its power and discount alternatives so that the populace does not question the established order (Mosco, 2009). Some scholars have positioned the hegemony as a singular and organized body - similar in nature to a global cartel, yet as Mosco notes, the hegemony is not a monolithic, permanent, or unchanging force. Mosco observes that institutions and structures of control are diverse and ever-changing (2009). Carroll argues that this plurality of hegemonic power "accommodates different

cultural roles for different groups to play, and different myths or cultural pleasures to go with them...it organizes consent but not necessarily consensus" (2006, p. 12).

In detailing hegemonic control, Gramsci also acknowledges the possibility of resistance and developed the notion of counter-hegemony. Counter-hegemony is "the way people develop ideas and discourse to challenge dominant assumptions, beliefs and established patterns of behavior" (Cox & Schilthuis, 2012, para.1). Scholars such as Hall have extended Gramsci's work and the concept of "theatre of struggle" to discuss the constant process of hegemonic control versus people's methods of resistance (2006). The early, dominant model of communication delivery as a "magic bullet" or "hypodermic needle", in which the communicator's message is absorbed directly and unfiltered into a passive audience, remains a pervasive frame to view the hegemonic power of media in some academic traditions (Mosco, 2009). However, some scholars believe audiences are more active in interpreting messages and constructing meaning. Theorists Blumler and Katz, through their uses and gratification theory (1975) address the ways people filter communications and actively create meaning to fit their needs and cognitive and affective background. Hall developed his encoding/decoding model of how people adopt the communicator's preferred interpretation, devise their own meaning, or something in between (2006). It is important to note, however, that scholars, particularly in the political economy and media effects traditions, continue to argue that the hegemony exerts substantial power in promulgating official interests through media (Littlejohn & Foss, 2008).

3.3.2 Hegemonic dominance of spatial relations

With regard to hegemony and our spatial relationships, Jessop argues that although Gramsci was sensitive to the importance of place and space, Gramsci's work does not specifically tackle hegemonic forces in regards to spatial relationships (2005). Thus, scholarship following Gramsci's lead has often neglected the role of hegemony in spatial matters. However, other scholars have examined pursued this topic, as will now be discussed.

Humans have used information to guide their interactions and relationships with their physical world since prehistory, in such forms as crude maps drawn in the sand, cave drawings of hunting grounds, or other forms (Garfield, 2012; Jacob, 2006). Yet with developments in

media technologies, information about locations has often been controlled (Bidwell & Winschiers-Theosphilus, 2012; Farman, 2012). The production and distribution of geographic information has been restricted for centuries as a means to control the masses and to support official interests, such as land development, colonization, globalization, and commerce (Crampton, 2008; Harley, 2001; Monmonier, 1996). Businesses and governments may impose sanctioned spatial representations and meanings and limit the ability to participate in place-making through discursive and visual forms of control (Stokowski, 2002; D. Williams, 2008). Increasing commodification has pervaded more of our spaces, including common spaces, public land, and even our bodies (Mosco, 2009). The 1950s work of French theorist Debord has been influential in providing theories of hegemonic control over space and place. Debord asserts that forces of power attempt to create apathy in citizens by denuding spaces of their meaning, noting that officials create a false notion amongst the public that the locations they encounter are void of meaning and the possibility of creating meaning (1983). The hegemony proclaim to us, "On this spot nothing will ever happen, and nothing ever has" (Debord, 1983, p. 177).

In addition, production of geographic information, such as cartography and geographic software, has been a professional activity, dominated by an elite with specialized training and credentials and access to necessary data and equipment (Tulloch, 2007). Douglas chronicles the hegemonic forces that have worked to restrict our spatial relations:

> It was largely during the 18th and 19th centuries that the shaping of the urban built environment became increasingly formalized and professionalized, in keeping with the wider standardization that came with the enlightenment, modernity, and industrialization. From the planning efforts of John Nash, Baron Haussmann, and Frederick Law Olmsted in the 19th century, to the widespread adoption of building and zoning codes, to the introduction of Le Corbusier's modernism, and then to the development of broken windows theory, by the 20th century Western cities were not only master-planned but tightly controlled and regulated, right down to the streets and sidewalks--to be altered only by professionals…. on the whole, we stopped thinking of the urban environment as open to popular reinterpretation (2012, p. 1).

Although Douglas speaks of urban environments only (as many such spatial theorists do), his point applies broadly to how the hegemony exerts control over the permissible interactions and meanings human can have with the various physical environments where we live and work.

3.3.3 Spatial resistance

Critical geography scholars in recent years cried for more open and egalitarian access to defining our spaces. Prominent work in this line include Lefebvre's and Harvey's notion of the "right to the city" (2008), Soja's "spatial justice" concept (2010), or Kitchen, Linehan, O'Callaghan, and Lawton's "public geographies" (2013). Harvey's oft-quoted statement asserts the importance of citizens to have control of their spaces: "The right to the city is far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city" (2008, para. 3). Spatial resistance may be motivated by a multitude of individual or collective goals such as: asserting marginalized people's land rights (e.g., Rundstrom, 2009), documenting alternative histories (e.g., Wershler, 2008), sharing in-group identities (e.g., Barkhuus, Brown, Bell, Sherwood, Hall and Chalmers, 2008), or personal recreation or entertainment (e.g., Ameel & Tani, 2012). For example, the practices of culture jamming advocates, which can take spatial forms, has the goal to "undermine the marketing rhetoric of multinational corporations, specifically through such practices as media hoaxing, corporate sabotage, billboard 'liberation,' and trademark infringement." (Harold, 2004, p. 190)

Forms of spatial resistance date back at least to nineteenth century forms of civic engagement (Talen, 2015). However, the work of Debord and the psychogeographic movement he helped found in the 1960s is substantially influential and continues to inspire theorists, developers, and artists. Debord staged spatial interventions (known as dérive and détournement) to counter hegemonic forces of control. Debord's theories of dérive and détournement are central to understanding his work with relation to claiming and reclaiming spatial meaning. Dérive (Debord, 1956a) entails a non-structured way of moving through and encountering space that runs against commonsensical or standard movements in the attempt to create new experiences and discoveries. Détournement (Debord, 1956b) involves a staging of spatial representations and includes holding events to create new interpretations of locations. Debord's work has recently had a tremendous resurgence as scholars, artists, and citizens cite his work as a way to resist our overly commodified and mediated world (J. Harris, 2012), providing a method to reinvigorate spatial explorations (Micallef, 2010), inspire application design (as discussed in section 3.4.4.3), and for generally explaining "the shit we're in" (Self, 2013, para. 9).

At a group level, people can be seen to resist hegemonic control of spatial relations through the creation of "shared geographies". The term shared geographies denotes groups collectively creating information and representations of place and sharing that within the group (Gatrell & Worsham, 2002). Shared geographies may not always be oppositional to the hegemony, however, they provide a collective method of asserting autonomous place-making efforts (Barkhuus et al., 2008). The degree of sharing and openness can be seen as falling within a continuum from fully public to privately shared geographies. Such sharing can foster group identity and friendship within a group by drawing upon "shared in-common senses of different places" (Barkhuus et al., 2008, p. 499), but as Bird points out these can also be used for intentional social exclusion (2002). Through ethnographic research, B. Taylor found that shared geographies can lead not only to place stewardship, but also to action to enact change (2009).

Harvey's call to action of asserting our right to the city (2008) has been met by citizens through various tactics, recently dubbed do-it-yourself (DIY) urbanism (Douglas, 2012; Iveson, 2013; Talen, 2015), also known by other terms such as urban hacking, tactical urbanism, and guerrilla urbanism (Sawhney, de Klerk, & Malhotra, 2015). DIY urbanism challenges hegemonic spatial control and "questions the very wisdom of going through formal channels to effect local change. The movement toward informal, spontaneous, DIY urbanism suggests a more malleable, democratic, and dynamic city" (Douglas, 2012, p. 50). Iveson provides a dichotomous typology of DIY urbanism to illuminate the variety and forms of DIY urbanism practices that "range from temporary to permanent, periphery to centre, public to private, authored to anonymous, collective to individual, legal to illegal, old to new, unmediated to mediated" (2013, p. 943). Douglas, in reviewing applicable literature, found three main perspectives on such unauthorized citizen spatial alterations: 1) acts of vandalism and trespass regarded by such scholars as having little significance beyond criminality, 2) forms of personal expression and subcultural markers that scholars note for their artistic and communicative significance but fail to consider any geopolitical factors, and 3) acts of activism and protest that scholars found to have overt geopolitical goals and transformative intent (2014, p.8-9). Douglas, in his own empirical research, concludes that these spatial alterations can be any of these three or all of them, as they are not mutually exclusive behaviours.

The forms of spatial resistance are not necessarily fully open or egalitarian, but like much activity in society, are limited both by social structures (as previously discussed in section

3.2.3.1) and technological, policy, and design restrictions (as discussed in section 3.4.3.2). Stokowski (2002) argues that place-making efforts are hampered or blocked to some due to issues of location (where a place is situated), access (exclusion via income, education, disability, gender, etc.), and equity (permissible actions and conflicting desires). Clearly, not everyone has the same ability to participate, yet the various interventions and approaches discussed offer some a means of spatial resistance.

3.3.4 Literature related to spatial counter dynamics in practice

In the previous chapter, I positioned the spatial counter dynamics of defamiliarization, refamiliarization, familiarization, decommodification, and collaboration as ways in which people have resisted hegemonic control of their spatial relations. Concurrent with hegemonic geographical information, people have produced and shared their own accounts and interpretations of places through various means. This section outlines some of the concepts and research regarding counter-hegemonic practices.

Iveson lists many citizen organized and enacted "micro-spatial urban practices that are reshaping urban spaces" (2013, p. 941). He lists "guerrilla and community gardening; housing and retail cooperatives; flash mobbing and other shock tactics; social economies and bartering schemes; 'empty spaces' movements to occupy abandoned buildings for a range of purposes; subcultural practices like graffiti/street art, skateboarding and parkour". Iveson groups these as forms of DIY urbanism and argues that such practices are growing globally. There is a bit of ahistoricism with some recent scholars, which urged Talen (2015) to publish a history of such actions that she finds dates back at least to the nineteenth century. To Iveson's list, I could add similar unsanctioned spatial practices some of which date back probably as long as people have lived in cities: busking and panhandling, protests and sit-ins, recreational sports and games (e.g., stick ball, street hockey, hide and seek, hopscotch), ghost stories (and walking tours), soapboxing, street parties (e.g., at a neighbourhood level or in response to team victories), postering, stickers, and stencils. More recent practices include yarn bombing, geocaching, Little Free Libraries, guerilla wayfinding, and location-based gaming (as discussed in Section 5.6.5).

A method with more sustained action and organized goals with regard to spatial resistance is participatory mapping or participatory geographic information systems. Participatory mapping efforts can consist not only of adding locations or descriptive data to a map or GIS software, but can also apply to place information, and can take the form of narratives, personal reflections, or imagery related to a given place (Dunn, 2007; Young, 2013). A form of participatory mapping is counter mapping. Counter mapping is inspired by Bunge's work in the 1970s. Bunge mapped urban poverty and initially focused on helping marginalized groups argue for territorial or sociopolitical claims (Rundstrom, 2009). The method involves marginalized groups, with or without the aid of external advisors, defining and mapping their places and routes and annotating their maps with their spatial narratives and histories of these places (Rundstrom, 2009). Counter mapping has frequently been conducted of indigenous people's land rights claims (e.g., Corbett, 2013; Hodgson, 2002; Peluso, 1995). Recent studies, however, have also used counter mapping to document the lives of minority children in ghettoized urban locations (K. Taylor, 2013) and for conservation efforts in protected areas (L. Harris & Hazen, 2006). Counter mapping has moved from pen and pencil techniques to mobile devices with GPS for the creation of counter maps, as evidenced in Taylor's 2013 study which used mobiles to map participants' routes.

With the advent of open-access geographic data and mapping software (such as Google Earth or OpenStreetMaps), combined with distributed access to the Internet and social media, people have been able to create and share their own geographic information in new ways (Corbett, 2013; Tulloch, 2007). These technologies combined are known as the geoweb and people have been found to use it for documenting, mapping, and sharing items of personal, social, and geopolitical significance. One of the earliest, high-profile examples was the mashup Chicagocrime.org, which a citizen created using open crime data in his city and Google Maps (Miller, 2006). Individuals and non-government organizations have also used geoweb technologies for crisis mapping and management (Roche, Propeck-Zimmermann & Mericskay, 2011). Another example is AccessNow, an online map and mobile application of accessible-friendly locations, built by a disabled woman and updated through crowdsourcing (Taruc, 2016). Geoweb technologies have also been used to map citizen-reported sightings of Bigfoot (Lallanilla, 2013). Not all such efforts entail issues of great import, yet the method enables

people to document and share their own spatial relations for all those who are able to access and use the technology.

This section has examined the background and conceptualization of hegemony and counter-hegemony and discussed literature that examines ways in which people have resisted the dominant meanings and officially sanctioned interactions with space. The next section reviews literature on locative media and addresses how people using the medium are influenced by hegemonic forces and counter-hegemonic practices manifested in locative media.

3.4   Locative Media

Locative media are an emergent and evolving media form, yet the topic is becoming increasingly addressed in academic literature. The section below reviews the literature of locative media to position its possible interplay with people's sense of place. A review of locative media literature follows based on the two dominant debates in the literature – that is, whether locative media distances us from place or enhances our relationship to it. A history of locative media is first offered for background context – a history of locative media has not been documented to this extent before in academic literature.

Before examining this literature, it is interesting to review a foundational work from 1999 that presciently foretold many of the issues surrounding the technology we are now encountering. Technology visionaries as early as 1999 envisioned the potential of location-aware devices to affect people's relationship to spaces. A poetic essay entitled *Headmap Manifesto* by Ben Russell is a foundational work, which is still discussed and cited. It is excerpted below:

> know your place
>
> there are notes in boxes that are empty
> every room has an accessible history
> every place has emotional attachments you can open and save
> you can search for sadness in new york
>
> people within a mile of each other who have never met stop what they are doing and
>   organise spontaneously to help with some task or other.

in a strange town you knock on the door of someone you don't know and they give you
   sandwiches.
paths compete to offer themselves to you
life flows into inanimate objects the trees hum advertising jingles
everything in the world, animate and inanimate, abstract and con-crete, has thoughts
attached

…

location aware devices
location aware, networked, mobile devices make pos-sible invisible notes attached to
   spaces, places, people and things.
the headmap manifesto articulates the social implications of loca-tion aware devices.
It manifests a world in which computer games move outside and get subversive.
Sex and even love are easier to find.

Real space can be marked and demarcated invisibly.
..what was once the sole preserve of builders, architects and engineers falls into the hands
   of everyone: the ability to shape and organise the real world and the real space.
Real borders, boundaries & space become plastic and malleable, statehood becomes
   fragmented and global.
Geography gets interesting
Cell phones become internet enabled & location aware, everything in the real world gets
   tracked, tagged, barcoded and mapped.

Overlaying everything is a whole new invisible layer of annotation. Textual, visual and
audible information is available as you get close, as context dictates, or when you ask
(Russell, 1999, p. 1- 4).

Russell envisioned both people and corporations using "location aware wireless, mobile,

devices" to annotate their worlds and provide an alternative lens for observing and experiencing

space, with both positive and negative outcomes (1999, p. 27). Despite the early (and continued)

heralded potential of locative media, there is a dearth of empirical studies on locative media and

its possible role in our sense of place.

3.4.1 History of locative media

A history of locative technology is offered in this section to demonstrate a progression of

the technology from its initial focus exclusively on wayfinding to current locative media

applications that offer a variety of place-related content. Locative media gained significant

prominence in 2010, such that the year was hailed as the "year of location" (Malik, 2010) in

response to the plethora of locative media applications that had launched and quickly gathered large user bases and media attention. However, locative media has a longer history, beginning roughly in the 1980s (Raper, Gartner, Karimi, & Rizos, 2007).

The first locative devices were navigation devices (both hand-held and in-car) which were primarily centered on providing map-based directions based on the device's location and enabling searches for proximal points of interest (e.g., attractions, restaurants, gas stations). In the 1980s, the United States military made its global positioning system available to civilians (Ha, 2010). This spurred development of locative technologies, particularly to assist automobile navigation (vant Hof, van Est, & Daemen, 2011) with the first consumer GPS device, the Magellan Nav 1000, being released in 1989 (Ha, 2010). The military initially restricted GPS accuracy for civilians to 300 meters, but in the year 2000 reduced this limit to 30 meters (Ha, 2010). As of 1996, the U.S. Federal Communication Commission required all portable phones to be able to pinpoint a user for emergency response, thus drastically increasing the ubiquity of mobile devices with locative technology (Cohn, 2002). Although GPS enables greater accuracy in pinpointing a user's device, other positioning methods of geolocation are also used including cell-signal triangulation and user self-selection (Brimicombe & Li, 2009).

The first cellphones to offer GPS functionality were launched in late 1999 in Japan by Seiko (Tanikawa, 1999) and Finland by Benefon (Finnish phone maker, 1999). Both devices enabled users to track their location on a map to aid wayfinding. They also offered proximal restaurants, hotels, and other points of interest (Finnish phone maker, 1999; Tanikawa, 1999). Benefon's device also had what was likely the world's first "friend finder" application, allowing people to see the location of their friends (Finnish phone maker, 1999). It was not until 2001 that the United States had a GPS-enabled cellphone commercially available (Cohn, 2002). In 1999, the United States company, the Weather Channel, launched what is possibly the first downloadable locative application for consumers' mobile devices. The application, consistently among the most downloaded applications in the United States, allows users to receive geotargeted weather forecasts based upon a zip code entered or now automatically identified (Weather Channel, 2013).

As mobile devices became more technically sophisticated and affordable, locative media became increasingly popular during the 2000s (Raper et al., 2007). In 2002, the term "locative

media" was coined by Karlis Kalnins at an international arts conference (Galloway & Ward, 2006; Lemos, 2011; Tuters & Varnelis, 2008), although Kalnins and early writers using this term envisioned the term and concept of locative media more as a medium focusing on using location-aware mobile devices to create artistic interventions. Much of the initial innovations in locative media as a representational and narrative medium arose from locative media applications with an artistic, academic, or oral history focus (Ladly, 2016). These include Murmur (www.murmurtoronto.ca) and Can You See Me Now? (www.blasttheory.co.uk) both launched in 2003, followed by Bio Mapping launched in 2004 (www.softhook.com). Science fiction author William Gibson is credited with popularizing the concept of locative media (which he called "geohacks") in his 2007 novel *Spook Country* (Blume, 2007).

From 2008 to 2012, commercial locative media flourished, with the launch of many high-profile applications, such as Foursquare, Loopt, Gowalla, Grindr, HistoryPin, SCVNGR and Highlight. In 2008, the Webby Awards (the equivalent of the Oscars for online and mobile media) launched a new award category for "best use of GPS or location technology" and awarded it to Adidas' Marathon Run Tracker (webbyawards.com). In October 2000, Nokia, Motorola, and Ericsson founded the industry consortium Location Interoperability Forum to spur development of locative services (Global Positioning, 2000). In 2011, the international industry group, Location-based Marketing Association, was founded to develop business and marketing opportunities through locative intelligence and proximity marketing (www.thelbma.com).

Foursquare (www.foursquare.com) was one of the first locative media applications to attain a very large and sustainable user base, a prominent role in the industry, and mature user practices and norms. Foursquare is considered a bellwether for the industry, thus to get a sense of the development of commercial locative media, a brief overview of Foursquare is provided. Foursquare is a geosocial networking, gazetteer, and place recommendation service. Users can add locations, commentary, and photography to its database and view place information sorted by spatial proximity. Foursquare's development team's first foray into locative media was Dodgeball, in which users texted their location to receive a text back indicating nearby friends and venues. Foursquare's official launch at the South by Southwest Festival spurred much hype not only for the company but also for similar locative applications (Monson, 2009). Originally, users could check into locations and earn points and honourary titles ("mayorships"), badges for their profile page, and monetary benefits (such as discounts) - however, check-in functionality

was spun off into a new separate application launched in May 2014 called Swarm. With a strong impetus to become profitable, Foursquare is increasingly prioritizing the display of advertising and providing business intelligence based on user data (Townsend, 2013; Wilken, 2015; Wilken & Bayliss, 2014). In addition, Foursquare's database populates other mobile applications through its application programming interface (Wilken, 2015). By one report, Foursquare is the most used standalone locative media application and one of the top 16 most used mobile applications in the world (Sacco, 2013).

By late 2012, many standalone locative media applications that focused exclusively or predominantly on geotargeted experiences had closed or suffered severely decreasing usage (Mitchell, 2012). Much of the functionality earlier companies such as Foursquare pioneered and popularized became embedded in applications with less of a niche focus beyond just places, such as Facebook, Instagram, and Twitter (Isaac, 2016). Thus, distinctions between locative media and other mobile media are blurring. For example, augmented reality technology enables mobile devices to visually overlay geotargeted information on top of a display of the physical world.

Locative media continues to evolve through the launch in the past two years of anonymous geolocative messaging apps, such as Slight, Yik Yak, Whisper, and Secret, and location-based games. Anonymous geolocative messaging apps, also known as gossip apps, may enable an "unfettered news feed into a location, and are opening up their locations so outsiders can peek in" (Shieber, 2014, para. 13). They also stirred controversy and were subsequently banned at several locations. Location-based gaming (also known as location-aware mobile games) has existed since the advent of geocaching via dedicated GPS devices and Dodgeball via text messaging (Bisceglia, 2013). These location aware mobile games have recently gained increasing popularity, with the launch of Google's Ingress in late 2012 (Etherington, 2012) and in with the almost-instant popularity of Pokémon Go in mid-2016 (Clare, 2016; Isaac, 2016; Keogh, 2016).

Technical innovation in this area continues to be driven by corporate interests to increase market share, enhance marketing opportunities, or improve business intelligence. Three anticipated growth areas for the industry are improving geolocative services' indoor coverage, providing integrated and highly targeted location intelligence to retailers, and offering in-store push notifications to consumers. In 2015, the WiFi Alliance, an industry standards association,

released their WiFi Aware service that strives to bring connectivity indoors and in crowded environments without causing a large drain on device's batteries (Wi-Fi Alliance, 2016). Companies such as Apple, Cisco, Google, Microsoft, and Qualcomm, as well as several smaller companies, have implemented methods to provide connectivity indoors and for geolocative business intelligence and retail marketing opportunities. The two most prominent methods are either device-based, using the signals mobile devices already emit, or infrastructure based solutions that rely on hardware installed indoors, predominantly Bluetooth beacons, such as Apple's iBeacons and Google's Eddystone (ABI, 2016). The implementation of such technologies may provide consumers with mobile connectivity indoors and geotargeted promotions, but this has also raised privacy concerns (Misener, 2013). Another growth area is the development of indoor location service apps for locales such as malls, conferences venues, and campuses (Goldberg, 2015). Also, locative media applications are no longer earth bound, as the recent application Flyover Country by the National Science Foundation allows airline passengers to learn about locations they fly over (Morris, 2016).

In a 2016 report, Pew Research Center found that 90% of American smartphone owners used their smartphones to access a form of geolocative information (Anderson, 2016). The adoption of locative media is still stymied, however, by the digital divide, that is, barriers to adoption of digital media due to unequal access because of disability, literacy levels, coverage areas, or cost (Dodds, 2016; Farrelly, 2011; Ishida, 2010; Kelley, 2014). Technical developments continue in this field and corresponding sociopolitical practices are still in flux.

3.4.2 Locative media and people's relationship to place

At the time of preparing this literature review, no studies were found that specifically investigates people's use of locative media using a comprehensive notion of sense of place. Even studies that use the term sense of place do not define the term with much detail beyond the feelings and memories for place. Such feelings are undoubtedly encompassed in the concept of sense of place, but this is nebulous and lacks a robust definition required to understand this phenomenon. There are speculations in the literature that people's use of locative media influences their sense of place, however, these claims in the literature were not found to be based on empirical research but rather based on the author's assertion.

To examine the role locative media may play in sense of place, I divided the literature based on whether locative media supports or detracts from our relationship to place, as this polarization represents a leading, if not the leading, debate among scholarly and popular discussion of the field. The placement of a scholar in this structure is not indicative of the scholar's overall position, but rather this structure is used to organize key points he or she made in regards to the issue.

Not all scholars subscribe to this polarization on interrelationships of people, space, and technology. As previously mentioned, some theorists argue that these elements are mutually constitutive (Cuff, 2003; Dovey, 2010; Graham, 1998). Specifically responding to the ubiquity of Internet access, theorists have in the past few years been developing the notion of hybrid space (e.g., Blum, 2009; Kitchin & Dodge, 2011; Phillips, 2011; Shepard, 2011). Gordon and de Silva describe this new idea as "networked locality theory" (Gordon & de Silva, 2011) and note "we don't enter the Web anymore, it is all around us. Net locality renders geography more fluid, but never irrelevant" (p. 3).

3.4.3 Locative media may detract from our relationships to place

Locative media literature can be classified as a subset of mobile media literature. With regard to the latter, broader field, it is not difficult to find critiques of the role mobile media has upon our relationship to our world – possibly arising out of the newness of the medium and its seeming ubiquity. A prominent critique of mobile media is that it diminishes the importance of place and mentally removes us from our spaces. This argument is not new or unique to this particular medium. In McLuhan's work published in 1964, he predicted that the acceleration of media development would "end space as the main factor in social arrangements" (1994, p. 94). Meyrowitz (1986) more cautiously argued that media, by which he was primarily referring to television, would eliminate prior conceptions of place. One of the first place theorists, Relph (1976), was critical that learning of a location via only mediated information results in an "inauthentic" (and hence to him inferior) sense of place. The critique that mobile media detracts from our relationships to place appears to grow with the increasing ubiquity of mobile devices. Gergen expresses a fairly widespread belief among digital media critics that the use of mobile devices mentally removes people from their physical world and instead leaves us with "a

diverted and divided consciousness" placing us in a "technologically mediated world of elsewhere" (2002, p. 227). For Gergen, the use of mobile devices results in "absent presence" in which people are mentally detached from their surroundings and physically co-present people. This is echoed by de Lange and de Waal who argue that locative media can increase the capsularization of society by enabling "people to retreat from public life into privatized tele– cocoons, bubbles or capsules" (2013, part 2.2, para. 1). Casey argues that social distancing results from mobile device usage and adds that it disembodies and displaces people from the here and now (2012). Casey's use of locative media resulted in him feeling less meaningfully connected to his world, provoking him to declare, "I have found my site in space but lost my way in place" (p. 177). Rutledge also raises these concerns that mobile devices are creating "a place out of place or interspace" (2013, p. 47).

These positions are not uncommon in popular discourse and media coverage on the impact of mobile devices on our relationships to place. The former can be seen in a recent first-hand account of mobile use and its impact on the user. It is indicatively titled, "I'm a Millennial Who Is Sick of Distracting Technology" (Ehamparam, 2015). Ehamparam questions the reliance of people on their mobile devices and wonders, "What happened to enjoying our surroundings and living in the moment?" (para. 3). A dramatic claim is made by Moskowitz in *The New Republic* (2015), who argues that mobile media enables stifling gentrification and the loss of local knowledge through the abundance of location-based recommendation and delivery applications. The popular magazine, *Time*, noted that the smartphone encourages users to become absorbed in the device to the extent that, "we can always be, mentally, digitally, someplace other than where we are" (Gibbs, 2012, p.32). The word "smombie" has even recently entered the lexicon to describe people so absorbed in their smartphone that they walk through the world like a mindless zombie – hence a smartphone zombie (Hookham, Togoh & Yeates, 2016). Although these critiques certainly represent a significant stance in academic and popular discourse, they offer only a binary, all-or-nothing position regarding mobile use, reflecting a defeatist belief that humans lack sufficient agency to use the medium critically to meet their own needs.

3.4.3.1   Normalize sense of place and limit serendipitous discovery

Several scholars argue specifically that locative media has the potential to normalize sense of place, as the clock did for time and the map did for space (Evans, 2011; Lapenta, 2011; Speed, 2011; Sutko & de Souza e Silva, 2011). Schwarzer (2010) cautions that such normalizing practices of digital and mobile media generally may prevent people from serendipitous and chance discovery of our world and lead to superficial relationships to place. With a ready guidebook always at our fingertips in the form of locative media, Schwarzer argues that the utility of reading others' assessments of locations will prevent us from forming our own unique impressions of places. Morozov is similarly concerned about how this new technology structures our spatial experience based on rational computer logic and neglects the human importance that "disorder, chaos, and novelty play in shaping the urban experience" (2013, para. 8). Morozov argues that the customization and locative features of mobile media allow people to create a predetermined individual world that cloisters them from more fully participating in public space. Scholars such as Haddon and Green (2009), Höflich (2005), Kupfer (2007), Malpas (2008), and Meyrowitz (2005) also argued that mobile media erodes distinctions between locations, merges public and private spaces, or renders spaces generic and lacking in meaning. These scholars raise intriguing insights, but their findings are often based largely on the author's assertion rather than on empirical investigation or a comparison analysis of media forms.

3.4.3.2   Technological, policy, and design restrictions

Infrastructure, policy, and design restrictions provoked Pinder (2013) to redub the medium "dis-locative". Although locative media applications may allow users to create and upload content to the application, people are not freely able to engage with place through the medium. Locative media, as with other new media, often carries a rhetoric of social liberation and freedom of expression, yet as Mansell (2004) points out, new media, as with old media, is still confined by hegemonic structures. For instance, before using locative media at all, users must first agree to the terms and conditions that are commonplace for most mobile applications and websites to be permitted to access full functionality and offerings. These terms of use, or "terms of ab(use)" as the Electronic Frontier Foundation dubs them (EFF, n.d.), are criticized for limiting people's freedom of speech beyond expected prohibitions against child pornography or

hate speech (Hartzog, 2013; Rosen, 2013). McGarrigle (2013) argues that using locative media does not allow a completely open experience of the world, instead the technical platform structures and restricts people's ability to experience place openly. There are also concerns that the dependence of locative media upon GPS for positioning presents similar technical limitations, as well as ethical issues, as the technology was developed by the U.S. military (Bleecker & Knowlton, 2006; Corson & Palka, 2004; Galloway & Ward, 2006). Many locative applications rely on maps as a mode of spatial representation and user interaction, yet the map form most used, the Cartesian map, is criticized for hegemonic persuasion (Jacob, 2006), perpetuating structures of political power (Harley, 2001), problematic visual form (Fusco, 2004; Pinder, 2013) and for generally lying (Monmonier,1996).

The issues of citizen privacy and surveillance are prominent issues due largely to locative media's capturing of people's location data (e.g., Abbas, 2011; Barkhuus & Dey, 2003; de Souza e Silva & Frith, 2010a; Lin, Benisch, Sadeh, Niu, Hong, Lu & Guo, 2013; Phillips, 2009; Shade & Shepherd, 2013). These issues also generated significant attention in popular discourse, such as that arising from the public sharing of Foursquare users' locations (Hough, 2010) and the Apple application Path's privacy violations (Chen, 2013). Users have been found to alter their usage of locative media based on their privacy and safety concerns (Frith, 2015). Scholars also raise concerns over corporations increasingly monitoring and analyzing people's location data from locative media for proximity marketing, social sorting, and surveillance (Kaplan, 2016; H. Smith, 2012). The American Civil Liberties Union and Canadian Civil Liberties Association have recently rebuked the company Geofeedia for selling to police agencies people's location data matched to their online profiles to aid police monitoring of citizen involvement in protests and activism (Cagle, 2016; Wright, 2016). Frith (2015) argues that more public awareness and government protection of our location data should be in place.

Demands for profitability for companies also drives design decisions of locative media. Townsend (2013) argues such profit-motivation promotes spatial commodification over user discovery, as seen with Foursquare:

> In the beginning, [Foursquare] did that by exposing things out there in the urban lattice we couldn't see directly - our friends, good food, and good times. There was an element of randomness and discovery, like browsing through the stacks at a bookstore. But as data mining and recommendations move to the forefront, Foursquare runs the risk of becoming a quixotic attempt to compute serendipity

and spontaneity…. Instead of urging us to explore on our own, will it guide us
down a predetermined path based on what we might buy? (p. 152).

This situation urged scholars to argue that locative media is permeated with corporate messaging (Vasconcelos, Ricci, Benevenuto & Almeida, 2012) or disguises corporate-sponsored content, i.e., astroturfing (Bienkov, 2012). This situation urged Manovich to proclaim that corporations are making our world increasingly full of "brandscapes" (2006). The economic disruptive powers of some locative media applications has also raised concerns, such as Airbnb being banned in some cities for causing rents to raise beyond what locals can afford (Oltermann, 2016).

Limitations of locative media may also arise from the users themselves. Keogh (2016) found that location-based games, such as Ingress and Pokémon Go (both developed by Google's Niantic Labs), have limited geographic content reach arising from the fact that they are populated by user generated content, which entails digital divide issues limiting participants based on wealth, education, and availability of leisure times. For example, game destinations are more likely to occur in affluent and urban neighbourhoods more so than poorer or rural areas. Keogh (2016) also notes that locative media, and in specific Pokémon Go, do not eliminate the spatial barrier and boundaries society imposes:

> Black players in America were realising that playing the game (Pokémon Go)
> could cost them their life [by going into "white" neighbourhoods and being
> harassed by police]. For many women, too, moving around the city is never quite
> a carefree activity. By incorporating public spaces, Pokémon Go can't help but to
> incorporate the politics of those public spaces that make urban movement much
> easier for some people than for others (para. 16).

In addition to these technical and political limitations, design issues and the medium's affordances are criticized for imposing representational and usability limits (Edwardes, 2009). Sample (2014) argues that locative media is an "impoverished tool" to represent the complexity and nuance of place. Conversely, Wilson, Bertolotto and Weakliam (2010) argue that mobile media in all its forms create "spatial information overload". Schwarzer cautions that as we continue to "deal with Google Maps or Wikipedia or TripAdvisor, with their rules and systems. The more such sites coordinate our experience of place, the more they will make up its infrastructure" (p.2). The technological, commercial, and design issues of locative media can thus be seen to restrict or negate people's experience of place – yet these same features can also foster relationships to place, as the next section addresses.

3.4.4 Locative media may foster relationships to place

In contrast to the argument that mobile media detract from place or render space trivial, various scholars argue the contrary (e.g., Brighenti, 2012; Hemment, 2006; Leyshon, DiGiovanna & Holcomb, 2013). Some literature suggesting the ability of locative media to enliven our relationships to place does carry the familiar flavour of technical utopianism, yet within the literature, analysis can be found that pinpoints how locative media may improve our relationship to place. The advent of locative media prompted some scholars and locative media artists and producers to tout the benefits of locative media to challenge our prior conceptions of space and familiarize ourselves with our world (e.g., Russell, 1999). More recently, scholars asserted that locative media can foster relationships to place (de Lange & de Waal, 2013; Farman 2012; Özkul, 2014, Nyíri, 2005). Farman goes so far as to assert that locative technologies, "are able to imbue space with meaning, thus transforming a space by giving it a sense of place" (2012, p. 40). Gordon and de Souza e Silva argue that locative media can enhance our relationship to spaces by exposing users to a space's multiple facets and fostering meaningful interaction, noting that, "Not being connected to a network, not having access to location-based information, is tantamount to being closed off to a space's potential" (2012, p. 93).

Of the literature found supporting locative media as having a positive role in people's sense of place, however, no studies specifically operationalized sense of place with any level of granularity. Instead, empirical research in the past five years has begun to explore locative media in relation to elements related to sense of place. The following sections review this literature to draw out key findings related to people's use of locative media and their relationship to place.

3.4.4.1 Place familiarity and place knowledge

Locative media has been found to allow people to navigate and discover their spaces in new ways (e.g., Bilandzic & Foth, 2012; de Souza e Silva & Hjorth, 2009; Leyshon, DiGiovanna, & Holcomb, 2013; Townsend, 2013). A study of locative media users found that such users knew more about their city and in greater detail than non-users (Bentley, Cramer, Basapur & Hamilton, 2012). Field trials of a locative news application found that the contextual relevance of the news items increased place familiarity, specifically knowledge of directions,

landmarks, events, news, and history and attachment (Oie, 2012). Based on her findings, Oie asserts, "Mobile devices do not detract from reality. They help to make it more real" (p. 167). A similar study by Tussyadiah and Zach (2012) also found that locative media usage increased place knowledge, place attachment, and sense of belonging. Learning about locations via media is certainly not a new phenomenon (as previously discussed in this chapter), but the ready access to such information has possibly introduced new issues of scale and ubiquity.

3.4.4.2 Geo-socializing via locative media

Locative media literature has examined the role of geosocial networking via locative media, finding people use it to maintain sociality (C. Smith, 2012) but also to learn about places through the virtual presence and traces of their friends and family (Gay, 2009; Humphreys & Liao, 2013; Özkul, 2014). Locative media features enable people to learn and connect with people who traverse and inhabit shared spaces, whether friends or strangers (Licoppe, 2013; Sutko & de Souza e Silva, 2011; Wilken, 2010). Studies of locative media usage found that people use it for social navigation, that is, to navigate and understand locations based on the experience of those who travelled there before (Bilandzic & Foth, 2012; Cramer, Rost, & Holmquist, 2011; de Souza e Silva & Frith, 2010b; Farrelly, 2012; Humphreys, 2010). In a field study of a locative media prototype, Paay and Kjeldskov (2007) found that people value other people's accounts of locations. Research has also looked at how locative media can be used for guided tours based on others' recommendations or shared stories (Cocciolo & Rabina, 2012; Greenspan, 2011; Ladly, 2008; Veronesi & Gemeinboeck, 2009). Hjorth and Pink (2014) studied how people share geotagged photographs of places taken on their mobile devices, finding that the photographs not only become social objects but that that there is a "geospatial sociality" (p.54) that extends notions of co-presence beyond those simultaneously collocated in physical space. Speed (2010) argues that locative media has the ability to display social elements and personal stories that are rarely displayed in other geographic media – adding that these elements enable people to recover their sense of place lost in earlier media. Other locative media literature is similarly challenging existing notions of spatiality, sociality, and meaning (Fazel & Rajendran, 2015; Licoppe, 2013; Sutko & de Souza e Silva, 2011; Wilken, 2010). Rather than insist, as some scholars have, that mobile media is significantly reducing or eliminating socializing, these

articles point out that sociality does remain, yet in forms that are emergent and unfamiliar to some.

3.4.4.3   Dérive and détournement

Scholars and artists have drawn upon the work of the Situationist theorist and provocateur, Debord (1983), to explore ways in which people create their own meanings of place via locative media (e.g., de Souza & Hjorth, 2009; Dodds, 2016; Farman, 2014; Gazzard, 2011; Hjorth, 2011; Lapenta, 2011; Sparrow, 2016). As practical manifestations of Debord's dérive and détournement concepts (1956a; 1956b), locative media proponents argue that it can provoke new interpretations and relationships with place through creative and playful interaction with place (Hjorth, 2011; Lemos, 2011; McGarrigle, 2010). Pinder argues that the creative and collective possibilities of the medium have potential for "encouraging disorientation and deliriously re-imagining spaces" (2013, p. 530). These may be seen as achieved through two properties of locative media, which Schianchi (2013) itemizes as 1) the ability to subvert physical laws, such as gravity and portability, and 2) the ability to subvert property laws, such as copyright, territory, and access. However, Zeffiro (2009) refutes claims that locative media achieves objectives of the Situationists, as the experiences and paths they facilitate are contrived by the developers. On the other hand, examples of Debord-like re-imaginings of place can be seen with the geolocative augmented reality application Invisible Pink Unicorn, that parodies organized religious sites through the projection of a unicorn over the Vatican (Les liens invisibles, 2011) and GPS Doodles by Vancouver artist, Stephen Lund, who uses the application Strava to track his routes in order to form of bizarre pictures overlaid atop aerial views of cities (Lund, 2016). Although such locative media projects offer interesting creative potential, the efficacy of such spatial interventions remains to be studied.

3.4.4.4   Participatory culture and locative media

Locative media can be seen as a form of participatory culture (Hamilton, 2009). Jenkins pioneered the concept of participatory culture through his work examining how new media in particular were opening up new avenues of cultural comment and production (2006; 2009) to the

"people formerly known as the audience" (Rosen, 2006). Various studies and position papers have examined the user participatory features of locative media through such forms as play (de Souza e Silva & Hjorth, 2009; Hjorth, 2011) and expression (Erickson, 2010; Gazzard, 2011; Licoppe & Inada, 2008). McCullough notes how the participatory features of locative media transform passive consumers into "an active tagger, an embodied interpreter, and at some level, and with some unstudied degree of access and duration, also a cultural producer" (2012, p. 63).

The possibilities for opening up participatory forms of publishing and the importance of raising the prominence of locally sourced place information versus global, corporate information is raised by Inkinen (2010) and Berry and Hamilton (2010). Collins believes the medium can be used to document, map, and "reveal the stories of place that remain invisible to the casual observer" that aid in social and spatial justice (2013, p.3). Scholars such as Shirvanee (2006) and Lodi (2013) argue that locative media offers the potential for people to democratize the public sphere in spaces not otherwise open to comment and representation. A study by van der Graaf and Vanobberghen found that locative media users were eager to personalize their everyday spaces and rewrite dominant themes, finding that "locative mobile technology can be used to counterbalance certain dominant versions of the urban space provided by the authorities or by commercial interests" (2013, section 3, para. 4). Albrechtslund and Glud (2010), in their study of residents of marginalized areas, found locative media could be used for spatial interventions that can empower them. A similar result was found by Crooks (2013) in his review of the location-based dating and sex application Grindr. This literature provides examples of how Townsend conceived of "bottom up locative media" as being able to "illustrate the complexity of richness of culturally constructed space" (2006, p. 346).

The literature also demonstrates how locative media's participatory features can facilitate bidirectional relationships between people and place, leading to direct engagement with place. In reviewing the location-based game, Asphalt Games, Chang and Goodman (2006) found locative media subverts passive spectatorship of other spatially-focused media and instead enables "location as a canvas" in which the application is used for creating memories, sharing stories, and performance. Researchers also found that locative media users documented and created shared spatial histories amongst their network used for group identity (Barkhuus et al., 2008). In addition, quantitative studies of locative media use have shown that users document their experiences and reflections of place, thereby enriching their spatial connections (Farrelly, 2013;

Lindqvist, Cranshaw, Wiese, Hong, & Zimmerman, 2011). Humphreys and Liao (2011) observed and interviewed users of locative media and found that people used the technology to virtually annotate a place with their life events, also fostering a connection to place.

Locative media provokes new interpretations and relationships with place through creative and playful spatial interactions (Hjorth, 2011; Lemos, 2011; McGarrigle, 2010); serendipitous spatial discovery (Özkul, 2014); artistic interventions (Ladly, 2016; Lodi, 2013; Schianchi, 2013), community co-creation of content (Chilcott, 2013), challenging underlying technical structures (Brucker-Cohen, 2014) and counter hegemonic representations (de Souza & Hjorth, 2009, Farman, 2012; Gazzard, 2011; Lapenta, 2011; Shirvanee, 2006). The literature provides a glimpse into how people can take an active part in creating their own individual connection with place via locative media.

3.5   Summary of What is Known and Unknown About the Topics

With the increasing growth in the use of mobile locative technology (Dige, 2016), it is foreseeable that the role of this technology in people's lives may expand. Despite the growing prominence of locative technology, its potential influence on our relationships to our places has not been fully studied.

Sense of place as a concept is frequently positioned in literature as an outcome of human's crucial relationship to our environment. Yet, sense of place literature has largely tended to focus on special places and "authentic" experiences, more so than the everyday locations people regularly encounter. Despite an extensive and cross-disciplinary literature on place, the role of information and mediation in forming a sense of place has seldom been investigated and has not yet been investigated empirically for locative media.

Within studies of media, there is extensive literature on how space and place are represented and on the associated concerns. As a new and still emerging medium, examinations of locative media within this context are still in their infancy. On the one hand, some scholars argue that locative media contribute to feelings of urban alienation and placelessness. This alienation is compounded by the increasing motility and migration of people and mass urban

development. On the other hand, literature also suggests locative technology may offer the potential for people to create counter-hegemonic content that fosters a meaningful sense of place. Although scholars assert that locative media can affect users' sense of place, such claims have not been based on a specific empirical study.

Even after an extensive review of the literature, there are still no clear answers to the question of how people's use of locative media and their sense of place may relate and in what ways the medium intersects or influences this relationship. I thus posed my two research questions to frame my study with the intent of examining this gap in the literature. My research questions are:

1) What forms of spatial counter dynamics are manifested in people's use of locative media and how do they relate to people's relationship to place?

2) In what ways does people's use of locative media influence the affective, environmental, or social aspects of their sense of place?

I thus seek to contribute to both place and locative media literature through an empirical study that examines the features and behavioural norms of locative media and the role in forming one's sense of place.

3.6 Chapter Conclusion

This review of literature provides an overview of the foundational theories, concepts, and scholarship of sense of place, spatial counter dynamics, and locative media. Sense of place literature was examined through a discussion of work with the predominant focus on the aspects of the physical world, the sociocultural, and the individual. This represents not only the core aspects of sense of place, but also the leading research foci within place studies. The ways people resist hegemonic control of spatial meaning was discussed through examining spatial counter dynamics. A history of locative media was offered, as well as an examination of the scholarship studying locative media as positioned by the overall role the medium may play in sense of place.

In the next chapter, Methodology and Research Design, I outline how I built upon this existing work to design and execute a study that merges the concepts of locative media, spatial counter dynamics, and sense of place to advance understanding of these concepts both separately and collectively. Subsequent chapters report on the new evidence arising from this study that contributes to the ongoing scholarship.

Chapter 4
Methodology and Research Design

4.1 Chapter Overview

In this chapter, I outline the methodological considerations and the rationale for the research design of the study. The chapter begins by discussing the methodological footing of this research as an exploratory, qualitative study. Subsequent sections detail the methods used (i.e., semi-structured interviews and field reports), sampling strategy, recruitment techniques, and the procedures to ensure an ethical study. An overview of the pilot study conducted is also provided. The chapter concludes by identifying the data collection and analysis procedures, followed by addressing steps undertaken to ensure a trustworthy study.

The research design for this study was developed based on consultations with my advisor and thesis committee. The study was approved by my committee in April 2015. Following approval from the University of Toronto's Research Ethics Board, a pilot study commenced in July 2015 and was completed by September 2015. With a modification to the originally proposed research design (see section 4.9), the full study commenced in October 2015 and was completed by April 2016.

4.2 Rationale for Exploratory, Qualitative Approach

Various methods have been employed by researchers to study sense of place and mobile technology usage. Sense of place has been studied using hermeneutic, cognitive, and ethnographic methods, including semiotic analysis (e.g., Müeller & Schade, 2012), narrative analysis (e.g., Bird, 2002), and content analysis (e.g., Buchanan, 2009; Lindgren, 2011). Mobile media and locative media use is often studied through human computer interaction methods, such as log file analysis (e.g., Bouwman, Reuver, Heerschap & Verkasalo, 2013) and surveys (e.g., Oulasvirta, Rattenbury, Ma & Raita, 2012).

For the purposes of this research, these methods were inadequate as they do not adequately facilitate the exploration of the internal process of sense of place formation and the role of information and mediation (in this case locative media), nor do they adequately enable participants to contribute their own experiences and thoughts. Human computer interaction methods present similar concerns, in addition to being limited to predominantly quantitative data. Quantitative data, although useful for recording usage patterns, do not offer sufficient insight into participants' motivations or the outcomes reflected by such usage. I thus concluded that qualitative methods were the most appropriate to achieve this study's objectives.

Before determining the research design, I conducted an extensive review of the literature. Based on a lack of preexisting studies examining the relationships between people's use of locative media and sense of place, it was not possible to establish the foundations necessary to guide structured or confirmatory empirical investigations. I therefore determined that an exploratory study was required. As an exploratory study, the goal for this research was to seek understanding of the phenomenon and to provide theoretical and methodological groundwork for future studies (Stebbins, 2001). Stebbins recommends a qualitative research approach for topics insufficiently studied. I therefore decided that an exploratory, qualitative approach offers the best approach for the situation and my research goals.

4.3 Research Design

In designing this research study, I strove to capture details of how people use locative media and any effect such usage may have upon their sense of place. The unit of study and analysis was thus at the individual level. In order to gain a robust and rich picture of the participants' locative media behaviours, as well as to ensure ecological validity, it was crucial to permit participants to report on any and all locative media applications they use. Leading locative media scholar Wilken (2015) suggests at this stage in the study of locative media, research should examine more than a single application to better understand usage as

> Such an approach is revealing of the points of comparison and contrast in how each app is built, used, and understood. In addition to this, larger multi-platform comparative studies are needed in order to understand the technological affordances of each (the issue of platform specificity noted above), the distinct as well as overlapping patterns of end use (2015, p. 53).

The final study used two methods, semi-structured interviews and field reports. This approach was designed to capture elements of people's sense of place and the influence and outcomes of using locative media, as well as provide a method for triangulation of data sources (see section 4.13). The research design for the study was comprised of three phases:

- Phase 1 – Screening and profiling

- Phase 2 – Field reports, mobile-enabled and in-situ

- Phase 3 – Interviews, semi-structured

I originally proposed a research design utilizing three methods, adding mental mapping before Phase 3. Upon conducting a pilot study, I determined mental mapping was ineffective for the research goals and it was thus dropped (see section 4.9 for details). The following sections elaborate on the methods and data collection procedures of the above three phases.

4.4 Methods

The two methods used in the final study, interviews and field reports, are described below, along with their methodological factors and the background that determined the suitability of their use.

4.4.1 Interviews

Interviews are an established method in qualitative research, due to their proven ability to solicit rich detail about people's thoughts, feelings, and experiences (Gubrium & Holstein, 2001). Prominent methodologist Kvale defines the purpose of interviews in qualitative research as being "to obtain descriptions of the life world of the interviewee with respect to interpreting the meaning of the described phenomenon" (1996, p. 5-6). McCracken describes the appeal for qualitative researchers:

> The method can take us into the mental world of the individual, to glimpse the categories and logic by which he or she sees the world. It can also take us into the

lifeworld of the individual, to see the content and pattern of daily experience. The interview gives us the opportunity to step into the mind of another person, to see and experience the world as they do themselves (1988, p. 9).

Research interviews have a long history of use in social science and the humanities, and often have been employed specifically for studies of sense of place or locative media usage (e.g., Reid, Hull, Clayton, Melamed & Stenton, 2011). Interviews can be conducted with multiple participants simultaneously (i.e., focus groups), however, for this study the unit of focus is on the individual, rather than on group dynamics. Interviews can range from rigidly structured to completely unstructured (Kvale, 1996; Roulston, 2010). A semi-structured approach was used, wherein a combination of a standard set of questions was asked of all participants, while I remained open to explore new directions of inquiry during a session. This approach was desirable as it enabled consistent data collection across participants for comparison purposes, while also allowing flexibility to pursue new or unanticipated topics. My interview style was "reflexive dyadic," allowing sessions to adopt a more conversational manner, as this style aids participant comfort, establishes rapport, and allows unanticipated points to be raised (Ellis & Berger, 2003).

4.4.2 Field reports

To understand how and why people use technology, it is preferable to minimize the time elapsing between people's use of technology and the researcher's data collection, seeking to gather users' "logic-in-use" versus an idealized account or espoused logic (Knight, 2002). As such, the method of field reports, that is, mobile-enabled, in situ user accounts was considered optimal for this study. Field reports have been used in social science research to capture not only records of people's behaviour, but also their reflections within the context of everyday life (Kenten, 2010). Field reports conducted via a participant's mobile device is an effective method to aid participants to tell their story about their experiences when the contextual and affective details are fresh (Hagen & Rowland, 2010). Field reports provide a method of expression or reflection conducted during or shortly after an experience (Hulkko, Mattelmäki, Virtanen & Keinonen, 2004), thus forestalling the limits of other methods that rely on participants remembering or retroactively abstracting their experiences, thoughts, and feelings.

Field reports have been used to study locative media before in studies by Barkhuus and Dey (2003) and Reid, Hull, Clayton, Melamed and Stenton (2011). Field reports combined with interviews are found to be a particularly effective combination of methods as it produces rich and reliable material (Corti, 1993; Kenten, 2010). Kenten comments on this method combination, which he calls a diary interview:

> The use of a diary interview allows for contemporaneously made entries to be explored in depth with the authors and provides them with the opportunity to clarify, expand and reflect on their actions, entries and connections, for example, similar or contrasting experiences or the regularity of the same experience. The context for the entries can be established and explored which assists with the analysis of the diary content. All of these aspects add to the value and the richness of the data produced via the diary interview. It also reduces the potential for analytical misinterpretation (para. 8).

Studies of locative media and people's relationship to place have already made successful use of this combined methods approach (O'Hara, 2008).

4.5   Research Instruments

This study made use of two research instruments to aid the interview sessions – an interview guide and planned probes. The methodological decisions that prompted their use and the implementation details are discussed below.

4.5.1 Interview guides

An interview guide (i.e., a documented, structured series of questions to pose to interviewees) is recommended by McCracken for semi-structured interviews, as it ensures that researchers ask the same questions of all participants in the same order (1988). McCracken has found this reduces order bias of questions, provides structure to eliminate potential "chaos" of over-generative discussions, and enables researchers' recall, which allows them to focus fully on the participant.

An interview guide was used with a set of standard questions asked of every participant (see appendices B and C). The interview guide was developed using techniques pioneered by

Spradley (see Spradley, 1979 and McCurdy, Spradley & Shandy, 2004) including the use of "grand tour" and "story" type questions. Guidance in developing the interview guide and research protocol was also received from Jacob and Furgerson (2012). The questions were devised based on concepts from the literature, the researcher's autoethnographic use of locative media (e.g., Farrelly, 2010) and from findings from the researcher's prior studies on locative media (see Farrelly, 2012; 2013; 2014).

Questions in the interview guide began with general big-picture type discussions, as this is easier for participants to recall initially and encourages participants to begin talking (Spradley, 1979). These broad questions became specific gradually as the participants became increasingly comfortable with the interview and the topic became top-of-mind. Questions and probes were also developed to avoid order bias.

4.5.2 Probes

Most of the interview questions contain corresponding probes. Probes are optional questions I could pose to the participants to aid recall, clarification, elaboration, or foster responses richer in detail. My interview approach made use of two types of probes: floating and planned (McCracken, 1988).

Floating probes are used in conjunction with an interview guide to encourage the participants to expand upon and clarify their responses in an "unobtrusive and spontaneous way" (McCracken, 1998, p. 35). A set of possible floating probes were included in the interview guide (see appendices B and C) and were based on the context of the interview question. The use of floating probes was determined during the interviews. They took various forms, for example the researcher repeats a key or uncertain term with a questioning intonation or asks follow-up questions, such as:

- Can you provide an example of that?
- What do you mean by X?
- Can you elaborate on X?
- How is X different than Y?
- Tell me more about that.

Planned probes were drawn from participants' user generated content. The purpose of this "stimulated recall" (Kennedy, 2006) drawn from participants' usage of locative media was to aid participants' recall and thereby better collect their motivations and practices based on "logic-in-use" versus idealized accounts or espoused logic (Knight, 2002). The interview guide in Appendix B contains samples of the planned and floating probes used.

4.6 Ethical Issues

As this study involved working with people, I sought and received approval from the University of Toronto's Research Ethics Board prior to commencing research. My application was approved in July 2015 (protocol reference number 31734). All ethical procedures established by my university were consulted by the researcher and were followed in preparing and conducting the research. In addition, I followed guidelines set forth by the Association of Internet Researchers (AoIR), an established international academic body, for conducting ethical internet research (Markham & Buchanan, 2012).

4.6.1 Consent process

All participants were adults who were capable of giving informed consent; no research was conducted prior to acquiring consent. When potential participants responded to my recruitment postings, they were provided with an introduction to the study and my background. They were also asked if they met the eligibility requirements. Communication with potential participants at this point was conducted via email or telephone, based on the respondent's preference. Respondents were given an introduction to providing consent, informing them of their right to withdraw and telling them that their participation is voluntary. They were encouraged to ask any questions about the research and their participation. Respondents were then sent a copy of the informed consent form with a request that they either email a reply indicating their consent to participate or provide verbal consent via telephone.

Before commencing a research session with a participant, he or she was informed about the research process and presented with the option to withdraw at any point or refuse to answer

any question. Participants were encouraged to ask the researcher any questions about their participation, the research process, or the topic. I did not deceive any participants at any point. I avoided discussing the sensitive issues related to any criminal or violent activities that a participant may have been involved in or had happen. No such areas were raised by would-be or final participants. I followed the same procedures for all participants.

4.6.2 Protecting participants' privacy and data

I assured participants of confidentiality and maintain this by using pseudonyms for participants, avoiding publishing or sharing identifying details or images, and securing any contact information required to establish initial communication. Upon agreeing to participate, participants were assigned a pseudonym. Each pseudonym uses a unique letter of the alphabet and is not one of the real names of any participants. All documentation with participant's names or contact details and the name/pseudonym key are kept in a locked drawer in my University of Toronto office and will be destroyed upon completion of the project. All response data is de-identified via the use of pseudonyms and I avoided identifying details anywhere on their response data, transcripts, notes, or in my reports. All de-identified data is stored on password-protected and encrypted servers within Canada. All audio recordings are saved on an external recording device and will not be uploaded to the Internet or any network servers. The audio recording device, when not in use by the researcher, is kept in a locked drawer in my University of Toronto office. I will destroy this data six years after completion of the research project.

4.7   Sampling and Recruitment

The following section outlines the considerations made to determine a suitable study population, the sampling strategy, and recruitment techniques.

4.7.1 Selection criteria

As my research plan consists of a pilot study and a full study, there were two types of participants with corresponding sampling plans. In both cases, the selection criteria remained the same. The selection criteria for participants were:

- locative media users who used any locative application for more than three months, to ensure they have transitioned from technology acceptance and novelty usage to continued usage (Cho, Cheng & Hung, 2009)

- mentally competent adults over 18 years old, who are capable of providing informed consent

- speakers of English and use of locative media in English (based on the researcher's language ability)

Selection criteria was not based on participant characteristics, such as gender, age, ethnicity, residence, education level, or occupation.

The only exclusion criterion for this study was participants who indicated or suggested criminal activity (past, present, or future) through their profiles or content uploaded to locative media. This scenario did not apply for any of the possible or final participants, and thus no one was excluded from the study for this reason.

4.7.2 Sampling strategy

As this research does not seek to generalize to the larger population, random sampling was not used. Instead, I used purposive sampling (Baxter & Babbie, 2004) and snowball sampling (Baxter & Babbie, 2004; Roulston, 2010). Requests to participate were posted on relevant websites and blogs. Snowball sampling was also used, where participants were asked to recommend other people to participate.

Sampling for the pilot study used convenience sampling, as the goal was to test and refine my research design, instructions, and instruments. Participants were thus drawn from my existing acquaintances, predominantly fellow graduate students.

4.7.3 Sample size

In consultation with my thesis committee, a sample size of 15 to 20 participants was deemed appropriate for the full study. The exact figure was determined based on achieving theoretical data saturation, which entails recruiting until no new data is gained from conducting additional research sessions. Such data saturation is used in qualitative studies as a stopping point for recruitment of participants based on the work of Glaser (1978), who argued that rather than determining a priori sample size, researchers should instead stop recruiting participants when they cease to discover anything new of relevance to the study.

In this study, I conducted data analysis concurrently to data collection. While analyzing the data from the sixteenth participant, I received additional examples but not any new conceptual findings or insight. I continued research with more participants to confirm or refute whether data saturation had been reached. At the eighteenth participant, it was apparent that no new findings would likely emerge from further data collection. Recruitment thus ended after the eighteenth participant. Four participants, however, were already in the process of participating (i.e., they submitted field reports) so I completed the research for these final participants.

4.7.4 Recruitment techniques

Recruitment efforts for the full study consisted of three tactics: 1) postings on applicable websites, 2) targeted recruitment, and 3) snowball sampling. All recruitment material referred potential participants to a research website I developed. Details are provided in the following subsections.

4.7.4.1 Study website

I created a small website to aid recruitment efforts and to disseminate project information to potential and existing participants. Upon arriving at my website, the homepage displays brief information about the research project and contains links to webpages within the same website

with more detailed information about the research topic, the nature of participation, the compensation offered, participant consent, the researcher's credentials and contact information. The website, called *Locative Media Research*, is available at this web address https://locativemediaresearch.wordpress.com. Upon completion of recruitment, this website was updated to indicate the study was closed. The website will be kept live until the end of December 2018, at which point a new message will be posted to the homepage to direct visitors to the researcher's permanent homepage (i.e., www.glenfarrelly.com).

4.7.4.2 Recruitment postings on websites

Participants were recruited via posting requests online. Postings to participate were posted to Twitter and the online classified service Kijiji (http://www.kijiji.ca). These postings offered a brief introduction to the study and provided details of the compensation offered, inclusion criteria, my credentials, a link to the study website, and my email address.

The recruitment postings are included below.

Kijiji posting:

I'm a PhD candidate at the University of Toronto, Canada studying how people use geolocative functions on their mobile devices.

Do you use geolocative apps such as Foursquare, Swarm, Glympse, Findery, Ingress, or similar apps to:

* Upload and geotag photos of places you visit?
* Share info or reviews about your whereabouts?
* Play location-based games?
* Read or create posts relating to local news or histories?

If you do any of the following or other geolocation-based activities with your mobile, please consider participating in this research. You will be asked to report on your use of the apps and participate in one interview session.

Eligibility:
Participants must be over 18 years old. All participation can be done online or in-person in Toronto.

Compensation:
All people who complete the research session will be given a $25 (Canadian) gift card.

For further details and contact info, visit the research website at:
https://locativemediaresearch.wordpress.com

Twitter posting (under 140 characters to comply with Twitter limit):

Recruiting for study of people using #locativemedia & #LBS to learn about their places. $25 compensation. Details: locativemediaresearch.wordpress.com [link goes to my study website].

This posting was reposted (retweeted) by other Twitter users as well.

4.7.4.3   Targeted recruitment

People who developed locative media applications for counter-hegemonic or related purposes (for example as part of a protest group, minority, or alternative histories initiative) as well as other innovators in locative media development, were sought to participate in this research as key informants (Gilchrist, 1992). Such individuals can contribute rich insight on this topic based on their deliberate, non-normative usage and they can provide expert knowledge about the context and future of locative media development. Based on my knowledge of developers in this field, I contacted people directly via email and inquired if they would be interested in participating in my study. The research design, communications, and consent followed the same procedures as the general population, with the exception that a targeted interview guide was written (see Appendix C).

4.7.4.4   Snowball sampling

People who participated in this study were asked at the conclusion to refer other people to the study. Participants who expressed an interest in referring someone were then given a web link with further information on the study to forward to their colleagues. Here is a sample of this

request: "If you know anyone else who would be interested in participating, please pass on the link to the research study details [link]. Thank you."

Based on these techniques 22 people were recruited. The breakdown per method is as follows:

- Kijiji – 6 people

- Twitter – 5 people

- Snowballing – 3 people

- Directly contacted - 5 key informants, 3 pilot study participants

4.7.5 Participant compensation

Participants for the pilot study were not compensated. To compensate participants in the full study, a $25 Canadian currency Visa gift card was offered. This amount was determined to balance appropriate compensation for the two hours required to complete the research session (and any travel expenses) and to offer a sum substantial enough to entice participation but not large enough to entail undue influence. The gift card was provided to participants upon completion of their research sessions. Beyond the $25 compensation, participants were not reimbursed for any expenses incurred to participate.

4.8 Data Collection Procedures

The full study and pilot study both followed the same procedures in the same three phases as below, with the exception that the pilot study included mental mapping.

4.8.1 Phase 1: Screening

Upon receiving initial expressions of interest to participate, I screened respondents (see section 4.7.1) Participants were informed of the nature of the study and the range of locative media applications. I then walked them through the consent process (see section 4.6.1). With participants' permission, I asked them to allow me to review their locative media profiles beforehand. These profiles contain any public content they posted to locative media applications, as well as check-ins, if applicable. Not all participants provided this profile information. In addition, with participants' permission, I collected my email communications with participants after they had consented to participate, as a source of data. This data generally consisted of emails that contained a high-level, brief overview of participants' use of locative media.

4.8.2 Phase 2: Field reports

The second phase commenced after participants provided consent to participate in the research. In this phase, I asked participants to use locative media during their leisure time and complete in-situ, mobile-enabled interviews for up to two to five places. With the goal of soliciting direct feedback from participants on recent locative media usage, I asked participants to use locative media applications during their leisure time as they might normally do, and I requested they contact me via their mobile device by telephone or email when they encountered an experience while using the application that they deemed "interesting" (an intentionally open term). I asked that they then answer the following three questions:

1. Where are you?
2. What app did you use?
3. Tell me about your experience with the app and the place.

Key informant type interviews with locative media developers were not asked to complete field reports. All other participants, except Cathy and Bernard, submitted field reports.

4.8.3 Phase 3: Semi-structured interviews

Interviews in this phase were in-depth, semi-structured, and in-person or via telephone. All participants were interviewed individually and in the modality of their choice, whether by telephone or in-person. Exceptions were made for three participants whose interviews were

conducted via email due to time constraints (Cathy, Ryan, and Oliver). For the in-person interviews, participants chose the locations – all of which turned out to be cafés.

Despite an interview guide, a flexible atmosphere was maintained during interviews to enable participants to share their own feelings, thoughts, and experiences. The interview guide is comprised of five portions: 1) introduction, 2) planned probes of participants' content, 3) user field reports, 4) general usage questions, and 5) conclusion. The introduction and conclusion portion covered standard opening and closing material. During the introduction, a consistent definition of the term locative media was given to participants.

The second portion of the interviews made use of participants' profile information and content I collected (with participant permission) from their locative media application public information. Depending on the amount of content each participant created, each individual's content was shown or read back to the participant. After presenting a single content item (e.g., a review they wrote) to a participant, I asked him or her to recount the experience that lead to its creation and any resulting impressions or feelings related to the experience and the associated geographical context. This process was repeated for each item of participants' created content to a limit based on the duration of the interview (generally three to six times).

The third portion was conducted in the same manner as the second portion, with field reports substituted for profile information.

The fourth portion of the interview covered participants' general usage, that is, their summative experiences, feelings, and outcomes of using locative media overall. I also asked people about the locations where they used locative media to allow for an open discussion of the dimensions of their interaction with place. Questions were structured in a manner that encouraged participants to reflect on their experiences and any outcomes related to their feelings of place, rather than merely soliciting a descriptive account of their usage. After the pilot study, an optional user walk-through was added to this stage of the research sessions. In this step, I requested participants walk me through their locative media profile information by turning on their mobile devices and using locative media applications as they would normally while thinking-aloud (McGuinness & Ross, 2003) during their usage.

For all interviews, I took notes during the session and reflexive notes afterwards. All interviews were audio recorded, with participants' permission.

4.9 Pilot Study

Piloting of this research plan and instruments was conducted in July 2015. The pilot study participants underwent all the previously mentioned steps (see Section 4.8) with the addition of a mental mapping step. Pilot study participants were asked to comment on the research process and my instructions as well.

Mental mapping was selected as a method with the intent of gaining access to different modes of thinking other than those facilitated by more verbal elicitation type methods. Participants were given a variety of paper sizes and art materials (i.e., markers, pens, pencils) and asked to "draw a quick picture" of where they used locative media and advised, "The goal is not to draw an accurate map or precise drawing, but instead to create a depiction of these places, using whatever symbols, colours or words you want".

Two people were asked to do the original, proposed research design (Zoey and Jacy). One participant, Dave, agreed to participate but did not want to do the mental mapping exercise. During Dave's session, he spontaneously turned on his mobile device and walked me through the locative media he uses as he used them, referencing how he interacts with the applications and specific content viewed.

The pilot test revealed the use of field reports and semi-structured interviews were successful in generating rich, useful data and participants were willing and comfortable providing such information. The user-walkthrough of locative media usage that one pilot study participant spontaneously performed was also found to solicit rich, useful data. However, the method of mental mapping was not successful as it generated very thin data and was also a recruitment barrier. Participants were found to use locative media at a wide variety of locations and it was difficult to recall specifics in sufficient depth for mental mapping to generate rich data on a variety of locations of use. The data given also tended to be on the location itself rather than on the use of locative media with regard to the location (per the focus of this study). In terms of

recruitment, several possible participants expressed reluctance to participate when informed about the mental mapping component of the study, as they expressed concerns that they had insufficient artistic or mapping abilities (despite being reassured no such skills were required) or that this method was too far beyond their comfort zone.

Based on the results from the pilot study and scholarly feedback, I revised my interview protocol by eliminating mental mapping and adding user-walkthroughs as an optional component of the research session. These changes were discussed and approved by my advisor. Following the conclusion of the pilot study in September 2015, recruitment for the full study began in October 2015. Data collection was completed in April 2016.

4.10 Amount and Type of Data Collected

Five types of data were collected during this study:

1) **Initial communications** – participants' emails to the researcher (sent after providing informed consent), generally containing a high-level, brief overview of their use of locative media. These are only included when they provide details not otherwise captured.

2) **Field reports** – transcripts of telephone calls or emails sent to the researcher by the participants about their use of locative media applications.

3) **Interviews** – verbatim transcripts of participant interviews. All interviews were conducted in-person or via telephone, except three conducted via email. Interviews also included participants' application profile data, as this was read to participants during the session to solicit their commentary. This data includes list of locations visited or checked-into, geotagged photographs, textual commentary of locations, and ratings of locations. Also included in the interviews are the user walk-through of their locative media usage.

4) **Post-interview notes** – observations and reflective notes written by the researcher during and after the interview, often containing observations of participants, key points and summative reflections.

5) Miscellany – two participants completed mental maps and one participant sent email communication following the interview.

In all, there were 89 items of data collected from this study. Instances of data by type are as follows:

- Initial communications = 7

- Field reports = 41

- Interview transcripts = 20

- Post-interview notes = 20

- Mental maps = 2

- Follow-up email from participant = 1

All data was entered and coded in NVivo (as discussed below). The findings presented and discussed in the next two chapters derive predominantly from the field reports and interview transcripts, as these were the richest sources of information. The researcher's post-interview notes were essential during the focused coding and sensemaking steps, as discussed below in sections 4.11.4 and 4.12 respectively.

4.11 Data Analysis

The following section outlines the steps and tools used during the inductive data analysis. The process of data transcription and data analysis occurred concurrently to my field research so findings gleaned from early analysis were used to guide and enhance field research, as recommended by methodologists (e.g., McCracken, 1988). As a methodological guide for data analysis, I used Lichtman's work (2012). I modified Lichtman's approach by merging the qualitative data analysis techniques of Kvale (1996) and Dey (1993). These methodologists' data analysis procedures were used as they are established and were used successfully in prior studies by the researcher (e.g., Farrelly, 2012; 2013; 2014).

Data analysis was guided by using Lichtman's recommended 6-step approach, which she summarizes:

Step 1. Initial coding
Step 2. Revisiting initial coding
Step 3. Developing an initial list of categories
Step 4. Modifying initial list based on additional rereading
Step 5. Revisiting your categories and subcategories
Step 6. Moving from categories to concepts (2012, p. 265).

Prior to coding, all interviews were transcribed and the data analysis software, NVivo was configured, as outlined below.

4.11.1   Transcription

All interviews and field reports were either audio recorded or were in a native text format. All in-person and telephone interviews were recorded on a Panasonic digital recorder with permission previously obtained from participants. Transcription was conducted solely by the researcher to ensure accuracy and to aid my recall of the sessions. The method of transcription used was verbatim – specifically Evers' pragmatic style (2011), wherein every word is transcribed. Paralanguage was not transcribed, unless it was deemed relevant to understanding participants' meaning. After transcripts were made, audio recordings were verified by the researcher against the transcripts to ensure accuracy. In a handful of instances where audio passages could not be discerned, they were marked on transcripts as "unintelligible".

4.11.2   Data analysis software

The use of computers to aid data analysis is increasingly common in research and in particular in studies with large data sets (Lichtman, 2012). As such, qualitative data analysis software, specifically NVivo, was used to aid in analysis. NVivo was selected because it is a leading software for coding and analysis of unstructured data (Lichtman, 2012). NVivo allows researchers to effectively organize, search, and display data and coding. Upon determining that NVivo was a suitable software for use in this research, I attended a week-long course on it at the Ontario Institute for Studies in Education (OISE). I purchased a one-year license for personal use of NVivo 11 for Windows Starter edition. All data, including transcripts, field reports, and researcher memos was coded in NVivo.

4.11.3   Open coding and code development

Before coding began, I read through all transcripts multiple times to gain familiarity with the data, as well as to determine context and holistic meaning. Using broad sensitizing concepts derived from the review of the literature and my prior studies, I conducted an initial coding unstructured – with no established codebook, preset codes, or labels. Corresponding to Lichtman's first step (2012), codes were developed and added as they emerged from the data. The initial coding of the data was conducted using Kvale's "meaning categorization" process (1996). This refers to coding interview transcriptions into categories of the phenomenon. Codes at this point were broad and largely not organized. An open coding approach was desirable as it enabled me to be more open to unanticipated and novel findings and it reduces researcher bias.

During coding, transcripts were annotated with my thoughts, linkages, and notes. Reflexive memoing was also conducted concurrently with coding to capture my thoughts on emerging patterns, new phenomena, confirming and contradicting evidence, and analytical reflections. This approach was successful in generating unanticipated themes, such as various user behaviours and dimensions of sense of place.

4.11.4   Focused coding

In steps corresponding to Lichtman's steps two to three (2012), data was coded and recoded while codes were still being developed, leading to more focused coding. As with the open coding process, concurrent to all coding, I annotated transcripts and wrote reflexive memos.

Then, through a process of revisiting the data and reflexive memoing, Lichtman's steps four and five (2012), codes were added and merged per procedures advised by Dey (1993). Using Dey's method of splicing, splitting, linking, and connecting codes, I arrived at a set of codes. In addition, I went back to my research proposal and key literature to provide further insight and organizational structure to codes. I also utilized the categories from Bott (2000) and Crawford (2012) at this point. This process resulted in adding a small number of new codes and merging others. I then formulated a codebook with operational definitions of codes and an organization structure (see Appendix D). The codebook, along with samples of my coding, were reviewed by my advisor, revised, and finalized.

Examples of my focused coding follows. If a participant mentions using locative media resulted in feelings Bott (2000) identifies as pertaining to existential elements of sense of place, specifically that they "feel a sense of connection, feel a sense of my own identity, feel a sense of attachment, [or] feel a sense of ownership" (p. 52) then this was coded as Bott's "Existential" aspect of sense of place. Participants may or may not have used these exact terms, but if their words reflect the topic of a connection between a place and the self or identity, this was coded as the existential aspect of sense of place. If participants indicate that using locative media captured the following characteristics, "historic, authentic, has a spirit of the people, fits within the larger context of [a specific location], supports the activities of [a specific location], [or] feel a sense of history" (p. 52), that is, if they relate a place to broader cultural or historic factors, than this was coded as Bott's "Inherent Sociocultural" aspect of sense of place. With regard to spatial counter dynamics, these were coded based on Crawford's four categories of 1) defamiliarization, 2) refamiliarization, 3) decommodification, 4) collaboration, and with familiarization added. For example, participants' responses suggesting that locative media made them feel or think differently about spaces they are familiar with was coded as refamiliarization, whereas if participants describe locative media creating a sense of strangeness, this was coded as defamiliarization. If a participant expresses that the use of locative media made them feel commercial spaces were presented in a manner beyond their commercial function, this was coded as decommodification.

A subsequent and final round of focused coding was then conducted on all data, during which time I reviewed all transcripts to confirm codes, add codes to passages, and change or uncode as applicable.

4.12 From Coded Data to Findings

With data coding completed, the next stage was the process of making meaning and analyzing patterns to arrive at the overall conceptual findings. This corresponds to Lichtman's sixth step (2012). After the final round of focused coding was completed by the end of March 2016, a process of memoing, sensemaking, and mapping of results was conducted. Key literature and my notes on key works were consulted again to assist me in considering theoretical ties. NVivo was invaluable during this process for its ability to query data and generate reports by

code, by participants, and by application. From this process, two documents summarizing my findings were prepared and shared with my committee on April 12, 2016. These documents provided the key findings relating user behaviour on locative media and the relationship to sense of place and spatial counter dynamics corresponding to my research questions. These documents, in table form, are presented in the next chapter.

To write this dissertation, I was guided by Emerson, Fretz, and Shaw's recommended approach for presenting qualitative data, which is the "excerpt commentary units" approach (1995). An excerpt commentary unit begins with the researcher's analytical points and orienting information, includes participant quotations, and concludes with additional researcher analysis. I then searched coded data for both representative and contrasting examples covering the spectrum of phenomena. These excerpt commentary units and representative and contrasting examples then formed the bedrock of this dissertation's discussion chapter.

4.13 Research Trustworthiness

As qualitative, exploratory research, the goal of this study is not to prove causal relationships or provide generalizable findings (Creswell, 2008). Instead, this study seeks to offer insight into and understanding of an emerging phenomenon and provide foundational concepts and tools for future research. Qualitative data is by its nature interpretative (Creswell, 2008; Miles & Huberman, 1994; Schreier, 2012). It is therefore impossible to ensure that all researchers using the same procedures and data will arrive at identical findings. Yet, as Schreier notes, "different interpretations of the same material can be valid" (2012, p. 21). However, ensuring the trustworthiness and rigour of data collection and analysis is essential. I employed various tactics to this end, as I now discuss.

To begin, the research design was structured to include triangulation of data sources and methods (as suggested by Miles & Huberman, 1994) in addition to conducting research with multiple participants also as a method of triangulation. By providing multiple and divergent sources of data, triangulation aids the researcher's understanding and provides a form of verification and corroboration of results (Miles & Huberman, 1994). Triangulation of methods includes using more than one method, as this research did through its multiple methods

approach, previously described in Section 4.10. This approach also included participants' checks of the researcher's understanding of participant data. After I reviewed participants' application profiles and their field reports, I read these back to the participants and requested that they provide commentary on this data. In addition, this provided an opportunity for me to ask for clarification, additional details, and to validate any of my prior conceptual analysis.

During the entire research design process, data collection stages, and data analysis, I regularly discussed the considerations I was facing, concerns, and emerging findings with my academic peer group. This peer check was combined with meetings and communications with my advisor and advisory committee. The scholarly feedback gained this way provided invaluable feedback and direction as well as helped to ensure that I was on the right track.

To show transparency and provide measures to demonstrate a degree of replicability of this study, various tactics are used. This chapter provides extensive details on the study instruments, data collection procedures, and data analysis procedures. The appendices provide further details and include copies of the instruments, specifically the interview guides (see appendices B and C). My codebook, including all code definitions used, as well as samples of my coding, are also provided in Appendix D. In addition, the data analysis software, NVivo, offers an audit trail feature. This audit trail includes a record of transcripts, field reports, memos, annotations, coding library, as well as all the coded data itself.

In my discussion and analysis of the findings in the subsequent two chapters, I endeavoured to ensure trustworthiness through frequent use of participant quotations. In addition, all cases where contrasting or contrary evidence was found are included. These tactics assist readers in assessing my analysis.

4.14 Chapter Conclusion

In this chapter, I detailed the considerations, procedures, and instruments that constitute the essential steps in conducting this qualitative, exploratory study of people's use of locative media and sense of place. The methodological underpinning and the data collection procedures of using field reports and interviews were discussed as well as the advantage for triangulated

data to help ensure trustworthiness of the findings. Commentary on this study's methodological contributions as well as observations can be found in the concluding chapter of this dissertation, in Section 7.5.1.

In the next two chapters, the Findings and Discussion, the results of this study are first described and then analyzed with respect to the research questions, theories, and analytical frameworks identified in the preceding chapters.

Chapter 5
Findings

5.1   Chapter Overview

This chapter reports on the findings of the previously described study. Twenty two people participated in this study. Of this total, two participants submitted field reports but left the study before completing the final interview. Data from all participants, field reports and interviews, are included below. To contextualize the findings, overviews of the participants of this study are provided, along with details of the applications, context, and locations they used locative media in (in sections 5.2 to 5.4). To assist in understanding participants' user experience with locative media that differentiate this media from others, Section 5.5 examines media characteristics and how they are used by participants. Section 5.6 then describes participants' user behaviour when using locative media as self-reported by the participants or discerned by the researcher. The final two sections, 5.7 and 5.8, address the findings as they relate to the research questions by examining spatial counter dynamics and sense of place. The purpose of this chapter is to present key findings arising from this study and to identify and itemize user patterns that form the basis for analysis in Chapter 6 – Discussion.

5.2   Participant Profiles

The following section provides the profile details of participants at the time of their participation in the study, which ranges from July 2015 to April 2016. Of the twenty two participants, twelve are male and ten are female. Participant ages ranged from 23 to 76. The median age is 38 with the average being 38.31 years. All participants, except two, live and work in Ontario, Canada, predominantly in the Greater Toronto Area. Of the two participants not from Ontario, one is based in Vancouver, British Columbia (Kevin) and the other is based in London, United Kingdom (Cathy). Occupations of participants are varied and include two university students, two lawyers, two consultants, and two retired people. Other occupations include: accountant, artist, customer service representative, educator, marketer, small business owner,

stay-at-home parent, and therapist. Five participants are locative media application developers as well as locative media users. For details on each participant's profile see Table 5.1. All participant names are pseudonyms.

Table 5.1: Characteristics of research participants

The table presents a list of participants (in alphabetical order) with their corresponding gender, age, occupation, and the locative media applications (in alphabetical order) participants reported using.

Name	Age	Gender	Occupation	Hometown	Locative Media Reported
Alex	33	Male	Management Consultant	Mississauga, Ontario	Airbnb, Facebook, Foursquare, Glympse, Ingress, Instagram, Swarm, Twitter, Uber, Yelp
Bernard	66	Male	Retired	Toronto, Ontario	Google Fit, Google Maps, GPS in-car, Instagram, TripAdvisor, Weather Network
Cathy	42	Female	Stay-at-home Parent	London, United Kingdom	Google Maps, OpenTable, Uber
Dave	24	Male	Artist	Toronto, Ontario	Foursquare, Swarm
Evan	29	Male	Accountant	Toronto, Ontario	Facebook, Glympse, Grindr, Instagram, Next TTC, Tinder, Whisper, Yelp
Frances	40	Female	Educator and Consultant	Toronto, Ontario	Clio Cloud Conference App, Facebook, Foursquare, GPS in-car, Google Maps, Runkeeper, Swarm, Twitter
Heather	23	Female	University Student	Toronto, Ontario	Facebook, Google Maps, Instagram, Strava, TripAdvisor, Twitter, Yelp
Ian	76	Male	Retired	Guelph, Ontario	Geocaching, GPS in-car
Jacy	45	Female	Lawyer	Toronto, Ontario	Findery, Waymarking
Kevin	41	Male	Digital Media Executive	Vancouver, British Columbia	CodeRunner, Ingress
Luke	38	Male	Volunteer	Peterborough, Ontario	Findery
Mark	29	Male	Customer Service Representative	Toronto, Ontario	Facebook, Foursquare, Google Maps, Instagram, Twitter, Yelp
Natalie	35	Female	Arts Organization Coordinator	Toronto, Ontario	Inspired By Arts Map
Oliver	48	Male	Artist and Application Developer	Toronto, Ontario	Queerstory
Parker	23	Male	University Student	Toronto, Ontario	Facebook, Google Maps, Instagram, Parallel

					Kingdom, Tagwhat[2], Twitter, Yelp
Quinn	41	Female	Small Business Owner	Toronto, Ontario	Facebook, Google Maps, LCBO Mobile App, RocketMan, Twitter
Rob	27	Male	Application Developer	Toronto, Ontario	Narratives
Susan	53	Female	Graphic Designer and Application Developer	Toronto, Ontario	Queerstory
Tricia	37	Female	Marketer	Mississauga, Ontario	Find My Friends, Groupon, Realtor.ca, TripAdvisor, Waze, Yelp
Vera	33	Female	Government Lawyer	Burlington, Ontario	Google Maps, Letterboxing, Runkeeper, TripAdvisor, Zombies Run
William	28	Male	Therapist	Toronto, Ontario	AroundMe, Foursquare, Geocaching, GPS in-car, Google Maps, Pixifly, Twitter, TripAdvisor, Yelp
Zoey	32	Female	Consultant	Toronto, Ontario	Foursquare, Findery, Ingress, Google Maps, Swarm, Yellow Pages

All participants had used locative media for over three months (per the screening criteria). As can be seen from Table 5.1, all participants reported using more than one application, except for the application developers and Luke, who dropped out of the study after only completing the field reports. Not all participants use locative media in the same manner, complexity, or intensity. Some participants use locative media infrequently or for utilitarian purposes, while others describe using a range of locative applications with regularity and deep engagement. In the findings to be discussed, examples are drawn from as wide a selection of participants as possible, however participants who use locative media with more regularity or with deeper engagement are quoted more often due to the richness of their responses. This is not a limitation, rather it reflects the different ways people use and engage with locative media.

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[2] Parker attributed features to Tagwhat that I was unable to verify. It is possible such features were available in the past or that Parker identified the wrong application. Parker would not reply to subsequent communications from the researcher for clarification. As the functionality he describes is available in other applications the name he used is not of critical importance.

5.3   Locative Media Applications Reported By Participants

Participants reported using 44 different locative media applications. Screenshots of most of the applications are provided in Appendix E. All of the 44 locative media applications participants reported using are summarized in Table 5.2. Not every application reported used by a participant was used equally or necessarily extensively. Yet including all applications demonstrates the diversity of locative media that people are currently using. Table 5.2 is also useful to provide an explanation on the nature of the applications that will be discussed throughout this and subsequent chapters.

The focus of the descriptions in Table 5.2 and throughout this dissertation are on applications' geolocative and place-related features. Locative media applications are developed to facilitate a single, dual, or multiple main purposes. For example, the applications Runkeeper and Strava are fitness applications designed to encourage participants to maintain and improve their fitness routines. To support this overarching goal, other actions, such as geosocial networking or reviewing, are also available. Other applications are more multifaceted, such as Facebook, and facilitate a range of behaviours, some unrelated to geolocative functionality or place. Applications are categorized in Table 5.2 based on their dominant place-related focus as identified in the locative media typology I devised and presented in Chapter 2, Section 2.4.3.

The web address of the application's companion website is provided if one exists (not all of them have one, in such cases the link given is to the application's listing on Apple App Store or Google Play). Unless otherwise mentioned, all applications, are available for free to download and use on Android and Apple mobile devices. These are the two dominant mobile operating systems in the North American market; no participant indicated they used any other devices, such as by Windows or BlackBerry. Of these 44 applications reported by participants, all are accessed from their mobile device, except for those accessed via a dedicated GPS in-car device. GPS in-car devices, such as those by Garmin or TomTom, are devices that are purchased and then mounted in one's car that offer navigation aids as well as business and point of interest finder services. Despite the different manufacturers, these applications do not differ meaningfully and so are grouped together for this dissertation as "GPS in-car". Similarly, for geocaching and letterboxing there are multiple applications available to facilitate this behaviour, but with nearly identical feature sets – even participants rarely name the application but instead

refer to the practice. For clarity, this dissertation follows the practice of participants and uses the terms "geocaching" and "letterboxing" as umbrella terms for the multiple applications.

Table 5.2: Locative media applications reported by participants

Locative media applications are listed in alphabetical order with their typology category, a brief description of relevant geolocative and place-related features, web address, and participants who reported using it.

Application	Category	Description and Web Address	Participants Reporting
Airbnb	Commerce & Marketing	Users can view or create proximal or remote private room listings, book rooms, and plan and share itineraries. https://www.airbnb.com/mobile	Alex
AroundMe	Commerce & Marketing	Users can find businesses near their location filtered by type of business. http://www.aroundmeapp.com	William
Clio Cloud Conference App	Coordination, Communication, & Safety	Made for attendees of a legal software conference, Clio Cloud, based on a template by application provider, Doubledutch. Users can receive geotargeted information about the conference venue and services and participate in live back-channel chat based on room. http://doubledutch.me	Frances
CodeRunner	Location-based Game	Users of Apple devices can play an interactive game, where the application overlays an espionage theme to players' proximal physical world, businesses and points of interests near players become elements in the game. http://www.coderunnergame.com	Kevin
Facebook	Geosocial Networking	A social networking service where users can check into a location, post a status update or photograph of a location with geotags, click on location information links, provide commentary on location description pages, and comment on friends' check-ins or place-related content. https://www.facebook.com	Alex, Bernard, Evan, Frances, Heather, Jacy, Mark, Parker, Quinn
Findery	Place Discovery	Users can view or create commentary or post photographs about locations near them or from remote locations. Posts generally include historical descriptions, trivia, or personal experiences or feelings about locations. https://findery.com	Jacy, Luke, Zoey
Find My Friends (a.k.a. Find Friends)	Coordination, Communication, & Safety	Apple users can allow their device to automatically share their location in real-time with friends, users can also view friends' (who are also using the app) locations. https://support.apple.com/en-us/HT201493	Tricia
Foursquare	Social	Users can view proximal business recommendations and	Alex, Dave,

	Recommendation & Navigation	reviews from friends and others users. Users can also add locations into Foursquare's database along as well as write reviews and upload photographs of locations. (Foursquare previously had check-in and game features which were transferred to Swarm.) https://foursquare.com	Evan, Frances, Kevin, Mark, William, Zoey
Geocaching	Location-based Game	Users plant boxes or caches of small trinkets in the physical world and post its rough location, clues to find them, and descriptions about locale (these often include sites of historic or scenic interest). Other users then search for caches and post their findings in online logs. Participants reported using the official application, Geocaching, in its free version which has limited listings, and c:geo, which is free and includes all listings. https://www.geocaching.com/mobile http://www.cgeo.org	Ian, Vera, William
Glympse	Coordination, Communication, & Safety	Users allow their device to automatically share their location in real-time to friends and users can view friends' (who are also using the app) locations. http://glympse.com	Alex, Evan
GPS in-car	Wayfinding & Transportation	Users purchase and then mount a single-use device in their car that provides global positioning satellite location identification and customized wayfinding aids. Users can also search a static database for proximal businesses and points of interest. Leading manufacturers include Garmin, TomTom, and Magellan.	Bernard, Cathy, Frances, Ian, William
Google Fit	Fitness	Users can track fitness routes and physical performance for fitness goals. https://fit.google.com	Bernard, Parker
Google Location History	Personal Efficiency & Organization	Users can opt-in to view their location history in a list or map based interface. https://www.google.com/maps/timeline	Alex, Mark
Google Maps	Wayfinding & Transportation	Users can view their location on a map and receive map-based, written, or audio step-by-step driving, walking or public transit directions. Users can also see proximal user generated listings of businesses and points of interest. Users can add locations to Google's location directory, submit corrections, or provide commentary or photographs. https://www.google.ca/maps	Alex, Bernard, Cathy, Evan, Frances, Heather, Mark, Parker, Quinn, Tricia, Vera, William, Zoey
Grindr	Geosocial Networking	Users can search for nearby gay and bisexual men interested in socializing, dating, or sex. http://www.grindr.com	Evan
Groupon	Commerce &	Users can search and purchase proximal products and	Tricia

	Marketing	services often with special deals and promotions. https://www.groupon.com/mobile	
Ingress	Location-based Game	Users play an interactive science-fiction themed game against other collocated players (not in real-time) by interacting with proximal points of interest. https://www.ingress.com	Alex, Frances, Kevin, Zoey
Inspired By...Map	Place Discovery	Users can view or create map-based points of interest, textual and video descriptions and artistic interpretations of sites of interest. Made by Toronto community arts organization, East End Arts. http://eastendarts.ca/inspired-by-map	Natalie
Instagram	Art and Geosocial Networking	Users can upload, perform image altering, and view georeferenced photos. https://www.instagram.com	Alex, Bernard, Evan, Heather, Mark, Parker
Letterboxing	Location-based Game	Similar to geocaching but with a focus on rubber stamps left in the box instead of gifts. The participant discussed using two letterboxing applications: AtlasQuest and Boxfinder. http://www.atlasquest.com http://agiletortoise.com/boxfinder	Vera
LCBO Mobile App	Commerce & Marketing	Users can search for liquor stores run by the Liquor Control Board of Ontario based on their location. http://www.lcbo.com/content/lcbo/en/pages/app.html	Quinn
Narratives[3]	Art	Users can view or create proximal videos with a focus on capturing experiences of impressions of users' locations. http://www.narrativesapp.com	Rob
Next TTC	Wayfinding & Transportation	Users can view the real-time physical location of the nearest Toronto public transit (TTC) bus or streetcar and the planned arrival time of vehicles and route schedules. https://play.google.com/store/apps/details?id= com.sinkpoint.nextTTC	Evan
OpenTable	Commerce & Marketing	Users can search, view listings, read reviews, and book tables at proximal restaurants. Formerly called TopTable. http://www.opentable.com	Cathy
Parallel Kingdom	Location-based Game	Users play a multiplayer online role-playing game with a fantasy themed virtual world overlaid on players' proximal physical world. Users claim game territory based on their physical location. Basic game play is free. http://www.parallelkingdom.com	Parker

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[3] As of November 2016, Narratives was still in limited beta release.

Pixifly[4]	Art	Users can view public, proximal, geocoded photos on Flickr on their Apple mobile device. http://www.pixifly.com	William
Queerstory	Place Discovery	Users can view by proximity a series of textual and video descriptions of key locations in Toronto's queer history through factual descriptions and artistic interpretation. http://www.queerstory.ca	Oliver, Susan
Realtor.ca	Commerce & Marketing	Users can view proximal real estate and rental listings in Canada as provided by the listing service MLS System. Users can also view assessments of how walking-friendly a location is and demographic information. https://www.realtor.ca/Residential/Mobile.aspx	Tricia
RocketMan	Wayfinding & Transportation	Users can view the real-time physical location of the nearest Toronto public transit (TTC) bus or streetcar and the planned arrival time of vehicles and route schedules. http://rocketmanapp.com	Quinn
Runkeeper	Fitness	Users can search, view, follow, and share running, walking and cycling routes, provide route commentary and photographs, track their routes and fitness levels in real-time, and develop and share fitness goals. https://runkeeper.com	Frances, Tricia
Strava	Fitness	Users can search, view, and share running and cycling routes, provide commentary and photographs of routes, track routes and fitness levels in real-time, and share fitness goals. https://www.strava.com/mobile	Heather
Swarm	Geosocial Networking	Users can check into locations and provide optional commentary or photographs, earn points and badges, and see their friends' check-ins. Integrates with Foursquare for viewing and to write location reviews. https://www.swarmapp.com	Alex, Dave, Frances, Zoey
Tagwhat	Social Recommendation & Navigation	Users can find businesses or points of interest near their location by category and view or write reviews and ratings. http://www.tagwhat.com	Parker
Tinder	Geosocial Networking	Users can search for people nearby interested in socializing, dating, or sex. Available in a free version and a paid version. https://www.gotinder.com	Evan
TripAdvisor	Place Discovery	Users can find businesses and points of interest near their location or remotely by type of business. They can also view or write reviews and ratings, as well as append photographs.	Bernard, Heather, Tricia, Vera, William

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[4] As of October 2016, Pixifly had ceased operations and the application was shut down.

		https://www.tripadvisor.ca	
Twitter	Hyperlocal Information	Users can view or write short news or commentary about a location or event or search for items within a specified proximal distance or by location-related hashtags. https://twitter.com	Alex, Frances, Heather, Mark, Parker, Quinn, William
Uber	Commerce & Marketing	Users can hail and view locations of cars for hire based on their location. After ordering a car, users can track its location, pay for their service, and rate the driver. https://www.uber.com	Alex, Cathy, Evan
Waymarking	Place Discovery	Users can create, view, and collect user generated content about sites of interest near them. Waymarks generally include history, trivia, or personal accounts related to the location. http://www.waymarking.com	Jacy
Waze	Wayfinding & Transportation	Users can view and report real-time, proximal traffic conditions and road hazards. https://www.waze.com	Tricia
Weather Network	Hyperlocal Information	Users can view proximal or remote weather reports and location-based weather alerts. http://www.theweathernetwork.com/weather-apps	Bernard
Whisper	Coordination, Communication, and Safety	Users can view and post anonymous, proximal messages, often of a confessional, gossip, or highly personal nature. https://whisper.sh	Evan
Yellow Pages	Commerce & Marketing	Users can find businesses near their location by type of business. Users can also view or write reviews and ratings as well as append photographs of businesses (although such content appears to be seldom available). http://www.yellowpages.com	Zoey
Yelp	Social Recommendation & Navigation	Users can find businesses near their location by type of business and view or write reviews and ratings, as well as append photographs of businesses. https://www.yelp.ca	Alex, Evan, Heather, Mark, Parker, Tricia, Vera, William
Zombies, Run![5]	Fitness	A fitness application for running, jogging or walking, with a supernatural adventure theme that uses fictional narratives to encourage users to meet fitness targets. The application uses players' location to determine narrative elements and delivery of game rewards. https://zombiesrungame.com	Vera

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[5] The Zombies, Run! application will henceforth be spelled without a comma or exclamation point for clarity.

This list does not necessarily represent an exhaustive account of all geolocative applications that a participant may use or used in the past, as participants were asked to self-report on the locative media they used. Nonetheless, based on the researcher's monitoring of the field, this list does represent both the spectrum of locative media applications available and the most commonly used applications as well. Of the locative media typology I posed in Chapter 2, Section 2.4.3, only the category of Health and Disability was not reported used by participants.

Of the 44 applications reported used by participants, 25 of them were reported used by only one participant. Several of the applications reported used by only one person, however, present functionality very similar to other applications. Specifically, Yellow Pages and AroundMe are very similar to Yelp, Find My Friends to Glympse, Next TTC to RocketMan, and Runkeeper to Strava. The ten applications most reported used by participants with their corresponding number of participants reporting are as follows: Google Maps (13), Facebook (9), Yelp (8), Foursquare (8), Twitter (7), Instagram (6), TripAdvisor (5), GPS in-car (5), Swarm (4), and Ingress (4). This is not surprising given that these applications have large user bases.

5.4   Overview of Locations Accessed and Context of Locative Media Use

The location where locative media is used does not necessarily equate with the location the user requests information about, although there is often overlap. For example, a person may look up information about a nearby location while on the street walking in the general vicinity. Another example is people using locative media at home to view the location of friends or family members who are located elsewhere.

Locative media was used by participants to access information about a large array of the types of locations encountered in everyday life and travels. Overall, participants were most apt to report using it for businesses, predominantly restaurants and cafés. Yet they also reported accessing information about locations ranging from the small (e.g., a mural, dry cleaner) to the large (e.g., city, region), from the familiar (e.g., workplace, campus) to the new (e.g., monument, festival ground), and from the domestic (e.g., home, neighbourhood) to foreign (e.g., hotels,

airport). Table 5.3 below summarizes the locations participants were looking for information about when using locative media, the applications used for this, and the associated participants.

Table 5.3: Locations participants accessed information about via locative media

Locations participants accessed information about via their locative media applications organized by type of location with corresponding locative media applications and associated participants.

Locations	Locative Media Used	Participants Reporting
Businesses – General		
Dry cleaner	Yelp	Mark
Fitness studio	Facebook, Swarm, Twitter	Frances, Parker
Retail store	Foursquare, Tagwhat	Alex, Mark, Parker
Workplace of participant	Instagram, Waymarking	Bernard, Jacy
Businesses – Food and Drink Services		
Café	Facebook, Foursquare, Findery, Instagram, Swarm	David, Frances, Heather, Luke, Mark, Zoey
Fast food or takeout	Findery, Foursquare, Twitter, Yelp	Luke, Mark, Tricia, William, Zoey
Grocery or liquor store	Foursquare, LCBO Mobile App	Alex, Quinn
Nightclub or bar	Facebook, Foursquare	Alex, Heather
Restaurant	Facebook, Foursquare, Groupon, Tagwhat, Yelp	Alex, David, Evan, Frances, Heather, Mark, Parker, Tricia, William
Culture and Heritage Sites		
Church	Findery, TripAdvisor	Jacy, William
Convention centre	Clio Cloud Conference App, Facebook	Frances, Heather
Concert hall or theatre	Foursquare, Instagram	Alex, Frances, Heather
Festival ground or special event location	Instagram	Alex, Bernard
Historic building	Foursquare, Instagram	Alex, Zoey
Monument or commemorative statue	Ingress, Instagram, Foursquare, Letterboxing, Twitter	Alex, Bernard, Frances, Vera
Museum, art gallery, or science centre	Facebook, Findery, Foursquare, TripAdvisor	Jacy, Mark, William, Zoey

Outdoor artwork	Findery, Instagram	Bernard, Jacy
University	Facebook, Letterboxing, Tagwhat, Twitter	Heather, Parker, Vera
Geopolitical Entity		
City	Airbnb, Facebook, Foursquare, Grindr, Ingress, Letterboxing, Pixifly, TripAdvisor, Uber	Alex, Evan, Frances, Heather, Mark, Vera, William
Country	Google Location History	Alex
Region, province, or state	AroundMe, Pixifly, Instagram, TripAdvisor	Bernard, Heather, William
Parks and Natural Areas		
City park	Foursquare, Geocaching, Instagram	Bernard, Evan, Ian, Zoey
Provincial park or regional conservation area	Letterboxing	Vera
Residential Neighbourhood		
Home of participant	Find My Friends, Instagram, Narratives, Uber, Whisper	Alex, Bernard, Evan, Rob, Tricia
Home of friend or family member	Instagram	Bernard
Neighbourhood of participation	Findery, Instagram, Realtor.ca	Evan, Jacy, Heather, Tricia
Transportation Centres and Routes		
Airport	Foursquare, Instagram, Swarm	Alex, Frances
Bridge	Findery	Jacy
Public transit	Next TTC, Parallel Kingdom	Evan, Quinn, Parker
Street – highway	AroundMe, GPS in-car, Google Maps, Waze	Bernard, Ian, Tricia, William
Street – urban centre	Glympse, GPS in-car, Google Maps, Ingress, OpenTable, Strava, Twitter, Waze	Alex, Bernard, Cathy, Heather, Ian, Parker, Tricia, William
Train station	Foursquare	Alex, Frances
Walking or cycling paths	Geocaching, Strava	Heather, William

It is interesting to note that when assessing the locations participants described using locative media which could be deemed to entail a place (i.e., a meaningful location) not only was there a diversity of types of locations, but the scale of the places identified ranged from a tree in a park to an entire building, and from a neighbourhood to a city. This is consistent with how Tuan scopes place (1977). This study also found that participants had a sense of place for heritage and cultural sites, domestic spaces, religious buildings, or other special types of places, but also for the everyday places people traverse and occupy. Places found in this study include the banal, such as train stations and bus stops, and the commercial, such as restaurants and cafés. This finding indicates that a priori assumptions about what entails a place should be avoided and instead replaced with an open conception of place.

Although the context of use was not specifically asked of participants, in many instances the participants provided such details. The main context of locative media usage were during leisure time (i.e. weekends, after work, vacation), liminal moments (e.g., the waiting time before a social or business meeting), travelling and in transit, mealtimes, workouts, shopping, or running errands. All participants described using locative media in their hometown and home region (i.e., the geographic areas around their workplace, school, or home). Participants also reported using locative media during their domestic and foreign travels – both for business travel (specifically, Alex and Frances) and recreational (Ian, Mark, Vera, William). Roaming fees, however, were mentioned by several participants as curtailing their travel use despite participants' expressed desire to be able to use locative media in such instances.

As one can discern from the above account of locations accessed, contexts of use, and applications used, participants' use of locative media is varied. In the next section, I explore the medium characteristics of locative media as demonstrated by participants' use. This offers insight into the nature of affordances and features of locative media, which is then discussed in the subsequent section on user behaviour.

5.5   Locative Media Characteristics

To get a sense of how participants were using locative media to distinguish it from other media, Baym's seven concepts for differentiating media (2010) is a useful base. For a description

of her concepts, please see the introduction. I determined, based on my prior research, that of Baym's seven concepts, it is mobility, reach, and interactivity that differentiate locative media from other media with regard to place. To Baym's criteria, I also added the vocality of a medium, that is, the number of content authors which can be viewed or heard within a medium simultaneously or in quick succession. Also, by combining mobility and reach, geographic relevance can be offered, which can also be considered a way to differentiate media. In the following passages, I highlight how participants use and value these criteria of mobility, reach, geographic relevance, interactivity (in its three forms), and vocality. The following sections briefly examine these four criteria, not in an attempt to prove that they are differentiating criteria (as this was not a focus of the research), but rather to provide background and depth on the nature of the medium and the characteristics participants use and value.

5.5.1 Mobility and reach

Baym's media concepts of mobility and reach (2010) are combined here as the two have such an overlap when applied to locative media that it is difficult to separate them. Mobility refers to the physical portability of the medium, while reach refers to the ability for content to be accessed across geographic distances and populations. With regard to mobility, although there has been an industry trend towards larger smartphones over the past few years, the devices of participants are small enough that participants report carrying them on their person throughout their day. The portability of the devices is often something of a given, as participants mention being able to use them when and where they need to, without referring to this ability specifically.

Participants reported accessing locative media at a variety of different locations entailing a considerable geographic reach in their home neighbourhoods, workplaces, and during their local and international travels. They report using it both in urban settings and semi-wilderness areas (e.g., provincial parks). Several participants mentioned using it while on vacation abroad (from locations as close as nearby foreign metropoles to mid-Atlantic islands). Although most participants noted their dislike for roaming fees, they also mentioned relying on free Wi-Fi connectivity (as provided by hotels or food services locations, for instance) or purchasing foreign coverage plans to extend their device's reach to their foreign travel locales.

It is the mobile device's easy portability that enables one participant, Tricia, to use locative media throughout her day for social coordination (discussed further in Section 5.6.3) and to ensure family safety. Tricia uses locative media, specifically Find My Friends, as a way to keep in touch and track the location of her family members and report to them her own location. This ability is important to Tricia, particularly with regard to her young daughter, who has become old enough to have increasing independence from her parents. Tricia insists her daughter carry her own mobile device with Find My Friends installed whenever she goes out on her own so that Tricia can monitor where her daughter is at any given moment.

An extensive reach of network connectivity, combined with mobility, enabled participants to access content via locative media when and where they want it. This ability to access locative media across a wide range of locations is not only valued by some participants but has also affected their behaviour in new ways, as Alex expresses regarding how his travel preparations no longer include pre-booking hotels:

> It's okay to roll into a city and not have a [room] reservation and just open up the Airbnb app and see what's around you and just book a place[6] instantly. Which is pretty cool.... What's nice is that if you're doing a multi-city trip in Europe or something and you're on a train on the way to Paris or something, Paris is a large enough city that there's enough people that have the instant booking feature [of Airbnb app] turned on so if you didn't have a place when you got on the train, that you'll have one by the time you get off it.

Alex's comment also demonstrates another component of reach that needs to be present for locative media applications to function, that is the geographic reach of the content, not only in terms of its accessibility, but also its topicality. Content reach, as I am using the concept, refers to the extent that there is content available pertaining to a number of geographic locations. So for the Airbnb application to function as Alex wants it to, there needs to be sufficient people in Paris also using it (to list rooms available) with the instant booking feature enabled. Content reach is also necessary for many of the applications. For example, social recommendation applications would have limited utility if they covered only a small geographic area.

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[6] The term "place" has many uses in general parlance beyond the more academically narrow definition used elsewhere in this dissertation. Participants' quotations, however, are unaltered so their wording is maintained.

Alex's comment also highlights the ability of locative media to have continuous connectivity even while moving. This has enabled step-by-step directions while travelling by foot or car as evidenced by participants' use of Google Maps and GPS in-car applications. Continuous connectivity throughout one's daily travels also enables people to have the locations they visited automatically tracked and recorded, for example by Glympse or Google's Location History. Some participants indicated they appreciate this personal mobilities record as a way to keep track of their activities and special places visited. Continuous access, combined with the widespread reach of content, also enables location-based games, such as Ingress. Ingress' reach is so extensive that Alex proclaimed, "The world essentially becomes the game field, like literally the entire world."

The ability to have mobility, constant connectivity, and content reach enables people to be able to search for and find information about new spaces they may be in. Cathy describes using OpenTable to find a restaurant near her location and then using it to "make a reservation while walking towards it." This can also be seen with Heather stating she likes to use "the Strava app to see where would be a good spot to go jogging or running", Mark looking for a souvenir store for his family when visiting another city, or William viewing georeferenced photos of his family and friends while on a trip to Pennsylvania. Parker also mentions playing a location-based game, Parallel Kingdom, while commuting, and Vera takes her device to wild areas of Ontario for her letterboxing hobby.

Participants also reported challenges that limit the reach and mobility they want from their devices, such as the length of battery charges, the availability of network infrastructure in rural areas, wilderness, and developing countries, as well as roaming fees. Despite these challenges, participants reported using locative media quite extensively throughout their daily and special occasion travels.

5.5.2 Geographic relevance

Although not identified by Baym (2010) as one of her media differentiation criteria, geographic relevance arises out of her concepts of mobility and reach. Geographic relevance is the degree to which the topical geographic footprint referred to in returned information matches

the geographic location or conditions of the user (De Sabbata & Reichenbacher, 2012). The form most used in locative media and most valued by users is spatial proximity (Mountain & MacFarlane, 2007). Spatial proximity, in this usage, refers to how relevant any returned information is to the geographic location of the user. No participants reported any other form of geographic relevance other than spatial proximity.

Geographic relevance can be considered an essential building block of locative media. Without being able to identify the location of a user and deliver geographically relevant information, the most basic functionality of locative media, wayfinding, would not be as feasible. Alex describes using such aids regularly on his mobile device to find locations as, "I usually don't know where the exact building is so I'll use Google Maps to get closer to figure out the exact location of where it is." Most participants described using locative media to help them access geographically relevant information useful for their daily lives, such as finding proximate points of interest and businesses, and reported this as being very helpful to them. An example of this is Tricia's use of Waze while driving to receive real-time alerts of road conditions ahead of her. In one instance, Tricia related an incident where she was travelling during a winter blizzard, and geographically relevant and timely information helped her avoid a possible accident.

Tricia's accounts of her use of locative media also involve another type of scenario in which many participants identified relying on the geographically relevant information available via locative media, that is, when in a new or unfamiliar locale. As Tricia points out with regard to using the application Yelp:

> If I'm in an unknown neighbourhood, I mean, I might not even know where to drive through to find any kind of restaurant or store or anything like that. If I open up Yelp, I can search based on my current location and it'll show me all the coffee shops in the area, all the restaurants nearby. And then, it also will give me a rating on each of them and this is a great place, people really like it, I think I'll feel comfortable there. And just even to know which main streets to head to, to have a whole bunch of places to pick from. If you're in an unfamiliar neighbourhood, how [else] do you find them?

Other participants noted the difficulty of finding such information before the advent of locative media, with two participants noting that the only other way to get such information was to ask people, while others noted that they just would not have access to it otherwise. William notes that geographically relevant information may have been available before, but through

locative media it is now much more convenient: "We don't have to just be beside people to find out useful information. You can get what you need where you need it."

Appreciation for the geographic relevance of locative media is not always the result of pre-planned searches for information, but may result from a serendipitous discovery as the result of using an application. For example, Mark reports using Foursquare when visiting an unfamiliar city and being alerted by the application that he was near a museum which he had never heard of before. It sounded interesting to Mark, so he consequently visited and reported enjoying it.

The potential of geographically relevant information has not gone unnoticed by marketers and advertisers due to the ability to deliver advertisements or promotions when and where applicable. The resulting increase in such corporate content on locative media concerns and perturbs some participants, while others find that it is a necessary condition of having free access to an application. Some participants expressed a begrudging appreciation for geotargeted advertisements, as they are more useful to their immediate needs than general advertising. Alex expresses enthusiasm for geotargeted commercial content: "I think geolocated searches and advertising and all that kind of stuff, it's pretty cool. It's definitely more relevant." The tension between such commercialization of digital space and decommodification efforts is discussed further in the following chapter, Section 6.2.2.

5.5.3 Interactivity - technical, textual, and social

Baym (2010) considers the interactivity of a medium to be the degree to which it enables social (interacting with other people), technical (interacting with the medium's interface), or textual interaction (interacting with the text available via the medium). With locative media, we can see all three forms of interaction. In some locative media applications, all three forms of interactions blend together. For example, in the location-based game Ingress, participants reported using the application to communicate player actions to achieve team goals (social interaction), to use the application's affordances to conduct specific game play elements (technical interaction), and leaving tips or comments (textual interaction). Participants had much to say in relation to the social, textual, and technical interactions they have with locative media, consequently only the most illustrative examples are included below.

5.5.3.1 Technical interactions

With the exception of the participants who are also locative media developers, the form of technical interaction with locative media that participants have is with the front-end or interface of applications. Interactions range from the quick and simple, such as tapping on a button to activate a function, to the complex and multiple-step, such as adding a new listing into an application's database.

One of the technical interactions most commonly described by participants was using an application's map interface to zoom in or out to receive directions to a specific location. Quinn provides an example of how useful such a simple interaction can be by describing her use of a public transit application that provides real-time updates: "You can see on a map exactly where the vehicle is that you're waiting for". Along a similar line, Tricia reports using the application Find My Friends as "My parents are traveling by car from Ottawa to Mississauga for a visit. I've been tracking them on Find My Friends to figure out when to have dinner ready for their arrival. It's saved multiple phone calls and texts because I could just take a quick peek at their location on the map."

Tricia's description of the traffic application Waze also provides a good example of the multiple types of interactions that a locative media application can offer:

> You can give a thumbs up, saying yes, the car's still on the shoulder or you can click an X to say no, that's no longer a hazard, it's been removed. So, as we're approaching this icy road, it [Waze] said this is coming up, is this still the case, so we clicked yes. So we could see that there were five or six different Wazers who had all reported it and so it shows up on your screen, you can see what's coming.

Participant interactions with locative media interfaces were not all positive. Many participants reported extensive complaints about the usability of locative media or mobile devices generally. Some participants, such as Evan and Mark, commented on their dislike of writing long textual passages on their mobile devices when inclined to review or comment on a location. Mark prefers to use Twitter with its 140 character limit opposed to other applications for his place-related commenting as, "I didn't want to write a long paragraph, just something short."

For further discussion of technical interactions see the following sections, 5.6.1 Wayfinding, 5.6.2 Checking in, 5.6.4 Fitness, 5.6.5 Play, 5.6.6 Information seeking, 5.6.7 Personal history, 5.6.8 Creative expression, and 5.6.9 Reviewing and rating.

5.5.3.2 Textual interactions

Textual interactions via locative media can be either through finding and viewing existing content (image or word based) that an application provides or by creating or editing texts in the application. Textual interactions were widely reported by participants and covered the full gamut of such interactions possible. For example, various participants reported enjoying viewing the media texts, such as Bernard viewing geotagged photographs posted in chronological order on Instagram, while others report creating new texts. Some participants described writing full reviews of locations or sharing helpful tips. Frances is an example of someone who avidly creates such texts as "it's more to help other people, to help myself as well." Jacy provides an explanation of the type of content she views on the application, "If I'm using something like Findery or Waymarking, I'm reading things posted by other people about what's in the area and their feelings about it or sometimes it's their experiences in that area, which is really cool."

Although most participants frequently described using and valuing the texts provided via locative media, many of them also raised concerns over the accuracy, completeness, or timeliness of information provided by locative media applications. Jacy describes the case with Findery having outdated information about a nearby location: "It was gone, so nobody was even updating the app [Findery], so we did." A common complaint amongst participants is that some content, particularly business reviews, is faked by unscrupulous companies or individuals (see Luca & Zervas, 2016) this and requires a mental process of determining what texts are real and what are not. William describes the problem as he sees it: "They're a bit harder to spot, the good [fake] ones. Because they get people that have taken marketing and try to mimic." William reads a variety of reviews to discern the overall genuine sentiment and weed out the fake reviews.

For further descriptions of participants' textual interactions with locative media, see the following sections, 5.6.6 Information seeking, 5.6.7 Personal history, 5.6.8 Creative expression, 5.6.9 Reviewing and rating, and 5.6.10 Social navigation.

5.5.3.3 Social interactions

Locative media, like many current mobile applications, often offer features to facilitate social interaction with other users. The users may be known to others, and in such cases the application has features that allow users to add another person as a "friend" to the application's social network. It is also possible through some locative media applications to see the profiles and content provided by strangers and to provide feedback ("liking" a post for example) or comments to the stranger. Social interactions can be simple, as with Tricia describing virtually "waving" to other drivers via Waze or Frances indicating "good work" to another cyclist via Runkeeper, or they can be more involved. Rob provides an example of the range of social interactions available via his locative media application, Narratives: "Knowing where people actually are or artefacts that are left behind of themselves is very interesting, but also at the same time, there's this thing that I like about the ability to be social." Interactions can be in-depth, such as threaded discussions or comments on posts. As reported by participants, location-based games, such as Ingress and Parallel Kingdom also enable extended, in-depth social interaction. Parker describes playing Parallel Kingdom with a friend and "battling against him" directly through gaming elements.

Direct social interaction with known people via locative media was described by several participants, with Alex and Frances being the two most active in this regard. Alex notes "Foursquare and Swarm are very much [for interacting with] my friends, in terms of what they like to do or where they like to hang out and stuff. To be able to share that with them." Similarly, Frances uses Swarm to keep track of where her extensive social network are via their check-ins on the application, "It's kind of fun to see where people are and what they're doing so I like that….I figure it just gives me a sense of connectivity with other people."

On the other hand, locative media can also facilitate social interactions with strangers, both directly and indirectly. Through her use of Findery, Jacy can see when content she has uploaded has been viewed and enjoyed by others (thus indirect social interaction) and occasionally receives comments or questions from other, unknown, users - as she describes:

> I feel gratified when I can contribute information that might be useful to others and pleased to see that others have discovered some of my notes and comments on Findery about various locations… I've had some nice comments on Findery and people directing me to other things that I can go and look at that might

interest me. It's actually a really nice interaction. It does sort of make me feel more connected to others and helps with exploring and discovering things.

William's experience with the geocaching application is similar: "I really like the idea of playing this basically hide and seek game with people that I'll probably never meet, but we can communicate with each other through these little messages." For these participants, locative media interactions lead to greater feelings of social connectivity even amongst people they do not know and may never physically meet.

Social interactions are not only limited to entirely online interactions, but may lead to physical get-togethers (discussed further in Section 5.6.3). Frances has also used the check-in feature of locative media applications to see who else she knows at a location "if a whole group of people are at the same event, it's like, oh, I didn't realize so and so would be here and go and meet them as well." Location-based dating applications have launched to help facilitate dating or casual sexual encounters among physically co-present users. Evan has used such locative media to meet strangers through locative dating applications, as he describes:

I used it [Grindr] to meet people, for hook-ups and it was great because it was a great way to meet people in different locations that I might not have expected there to be many gay people. I've been surprised sometimes by how many people are on the app in an area. So, it's really helped.

Various participants described posting content regarding their whereabouts to a locative media application as a way to share details of their lives with their social network. Bernard is a reluctant user of social media, but he uses Instagram to keep in touch with his adult children. Parker describes how his posts on locative media, specifically Facebook, have sparked discussion among his social network:

Some people who disagree with me. Some people agree with me and they say, oh, this is a good place, I've tried it. Other people write, no, you have to try this other place.... It does make me feel more connected because the people sometimes relate well to food and talk to me. And it's an easy way to strike up, start up conversation. So yeah, it's good. It makes me feel less awkward.

For further descriptions of participants' social interactions with locative media, see the following sections, 5.6.3 Social coordination and 5.6.10 Social navigation.

5.5.4 Vocality

The degree of vocality of a medium entails its ability to enable the presentation of content by various content creators or authors simultaneously or in rapid succession – a concept not listed by Baym (2010), but which I consider important nonetheless to understanding the nature and appeal of locative media. Whisper is one locative media application for which a participant expressed enjoyment of the many voices readily accessible on it. Whisper allows users to post anonymous comments or secrets about their lives and to geolocate those posts. Readers can then view "whispers" of strangers near them. Evan expresses why he enjoys reading these:

> Whisper provides anonymous little tips – not tips – comments about life in a given area. I like reading about other people. It gives me fragments of the life of people around me. One of the reasons that I like Whisper is it lets me see into the mind of the people and the place without necessarily seeing their images… You really get right straight into the minds of people and their experiences with places, like real honesty, more so than I've found before.

Participants were most apt to indicate they appreciated multivocal content provided by locative media when discussing their appreciation for people's reviews and social recommendations services (as discussed in Section 5.6.10). William describes the appeal for him of such content:

> It's more user generated, whereas a traditional source of information about a destination is written by some organization or institution or an individual working for an institution that, like, who knows how long ago they wrote that about that place, right? Whereas when it's user generated information, it's a lot more up-to-date because it's open to anybody.

Various participants commented that they appreciate the plethora of opinions or comments they can readily receive via the locative media applications they use, such as Foursquare and Yelp. Frances notes that when looking to find a new restaurant or store near her, she reads a variety of posts or reviews by other users to assist her in making a decision. Alex also reported doing this and noted that this collective intelligence has helped him avoid unpleasant experiences with businesses, but has had the downside of removing elements of surprise from discovering new finds himself.

Participants also noted that they appreciate the ability of locative media to not only present the official, corporate messages but also to present alternative voices and opinions. This topic is discussed further in the upcoming next chapter, Section 6.2.3.

5.6   Participant Behaviours during Usage of Locative Media

In the preceding sections of this chapter, we examined the study's participants and applications. This section now combines these two entities to examine specifically participants' actions with locative media, that is, their behaviours. This provides a useful springboard for the following chapter to explore locative media use and sense of place and spatial counter dynamics. In both the field reports and interviews, participants reported different ways that they use locative media. As locative media overall offer a range of features, it was not surprising to see participants using locative media in a variety of ways. Some of these behaviours were discussed outright by participants, while other behaviours were identified by the researcher as the result of data analysis.

These behaviours were not predetermined prior to data collection. Instead, patterns emerged organically during data analysis and the data was recoded based on these newly identified behaviours. The following pages do not present an exhaustive list of all behaviours participants reported or that might be possible for locative media users, but instead represent the behaviours most often reported and as they pertain to place. In the paragraphs that follow, I provide an overview of the behaviours, as follows: wayfinding, checking in, social coordination, fitness, play, information seeking, personal history, creative expression, reviewing and rating, social navigation, and exploring and discovering. Some behaviours were coded but are not discussed in this dissertation due to insufficient evidence or as they did not pertain to place in a sufficiently meaningful manner: counter-mapping, diversion, geocoding, and utility. In addition, the category of geosocial networking overlapped considerably with the media characteristic of social interaction and is therefore not specifically addressed below. Similarly, creating place-related content (that is reviews and ratings, check-ins, or creative expressions) also overlapped considerably with the media characteristic of textual interaction, which is consequently not discussed as a new behaviour.

In the following pages, I introduce and contextualize participants' locative media behaviours, examine the types of behaviours, and then cover the corresponding motivations and value participants receive. Rather than list every instance of an item, the following passages provides an overview of findings through typical and contrasting examples. For transparency, the passages below organize the findings while minimizing the researcher's interpretation, so that readers may arrive at their own conclusions. The final paragraph in each section provides a brief interpretation to position the behaviour related to the research foci and as it is discussed in more detail in the subsequent chapter. Also for transparency, I provide a quotation for each point made below towards the goal of demonstrating corroborating evidence for my findings, while I also include contrary evidence if it was found.

The behaviours reported below are organized based on the most simple interactions with place first, followed by more complex interactions. Foundational behaviours (i.e., a behaviour upon which another behavior builds) are also addressed first. For an overview of behaviours, applicable participants, and associated locative media applications, please see Table 5.4 below.

Table 5.4: Behaviours participants engaged in while using locative media

Participants' behaviours are listed with associated participants and respective locative media applications. Behaviours are listed that entail the simplest interactions with place coming first followed by growing complexity.

Behaviour	Participants	Locative Media
Wayfinding	Alex, Bernard, Cathy, Evan, Frances, Heather, Ian, Mark, Parker, Quinn, Tricia, William, Vera, Zoey	GPS-in car, Google Maps (including Findery and LCBO Mobile App), Waze
Checking In	Alex, Dave, Evan, Heather, Mark, Parker, Zoey	Facebook, Foursquare, Instagram, Swarm, Yelp
Social Coordination	Alex, Evan, Frances, Heather, Parker, Tricia	Find My Friends, Glympse, Grindr, Swarm
Fitness	Bernard, Frances, Heather, Parker, Vera	Google Fit, Google Maps, Runkeeper, Strava, Zombies Run
Play	Alex, Dave, Frances, Ian, Kevin, Parker, Vera, Zoey	CodeRunner, Ingress, Geocaching, Letterboxing, Parallel Kingdom, Swarm
Information Seeking	Alex, Bernard, Cathy, Frances, Heather, Ian, Jacy, Luke, Mark, Frances, Parker, Tricia, Zoey	Airbnb, Findery, Foursquare, Google Maps, Instagram, Next TTC, OpenTable, Realtor.ca, RocketMan, Twitter, Uber, Weather Network, Yellow Pages, Yelp
Personal History	Alex, Frances, Jacy, Heather, Mark, Zoey	Findery, Facebook, Google Location History, Instagram, Swarm

Creative Expression	Alex, Bernard, Evan, Frances, Heather, Jacy, Mark, Natalie, Oliver, Parker, Rob, Susan, William, Zoey	Facebook, Findery, Foursquare, Inspired By...Map, Instagram, Narratives, Queerstory
Reviewing and Rating	Alex, Dave, Evan, Frances, Heather, Jacy, Mark, Parker, Tricia, Vera, William	Foursquare, Twitter, TripAdvisor, Yelp
Social Navigation	Alex, Dave, Evan, Frances, Ian, Heather, Jacy, Mark, Parker, Rob, Tricia, Vera, William, Zoey	Foursquare, Geocaching, Letterboxing, Narratives, Tagwhat, TripAdvisor, Yelp
Exploring and Discovering	Alex, Evan, Frances, Ian, Jacy, Oliver, Parker, Rob, Susan, Vera, William	AroundMe, Geocaching, Findery, Ingress, Inspired By...Map, Letterboxing, Narratives, Pixifly, Queerstory, Strava, Waymarking

5.6.1 Wayfinding

At its most basic level, any locative media application provides users with an indication of their location. Many applications offer a map interface with an icon to show the device's (and thus the user's) location. The earliest form of locative media applications was to take this information and offer users the option to enter in a desired future location and then provide either a visual route on a map or step-by-step directions (in audio or text format). Wayfinding is the term used for the ways people orient themselves in their physical world and find their way to their intended destinations. Unsurprisingly, most participants reported using locative media for wayfinding, predominantly via the application Google Maps.

Participants reported seeking directions for two types of locations – either for a location unfamiliar to them or for a location where they have a sense of the area but do not know the exact directions needed to get to their final destination. Bernard's comment is typical of the former usage scenario "[Google Maps] is useful when you are going to someplace you haven't been to before…. It'll give you the route and some idea of how long it's going to take." Alex's report on using Google Maps is more typical of the latter type of usage:

> When I'm going to a place and I'll know the general neighbourhood and so I'll just start heading in that direction [of his destination]. When I get closer, I usually don't know where the exact building is so I'll use Google Maps to get closer to figure out the exact location of where it is.

Through Google making its Maps service available to use through its application program interface (API), other applications such as Foursquare and Findery have embedded a Google

Maps feature to direct users to points of interests. This can be used for wayfinding to a location or for viewing points of interest plotted on a map. Jacy describes using Findery the latter way: "I looked on Findery to see what was nearby. It gave us a map with instructions to walk and see a giant mural… we followed the map, and it was cool because it showed us exactly where to go."

Another type of locative media application participants reported using for wayfinding was in-car GPS applications (such as TomTom and Garmin). The participants who reported using this for wayfinding describe using it in a manner very similar to how other participants described using Google Maps. Ian describes his usage:

> I usually just use them [his GPS device] if I am driving someplace where I know where I'm going but I really don't know how to get there, so I use them to give me the directions on how to get there… It gives you the address of a business or a friend's home or whatever and your shortest route at getting there.

Ian notes how helpful his in-car GPS has been, particularly in situations that might otherwise be problematic. He describes using it when travelling in a new location at night:

> We were in a town one time and my wife had wanted to go to a mall and we went there and then we came out and it was dark. It was hard seeing road signs, so we put the GPS [device] on and it got us right back to the hotel with no problem, whereas if we had been just reading road signs as we got to them, dear knows where we might have ended up.

Alex discusses why he prefers using Google Maps on his mobile device versus other wayfinding methods:

> Without it [Google Maps], it's awkward. You have to ask people for directions and the whole thing is that most people, even in a pre-Google Maps era, nobody really knows, beyond the places that they live or work, how to give directions. And to be honest even when someone's given me directions, I suck at listening to them. They'll say "turn left here and go past a mailbox and then turn right" and all that. I'd rather just have Google Maps. It's more reliable that way and it's simpler.

Beyond simply accessing linear directions, participants report using locative media to plan scenic routes, try new or alternate routes, or avoid undesirable conditions. Parker's comment here demonstrates this type of use: "I used Google Maps to help me plan my bike route across the path that I don't really know. And it was really helpful to guide me along in a safer manner, avoid the big streets and to avoid the uphill streets." The traffic application Waze also

has such wayfinding aids. Tricia is a frequent user of Waze; she describes how she uses it to plan routes selectively: "It'll gives me different options of how to get somewhere and what length of time it's going to take you to get there… I like to go the quickest way, so I'll just follow the directions on there." William uses his GPS in-car application to maximize a sense of adventure: "I like taking off-the-beaten path routes, because that's how you explore, find out new things and with GPS, I can always rely on never getting lost. That's what the GPS is. It's like that peace of mind, so that I can go off exploring." William, Frances, and Parker specifically noted that due to their use of locative media they no longer get lost.

Wayfinding may not be the most complex or perhaps meaningful behaviour that participants use locative media for, but it is certainly one of the most regular behaviours for these participants and one with clear utility for them. It also provides a degree of certainty of knowing that they have a ready means to find their way.

5.6.2 Checking in

The term checking in, within the context of locative media, refers to the user act of signalling to the application and one's network therein of one's presence at a specific physical location, such as a business, cultural, or recreation site (C. Smith, 2012; Frith, 2015). This is often achieved through a direct feature of the application, wherein the application determines the device's location and supplies a list of nearby points of interest from which users select the location they wish to indicate their presence.

Mark states that the main reason he checks in via locative media is to update his friends on his location and activities, as he mentioned regarding a time he used Facebook to check into special locations he was visiting in Toronto: "I was visiting the ROM and the AGO that day. I just felt like letting people know where I was." Parker also discusses that his motivation to check in is largely social, but adds that he also does it to help promote a friends' business (in this case a martial arts studio): "When I was going out to a friend's martial arts place, I would check in there. So people could know that I'm there. Just in a sense advertising the place."

Heather, Evan, and Alex also express that they often take a photograph of their location and post that as a way to share locations with their social networks. Rather than a distinct check-

in, they geotag the location of the photograph either through selecting the location from a pre-supplied list the application provides of nearby locations, or by using a folksonomy hashtag. Evan notes how he does this: "Sometimes I will give it the location that Instagram looks up, or other times I'll use a hashtag. So this [photo] was Rosedale Valley. I tagged it as that." Alex describes the value of adding geotagged locations to his photographs: "It's actually from the system that geotag versus you declaring that you were there. The app itself is lending itself to verifying that you were actually there."

In the examples of Mark and Alex's check-in behaviour we can see a locative media check-in serving as a social object to trigger social interactions and as a form of identity association and projection (discussed further in the next chapter, Section 6.5.3). Participants indicated additional motivations to check into a location. Mark has checked into businesses to receive promotions. He describes one instance, "Each participating restaurant location offered a featured burger at only five dollars. To receive this special pricing I had to check-in on my Yelp mobile app at each location and present the check-in offer to my server." Frances discusses using a locative media application purposely built for a conference, Clio Cloud, that allows users to check into a session during a multi-track conference and then "post comments about the sessions, questions, or whatever."

Frances raises another purpose for check-ins which runs counter to the common perception of the security concerns of sharing one's location online. Frances mentioned that as she lives by herself, she likes using check-ins as a way to share with her friends where she has been in case anything happens to her. Frances did add, however, that she is careful to check into locations generally only as she is leaving for personal safety reasons. For other purposes for check-ins see personal history (Section 5.6.7) or social interactions (Section 5.6.3).

Some participants avidly check into locations. Others, such as Zoey, mention that she used to check in more frequently when she first started using Foursquare but has now curtailed this behaviour:

> I did it a lot when I started using Foursquare, but it's just not interesting to do it for places you visit a lot. I still like doing it when I'm doing something special or at a new or interesting place to share with my friends… like seeing a big new movie or play or celebrating a special event like someone's birthday.

Zoey's check-in practices are consistent with the types of locations and circumstances that generally motivate participants to check in. The novelty of check-ins initially motivated people to partake in these practices (see Farrelly, 2012), but such novelty usage wears out, as both Zoey and Evan indicated.

A check-in may be as simple as tapping on a locative media application button to indicate one's presence or post a geotagged photograph and it may also entail providing additional commentary on that location (as discussed in Reviewing and Rating, Section 5.6.9). Whether a quick, simple act or a contemplative, creative act, check-ins are an interaction with that location that leaves a lasting record of one's presence and possibly also one's impressions of that place.

5.6.3 Social coordination

Social coordination in this context refers to the human activity of arranging physical meetings with other people (generally people already known) and to general acts of keeping others apprised of one's whereabouts. Through locative media, participants can actively or passively inform or alert others of their physical location. This can be achieved through checking into a location via an application or through a subset of locative media, ambient friend finder applications. Ambient friend finder applications regularly and automatically update users' location to other people in your network. Tricia summarizes how one works:

> You request someone be your friend, and they have to accept or decline and share their location with you. And then you open it up and it will show where they are on a map at any given time.... It just runs in the background and you open it up and you can see the list of all your friends who have accepted you and you've accepted them. And then it tells you how many kilometres away from you each of them are and it shows you on a map.

Evan describes the social coordination value of using such ambient friend finder applications:

> Glympse, I have a few friends that are using it. It lets me know where their location is at any given time and I find it's a good way to keep track of my partner and friends.... If we are meeting up somewhere, I can look at the app and know if people are actually there. Sometimes people come really late and I don't like being the only one there.

Tricia uses locative media to manage the schedules and activities of her extended family, as she describes: "My husband and I use it [Find My Friends] to figure out who is closer to daycare for pickup, when each other will get home, et cetera" as well as to keep track of the location of her pre-teen daughter (as described on page 109). Alex also describes the convenience that this locative media feature enables: "Sent a Glympse to keep them [friends] apprised of when I would arrive... convenient to give location access for 20 minutes so I don't have to keep on sending text updates."

Some participants mentioned not using such applications due to privacy concerns with having the application company always aware of their location. Tricia notes that her brother won't use it because "it creeps him out". Other participants, as we have seen, find the constant ability to know where their friends or family members are to be reassuring and convenient. With social coordination, the interaction with location may have less depth than other behaviours, but it nonetheless represents a form of social and spatial connectivity.

5.6.4 Fitness

Participants reported using locative media applications with a sole focus on promoting physical activity to maintain one's health, specifically Google Fit, Google Maps, Runkeeper, Strava, and Zombies Run. Participants reported using these for their running, jogging, or cycling exercise activities, although these applications could be used for other sports and fitness activities as well. There are four ways that participants describe using the geolocative elements of mobile applications for physical fitness: 1) to find and plan fitness routes, 2) to map their routes, 3) to ascertain their physical performance through tracking of their distance run or cycled, and 4) to compete with co-present others. Participants also mentioned using locative media as a wayfinding aid when trying out new routes and seeking directions. Fitness applications may also offer geolocative features for annotating points of interests along a route - although participants did not specifically mention using these features.

Parker describes using locative media in the first way, to plan routes that are near him and are suitable for his cycling routines (e.g., avoiding hazards). In Parker's case, he does not use a dedicated fitness application for this but rather Google Maps, which offers a feature to filter

routes for cycling. Parker notes: "I use it when I'm trying to plan how to bike somewhere. And I see the distance, the elevation, they show it. It's useful, and I see the details of which streets not to take and which streets to take, so it's really nice."

Frances uses Runkeeper for her exercise routines in ways that combine a variety of the user actions described above, and notes that the application uses location data to add motivational elements: "It tracks my route, tracks my distance, tracks things like speed. And it actually – this app talks to me so if I have the volume up it prompts me along, gives me an update as to how far I've gone." As Frances mentions, the data Runkeeper records about her routes and performance is used not only to motivate her during her workout, but it is also stored in the application and companion website for her longer-term fitness and health goals. Heather uses Strava in a similar way, but also uses it to receive suggestions for new running routes: "[Strava] also shows me new paths that I didn't know were available in Toronto. Like bike paths and hills and stuff like that. And it can track how fast I ran it or the elevation as well." Heather also uses the application in the final way – to compete with co-present people on the same route: "It records some other people that have checked into that place and you can compete with them."

Vera has used fitness applications with geolocative features and expresses how they aided her motivation to continue and improve her exercise routines for health benefits: "I love Zombies Run and their 5k version as well, which link [and] track your location for the usual reasons, but also track your location for the purposes of story development and for zombie chases. I don't think I'd ever have learned to run but for these applications." This behaviour does indicate one way in which locative media allows people to interact with and repurpose spaces and engage in a healthy lifestyle in locations beyond the confines of an exercise room.

5.6.5 Play

Locative media applications can facilitate play or gaming in a variety of ways. They may encourage people to explore and interact with their physical world either through practical objectives or fictional narratives and tasks. Within locative media there are applications that are dedicated to game play and applications with a primary focus on other objectives but that use game play as an enticement for use. Participants described using both aspects. With regards to

the latter, participants such as Dave, Heather, and Frances reported enjoying the game elements that locative media applications such as Swarm and Foursquare offer, such as earning points per check-in and winning honourary titles and badges.

Locative game play with physical world elements can be seen with participants using it for geocaching or letterboxing, specifically Ian, William, and Vera. Geocaching did not exist until locative media was created (in the form of GPS handheld devices). Letterboxing precedes digital media considerably as it has been played for 150 years in the United Kingdom, but it is the ongoing popularity of locative media that has helped it become more popular in North America (Vyvial-Larson, 2007). With both geocaching and letterboxing, physical containers (of varying sorts and sizes) are placed in the physical world and then listed on websites for others to find. The person planting the containers provides clues to help others find the container as well as possibly posting interesting information about the location. All three participants described enjoying this as a recreational activity and as a way to facilitate their exploration of the physical world (as discussed further in Section 5.6.11). It can also be a social activity that one can play with others. For instance, Ian describes geocaching with his granddaughter: "It was fun doing it with somebody like that because they put in different kinds of questions… and so it really opens your eyes up and it's fun doing it with kids, seeing their expression and views."

The applications participants reported using to interact with the physical world through superimposing fictional elements onto the physical world are the location-based games Ingress and Parallel Kingdom. Data collection for this study had completed two months before the launch of Pokémon Go, yet there are similarities with Ingress and both are made by the same studio. Alex is an avid player of Ingress and describes the game: "Monuments, buildings and stuff become game regions. You have home and can drop detonators as you're walking by them." Kevin has also played Ingress and discusses its impact: "Ingress has provided a whole new experience and way of looking at the world that many people have found very compelling." Parker was the only participant using the sword and sorcery themed location-based game Parallel Kingdom, which he describes as a good way to pass time: "There are magical creatures and stuff like that and you can battle and duel people, upgrade your weapons." Locative media can also be a hybrid of game and fitness applications, as is the case with Zombies Run. Vera describes it as having a fictional zombie apocalypse that prompts users to escape zombies by running further or

faster (tracked via geolocative features). She relates the appeal: "Very entertaining and integrates your physical environment with a story that you're hearing and it's kind of entertaining."

Mobile devices provide a ready form of entertainment and distraction, suitable for liminal moments or free time, as participants noted. Locative media, by enabling game play, whether short-term or lengthy, one-off or continuous, provides a ready means for people to enjoy, use, repurpose, and reimagine their physical world.

5.6.6 Information seeking

Participants reported using locative media to find, access and use information. The most common form of information participants sought is directions to locations (as previously described in Wayfinding, Section 5.6.1). Other types of information seeking participants engaged in range from specific searches for simple information about nearby businesses or points of interests, such as addresses or phone numbers, to browsing for more in-depth information, such as histories, imagery, and personal anecdotes of their locations. Information seeking was found to be focused or serendipitous. By far the most reported type of information seeking was focused. So many participants reported seeking information to receive recommendations on places to visit or eat at that I made this its own behaviour, social navigation, as discussed in Section 5.6.10.

Focused information seeking was seen in various participants locative media use. Several participants mentioned using Instagram or Yelp to view photographs of food to get a sense of the quality of a nearby restaurant they were considering. Heather uses Instagram and Facebook to look for information and images of locations she is considering or planning to go to. She describes one instance of searching both Instagram and Facebook for geotagged photos to determine if a private pool, Cabana Pool Bar in Toronto, would be suitable to visit:

> I went to look it up. It was Facebook, yeah because people posted pictures on Facebook rather than on Instagram. And through seeing it on Facebook, it turned me off because I realized, oh, this is not what we were looking for. It was, you know, some slutty event…. I don't think this was about the pool anymore.

Heather also uses Yelp as well to get information while at a location (often the help her determine what to order) as she describes appreciating the information and photographs that users post: "There's so many different food pictures, they give me ideas."

Other participants use locative media intentionally to seek information to learn more about their locales. Without a specific location in mind, participants reported using locative media to return any content based on their proximity. Jacy uses Findery this way; she reports browsing for information about points of interest near her workplace and serendipitously learned about a nearby, non-descript site's purpose and historical significance: "It's this derelict looking area – it looked bad, it's this building run down. I thought it might have been a fountain or something. I saw it listed on Waymarking as this skating rink commemorating Barbara Ann Scott." William reported that he and his partner have been using locative media to find information about the locations they traverse locally and internationally. They used AroundMe for this purpose and he described using it extensively during a road trip to act as a virtual tourist guide:

> So if you're exploring an area, AroundMe uses your location and then just sends Wikipedia articles to you... So it [AroundMe] told the histories of those cities and maybe something, anything famous that happened there, or what their primary export is, or just like little things like that.

In a similar way, Luke mentions learning the history of a café that he was at via Findery: "I find it really interesting to learn all these things about this really neat building all at once... I now know that it is an old theatre and it used to play silent movies and then in the 1950s according to the app it started playing talkies."

Participants also described using locative media to get information that helps them be informed consumers and to make better choices, often to save money or travel time. Locative media, by having a ready source of geographically relevant information, gives participants a channel choice they like (several participants reported greatly disliking having to ask strangers for directions) and allows participants to feel certainty and control of their world.

5.6.7 Personal history

Participants reported using locative media to record aspects of their lives - their thoughts, experiences, and feelings related to their visited locations. They also reported that they use locative media to review these records at later dates for memory aids or for reminiscing. This is similar to lifestreaming, the online practice of sharing moments of one's life through digital artifacts (Marwick, 2012). Lifestreaming, however, is usually intended for an external audience, whereas participants were using locative media to record facets of their life predominantly for their own purposes and sometimes visible only to themselves, in practices similar to earlier media such as diaries.

An example along the lines of lifestreaming can be seen in how Jacy uses locative media: "When I'm out, I like to take pictures when I'm at different locations and I will post them immediately to places like Findery or Facebook, sort of as a way to journal where I've been and what's going on." Some participants also describe using Instagram as a way to share one's life events publicly but also as a memory aid, as Heather indicates: "I could see from the [geotagged] location [of the photograph] where I was or if I see a picture and I don't remember when it was then I can review the location and that helps me remember."

For a private spatial record, two participants describe using Google's Location History, which automatically records the locations one visits as long as one is connected to a mobile network. Similar to Jacy, Alex uses locative media as a form of travel journal:

> I've been doing it for the last two, three years. And it's like Google being apprised of where I am at all times. It's actually gotten way better. So that when I log in [to his location history page] online I'll look through the history and think oh that's cool it actually knows that I was at that restaurant or I was at that place or whatever. And I find it particularly helpful when I'm travelling, because I may not be writing down all the places that I actually went to and I usually look back anytime I travel, see itineraries and see where you were. And I think one of the sad occasions was I had my GPS turned off and I forgot about when I was in Portugal and so I have no location history there and that's sort of regretful.

Mark uses Google's Location History feature in much the same way as Alex and describes its value to him: "It jogs the memories. It makes me reminiscence about when I was there, the experiences I had, who I was with".

Instead of using locative media for reminiscing, Frances uses Foursquare and Swarm for the practical purpose of being able to recall and thus revisit favourite places:

> I can go back into the data [on her Foursquare account] and see where I've been. So, if I think, oh, where was that great restaurant in Chicago, I can go back to that date and see all the places I've been to in Chicago.

Recording one's personal history regarding locations via locative media can be done via a simple check-in or by posting a photograph and geotagging its location. Participants were found to use locative media to create a record of their presence, experience, and feelings about a place.

5.6.8 Creative expression

Various locative media applications enable people to upload content they created related to a location. This content is often, although not always, geotagged by the user in relation to the location of the content. Content that is uploaded is not required to be made on one's mobile device, although all content participants reported uploading to locative media was created on their mobile devices. Some applications allow multimodal content, specifically photographs, videos, and text. The content participants mostly reported creating (aside from textual descriptions and reviews) was photographs.

Participants did not necessarily indicate their photographing behaviour was creative expression. However, when one thinks of the considerations one must make to take a photograph – such as choosing the subject matter and vantage point, framing the shot, and determining if any flash or focus features must be selected, and then posting a photograph, often using image editing tools for colour or light correction, cropping, or applying styling filters, photographs can be considered a creative and expressive act. Each step along the way requires the user to make choices that express the desired representation of the idea or feeling that they wish to convey.

Heather indicates that most of the photographs she takes and shares on locative media are of the location itself. She attempts to capture the essence of her experience of the location. Even the now common practice of photographing one's meal and sharing it on locative media is an example of people conveying a message not just of what they ate but also other ideas. Heather mentions one such instance: "So I shared a photo. I ate the food so fast that I didn't really get

photos of everything, but it was also a way to sort of let other people know, okay, here's a new place. It's good." Jacy's account of her use of Findery is a good illustration of how one can convey messages about a location through photographs posted to locative media. She recalls: "We got a photo of it, so we could put it on the app and try to share what was beautiful or interesting about this neighbourhood."

Zoey describes taking photographs as an "outlet" for her but also as a way to share her impressions of a location. For example, she recounts a visit to a city park:

> Recently they've added a series of graffiti style murals. And I was there with my kid. While she was enjoying the playground, I was looking at the various murals. There's quite a lot there and they're so beautiful, I just wanted to share this sort of unknown place with people I know and to start sort of a permanent record of what was there. So I took a photo of one of the murals and wrote a note and posted it to Foursquare.

Zoey notes that uploading her photographs to locative media is something she enjoys: "I like putting my photos on the map so to speak. I actually sometimes will look at Instagram's map page that shows your photos on a map."[7]

Susan, in developing the application Queerstory, decided to use multimedia (text, photographs, and videos) to enliven historical descriptions and artistic interpretations of events at a location. She relates: "We wanted to have an artistic bent to the whole experience of geolocative apps. We're trying to explain to the users that this technology itself is an art medium." Rob, in developing his locative media application, wanted to solicit similar creativity,

> So you could take a selfie on a street corner where there's a wall of a building that you just spray painted with virtual spray-paint and we believe that providing that creative element of manipulating your environment in this virtual world and then recording video and documenting it for other people to see, that's how we think that people will be more engaged in wanting to do this, because then you're sending your creativity, you're extending your voice or your message.

Mobile devices and other mobile media provide people with the tools to create and modify multimodal representations of locations. When combined with locative media as a means

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[7] As of September 2016, Instagram removed their photo maps feature.

to share these representations, these tools and features allow people to creatively express themselves, their feelings, relationships and reflections on place.

5.6.9 Reviewing and rating

Locative media applications, such as Yelp, Yellow Pages, Google, and Foursquare, allow users to review and rate locations. Reviews are generally short, text-based commentary and ratings are most often a quantitative assessment. I use the term reviews broadly here to refer to the information people upload describing or assessing a location. Ratings are often included when uploading a review and are generally achieved via icons representing a Likert scale with stars from one (for lowest opinion) to five (for highest). The applications participants described using provide leeway (barring violations against standard user terms and conditions such as profanity and slander) so that users can write and upload factual details (such as opening hours, address) or a critique based on their experience. In addition, locative media applications such as Findery, Facebook, and Foursquare, allow participants to provide comments or replies to people's reviews. Jacy describes finding a review for a nearby outdoor artwork, but when she went there it was gone, so she replied to the original post and "noted on Findery that this artwork is no longer here so that no one else looks for it."

Participant reviews were often of restaurants, but participants also discussed reviewing other types of locations such as businesses and transportation centres. Their reviewing tends to be a quick act that participants describe as being motivated by a particularly good or poor experience. Tricia describes one of her experiences writing a review: "After enjoying our [take-out] dinner at home, I went back into the Yelp app from home and posted my own review…. When I've had a really good experience, I'll tell other people about it."

The participants who write reviews all described reading and using the reviews the applications provide, so feelings of altruism and reciprocity appear to motivate participants. Tricia states that both these feelings guide her reviewing:

> I do know that these sites only work if people actually take the time to review something. And, I guess, when it's a great place I want to tell other people about it, so they may not know about it and may be unsure of trying it and maybe the review will help them go and check it out.

Similarly, Alex describes altruistic purposes as a reason for some of his reviews: "It's a small thing to do. I mean that one sentence can save I don't know how much pain for other people." Parker describes his behaviour as writing about one to two reviews per month on Yelp. He describes his reviewing habits as follows:

> I think it's actually the good experiences that I write. Like, I try to recommend a place to people, to other random strangers who are also looking like me, it would save the time walking and stuff like that. So they could have a nice date for instance or a nice family get-together. But on occasion, I do write a bad one.

In addition to being motivated to write reviews to help other users, Parker also expressed that he is more apt to review new, small, or independent businesses "to help them out". Along the same line, Vera notes that she writes reviews "when places are new and deserving of attention".

Many participants were found to be more apt to write positive reviews than negative ones. This could be the result of social desirability bias during data collection or the study's sample, but of the participants who shared their profiles their reviews were largely positive. Some participants, however, did discuss writing negative reviews. Heather stated she only writes reviews when she has an unsatisfactory experience as, "I've never taken the time to write a good review, no. I usually just tip well when the restaurant is good." Evan describes his reasons for generally writing more negative reviews:

> And so the only places I really feel strongly about will be the ones that I'll leave a review. I do it if I feel I had a particularly frustrating experience or if I feel that the company is misleading people. I feel like I want to sort of correct that.

Although restaurants were the dominant type of location that participants described reviewing and rating, other participants such as Alex, Jacy, Frances, and Zoey provided tips about locations or instructions about lesser known sites or features. For instance, Zoey describes the kinds of locations she likes to review: "I'd say they would be places that are sort of a bit different. Like maybe if a park has a really great playground or a fun place that I think people might not know much about." Alex was the only participant who described writing reviews for Google. He describes his motivation for doing so is that Google is providing reviewers with benefits (extra storage space, early access to products, special events, etc.) in return for posting a threshold number of reviews to Google. For more discussion on participants reviews, see Decommodification in Section 6.2.2.

Prior to locative media, it was not feasible for people to provide such semi-permanent and public commentary about their locations to this extent. I argue in the next chapter that such behaviour changes the spatial power dynamic of people to their places.

5.6.10   Social navigation

Social navigation is deciding where to go or which businesses to visit based on the experience, traces, and appraisals of others (Dourish, 1999). These others may be people already known or strangers. Locative media facilitates social navigation by prominently presenting recommendations of locations to visit (often organized by type of location) based on the locations that receive the highest reviews from their users. Reviews may be sorted by the most recent or by reviews most highly rated as useful by other users. Users can view locations near them sorted by ratings and peruse other people's reviews. Parker describes the role reviews often play in helping him determine where to go: "If there are lots of positive reviews and people like it then I'll be like, you know what, it's probably the place, I'm going to go to it."

Although the applications tend to just present the most highly rated nearby locations to users, participants described reading through the informational content, whether a review or tip, to receive specific recommendations or for guidance and planning information. Frances expressed using locative media tips to plan when to visit a busy business, "I read through the tips and they sort of told you what time was the best time to go and so I went back the next day." Dave also reports finding it useful when he is in a new location to view and use other people's reviews and ratings of locations to make his own decisions. Heather describes visiting Niagara Falls, Ontario and checking out what people were posting on Instagram about it. She then learned of a tourist attraction (the boat formerly known as the Maid of the Mist, now called the Hornblower): "I could see, oh, these people went on the boat that can take you close to the falls. Oh, you know, I should do that too." She did take the boat ride and expressed that it aided her enjoyment of her Niagara Falls visit. Mark noted that he appreciates the access to insider information he gets via locative media that lets him find locations that he might not otherwise know about as a newcomer to an area. Vera also uses locative media to get access to insider information when visiting new locales: "I saw more of Charleston than the people I was with who did some tours and stuff like that because I'm seeing what the locals see."

It is not just in new locations that people use locative media for social navigation, but also for other circumstances. Changes in Evan's lifestyle motivated him to value recommendations in areas he knows well such as near his home and work. He notes: "I've become vegetarian, and I was looking for places to eat that are vegetarian near where I live and work too, so I've used it that way as it can be difficult to find places where I can eat." Social navigation via locative media can take the form of planning routes. Tricia uses the application Waze to plan her driving routes, while Heather and Parker find desirable fitness routes.

As previously mentioned, there is concern among users that the placement of the reviews or ranking of recommended locations has been affected by companies paying the applications for such placement or by companies gaming the system, for example by hiring people to generate fake ratings and reviews. Participants did state that they believe recommendations and reviews are often artificially manipulated for corporate goals, but the extent of it are beyond the scope of this dissertation (although this topic is actively explored in the literature, e.g., Hu, Bose, Koh & Liu, 2012; Luca & Zervas, 2016).

Social navigation via locative media not only helps people determine which businesses to patronize and which locations to visit, it also provides a readily available guide to one's world – a collective curator. The reviews and other traces people leave behind on locations not only guides others in their spatial journeys, but provides a constant and visible sense of the co-presence of others in shared space in new ways.

5.6.11   Exploring and discovering

Participants expressed using locative media to explore their physical world with the goal to learn more about their surrounding and make pleasant discoveries. Participants describe intentionally setting aside time for using locative media to facilitate their explorations, while others describe using locative media to pass time and consequently make rewarding discoveries.

Jacy describes the former behaviour through her use of Findery. She uses Findery to find nearby points of interest, vets them, and then locates them in the physical world, as she relates: "It [Findery] will find your current location and it will plot out a map for you to things that other people have entered on Findery. So we had it plot out a map and see what was nearby." In one

instance, Jacy found a mural that she found interesting: "It's in an industrial areas that I've never walked in – discovering this in this industrial area was a surprise. So it was really nice and was a very cool experience." Oliver describes how his own use of Queerstory lead him to explore more of his city: "I think the process of walking through the city and exploring these sites is an experiential and fun way of discovering and learning about queer history". Heather uses Strava to find new, interesting locations to run as Strava "shows me new paths that I didn't know were available in Toronto." Participants also mentioned using locative media as an aid to prevent them from getting lost during their otherwise unstructured explorations (see Wayfinding, Section 5.6.1).

Geocaching and letterboxing were reported used by participants to help and encourage them to explore their world. Ian enjoys geocaching for this reason. He notes that on one occasion he used it at a city park as "it gave you something to look for and took you to parts of a park or whatever where you maybe wouldn't have went to if you hadn't of been sent there." William summarizes the experience of using geocaching as "it helps me explore. I like the idea of exploring the city, looking." Vera expresses similar thoughts on her use of letterboxing applications: "I've just gained seeing the most amazing natural formations, historical sites, and places that I just never would have thought existed, never would have had occasion to travel to were it not for letterboxes." Vera also relates how letterboxing lead her to learn about a location that she had frequently passed without knowing much about it:

> There is that grounded boat that looks like it's been burnt to the ground in the water outside near Grimsby there, right? So how many times have I driven past that? Well, there is a letterbox there.... When I found it, not only did that take me actually to the shore right beside that boat, but it [information on the application] took me through the background of that boat… it has more significance to me than when I had driven down the highway before and not really understood why that boat was there.

Vera adds an interesting dimension that the enjoyment of her use of letterboxing is not only in her own sense of exploration and discovery but also in facilitating this behaviour for other users: "They go to that place, they're discovering that place because I wanted to showcase [it]. I was with them without actually being with them for that experience."

Alex has made similar discoveries through his game play of Ingress. He notes that players use actual monuments and notable buildings for key elements of game play. By playing

the game it is: "bringing my attention to arts and statues that I probably would have never noticed before." He enjoys this as a benefit of the game play as, "You feel more informed. You can point it out to a friend if you're walking by. Hey that's this Earl Bayes statue - I found it on Ingress."

In a counterpoint, Parker notes that his use of locative media can often stymie his sense of discovery. Although he was referring specifically to food services, his comments about always having a curated world readily available to him has benefits (avoiding unsatisfactory experiences) and drawbacks. Elements of uncertainty and personal discovery are removed for Parker because, "you're not surprised. You didn't really discover it yourself. You know what you're going to get."

Using locative media for exploring lead participants to both discover locations they had never previously been to, but also to experience more familiar locations with greater perspective or in a new light. Such explorations may arise out of intentional use of locative media or as a byproduct of its use, but regardless, in both instances participants expressed enjoying this process of discovery and valuing their discoveries. At the same time, however, a loss of a sense of discovery as the result of locative media usage was also reported.

5.7   Spatial Counter Dynamics and Participants Use of Locative Media

This section highlights the findings of the study pertaining to my first research question, which is as follows: What forms of spatial counter dynamics are manifested in people's use of locative media and how do they relate to people's relationship to place? To investigate this I used Crawford's 2012 work on urban counter dynamics (which I renamed as spatial counter dynamics). As elaborated upon in Chapter 2, Crawford identifies four ways that people can interact directly or indirectly with space to help claim and project their own meanings of place. These four counter dynamics are 1) collaboration, 2) decommodification, 3) defamiliarization, and 4) refamiliarization (p. 84). As people's use of locative media can introduce people to new locations, I added the concept of familiarization as a fifth counter dynamic.

Using Crawford's work on counter dynamics proved to be a useful analytic lens to examine the ways in which participants used locative media. Evidence was found to support all five of the spatial counter dynamics. I conceived of Crawford's decommodification counter dynamic as a continuum rather than a binary – that is, actions were found to entail a decommodification spirit if they assert citizen control of their own spaces and experiences even if they do not entirely remove or repurpose a location from its commercial context. This also includes behaviours that assert citizen control over their own financial affairs and business relations, irrespective or in opposition of commercial interests.

Table 5.5 presents the main findings of this study organized by the five spatial counter dynamics. The table lists the participants found to engage in or to experience the spatial counter dynamic along with locative media applications they were using and associated behaviours. The role locative media plays in facilitating this dynamic are also listed. Representative examples from the data are also provided.

Table 5.5: Summary findings of spatial counter dynamics in use of locative media

This table is organized by each spatial counter dynamic as found in a participant's locative media usage with the corresponding user behaviours, locative media applications, the role of locative media in this and examples from the data. The table is organized by spatial counter dynamic as discussed in the next chapter, Discussion.

Spatial Counter Dynamic	Participants, Behaviours, and Applications	Role of Locative Media	Examples
Collaboration	**Participants:** Alex, Bernard, Evan, Frances, Heather, Ian, Jacy, Mark, Parker, Tricia, Vera, William **Behaviours:** play, fitness, reviewing and rating, social coordination, social interactions, textual interactions, wayfinding **Applications:** Facebook, Find My Friends, Findery, Geocaching, Glympse, Google Maps, Ingress,	• Feature to allow users to submit additions and corrections to maps, routes or traffic conditions • Ability to share location tracking with friends or family • Feature to share suggested fitness routes or annotations about routes • Provides means for people to discuss locations	William: "I was driving to work and… there was like this big, big truck that was completely on fire! And there was smoke billowing out and I was like, what is going on!... I also checked on Twitter to see if anybody else had tweeted about it with any hashtags like Dupont and Spadina or Toronto, fire, road fire, something like that. And nobody had, so I made a tweet about it…. Just to give people a heads up to avoid that part of their commute and also just to bring attention to it." Frances: "I'll share tips... to help other people, to help myself as well. So my most popular tip, which is funny, I don't know, it won't show up here, my most popular tip is for the Ottawa airport. There's a really easy bus to get downtown from the airport and so I put a tip in there, so that when I go to Ottawa I can figure out which bus it is and I've had hundreds and

	Instagram, Letterboxing, Parallel Kingdom, Runkeeper, Strava, Twitter, Waymarking, Waze	• Facilitates collaborative efforts to achieve game objectives and communal game play • Provides means for people to share location information, news, or recommendations	hundreds of people view it and favourite it as a favourite tip, because it's cheaper and faster than a cab." Alex: [on his Foursquare tip to clarify different bus stops] "You buy the wrong ticket and it's just a shitty situation…. I was sending a warning flare. Like hey heads-up. It's a small thing to do. I mean that one sentence can save I don't know how much pain for other people."
Decommod-ification	**Participants:** Alex, Frances, Jacy, Kevin, Mark, Parker, Vera **Behaviours:** creative expressions, information seeking, fitness, reviewing and rating, social navigation, textual interactions **Applications:** Airbnb, CodeRunner, Foursquare, Geocaching, Google Maps, Ingress, Instagram, Letterboxing, Parallel Kingdom, Uber, Yelp	• Facilitates interactions with commercial space repurposed for play or fitness • Offers means for people to add their own content about locations that may be critical of corporate interests, exposes dubious business practices, offers information to save money, or generally noncommercial • Provides means to find and contact independent, local businesses • Offers ability to find best prices amongst nearby businesses	Jacy: "It's great where people can share their own content, and I like content that's not commercial content, it's just people entering interesting things [on Findery]. I'm more interested in that. I like arts or cultural things or just beautiful sites in the neighbourhood." Evan: "So there was this chicken wings place that I wrote a review [on Yelp] and I was upset because the price they said as a special wasn't really the special they were offering so I wrote a review to correct that. That review got a lot of feedback from other people that appreciated that review." Tricia: "I would value a user review slightly more than a corporate written statement about a place…. A restaurant that's selling themselves are going to focus on the things that they think they do well and they're selling a product, where the user is going to give you a bit more accurate review of how the user experience was. And I think the restaurant, you know, when they position it, they're talking about how they want you to feel and they're talking about their product and what they're selling, whereas a user gives more of an experience of how it is for someone not working there."
Defamiliarization	**Participants:** Alex, Jacy, Jason, Kevin, Oliver, Parker, Rob, Susan, Vera, William, Zoey **Behaviours:** play, fitness, information seeking **Applications:** CodeRunner, Ingress, Instagram, Narratives,	• Provides a fantasy layer through narratives or visuals superimposed on physical world for game play or fitness • Offers multimedia content about locations that may present a known location in a different or jarring manner resulting in users feeling	Rob: "I think our app [Narratives] allows you to see around the corner, to see beyond walls, almost like being God, and being able to look around quickly and see what's happening, actually what people are doing…. It could be a way of looking at your city that you've never seen before." Alex: "I think the experience [via Ingress] of having that additional layer of the world, it's sort of neat. You pretty much feel like there's a map of the world and all these glowing kind of portals."

	Parallel Worlds, Pixifly, Queerstory, Run Zombies, Yelp	disconnected or disjointed from location • Offers geolocated, immersive interactive cinema that tells place stories in new ways	William: [On using Pixifly to see geolocated photographs of Edmonton] "It was like things that no longer existed, like old buildings and things or very temporary settings or views or events that he [a relative] took photos of. And it was really interesting to compare what it was like now with that thing absent compared to what it looked like in his photo."
Refamiliarization	**Participants:** Alex, Evan, Frances, Heather, Ian, Jacy, Mark, Vera, William, Zoey **Behaviours:** creative expression, exploring and discovery, information seeking, personal history, play, textual interactions **Applications:** Facebook, Findery Geocaching, Google Location History, Instagram, Letterboxing, Swarm, Twitter, Waymarking, Whisper, Yelp	• Ability to review location history, photographs and notes about places previously visited • Provides means to intentionally seek or serendipitously discover information about familiar places	Luke: "I've been by there [a café and sports venue] before and seen the big camera in front before and wondered why it was there. I now know [through Findery] that it is an old theatre and it used to play silent movies and then in the 1950s according to the app it started playing talkies." William: "Even in a neighbourhood that I'm very familiar with. It might be something invisible to your eye in person because it's just become part of the scenery. That's why I don't take it for granted I look on Yelp and see if - like, this hole-in-the-wall restaurant that looks like nothing on the outside might be one of the best restaurants in the city on the inside, which is why I go to Yelp even in places where I'm completely familiar." Evan: "Whisper provides anonymous little tips, not tips, comments about life in a given area. I like reading about other people. It gives me fragments of the life of people around me."
Familiarization	**Participants:** Alex, Bernard, Cathy, Dave, Evan, Frances, Heather, Ian, Jacy, Mark, Parker, Rob, Tricia, Vera, Zoey **Behaviours:** exploring and discovering, information seeking, social navigation, wayfinding **Applications:** Facebook, Findery, Foursquare, Geocaching, Google Maps, Letterboxing, Narratives, Instagram, Strava, Swarm, Waze,	• Provides sources of geographically relevant information • Presents wayfinding aids (e.g., maps, directions, street view) to orient and direct people • Offers content from users that can introduce, recommend, and inform about locations • Gives information about locations after user checks in • Encourages people to visit new locations,	Tricia: "If I'm in an unknown neighbourhood, I mean, I might not even know where to drive through to find any kind of restaurant or store or anything like that. If I open up Yelp, I can search based on my current location and it'll show me all the coffee shops in the area, all the restaurants nearby. And then, it also will give me a rating on each of them and this is a great place, people really like it, I think I'll feel comfortable there." Vera: "It was through the [Letterboxing] app that takes you to these beautiful places…. And so what the app has done is allowed me to see how different each park is and what it has available to it so it differentiates all these areas in a way that to me before was just this glut of all these parks that were all the same in my mind." William: "There was this path, that's a bike trail that you can take that's parallel to the Go Train... I didn't know about it until I looked at a map, a GPS map.

	Yelp, Yellow Pages	elements such as game play or recommendations	And I was like, what is this route that I've never explored? It's off, you can't access this by cars. So I just decided to walk to it and see what it is."

5.8   Sense of Place and Participants Use of Locative Media

This section highlights the findings of the study pertaining to the second research question, which is as follows: In what ways does people's use of locative media influence the affective, environmental, or social aspects of their sense of place. First, I discuss how I used Bott's sense of place instrument (2000) during data analysis to arrive at my sense of place findings. I then present Table 5.6 which summarizes the findings based on Bott's domains and categories of sense of place.

As anticipated, using Bott's sense of place instrument (2000), has both benefits and challenges. In my opinion, it remains the most comprehensive work to categorize elements of sense of place and items to help researchers uncover specific indications of sense of place. However, Bott's work, if used as is, is not without limitations, some of which I previously identified in Section 2.2.5. Perhaps the most limiting aspect of her work is that it was designed for a specific location, Colorado State University campus. Although she intended her work to be more broadly applied, she did not rework her instrument to apply to any other location. There are also challenges in Bott's sense of place criteria (her individual "items" as she calls them). Her items are not exhaustive, are biased towards only a positive sense of place, and at times overlap. Some of Bott's items also confound traits or elements present in a location with how people derive meanings or feelings from them – after all, the instrument was designed to measure one's sense of place for a location, not an assessment of the location itself (although of course they overlap). Finally, Bott's instrument was designed for more quantitative purposes (that is to measure the presence and types of sense of place) more so than for qualitative explorations, such as this study. For these reasons, I used Bott's instrument as a guide rather than a rulebook for exploring sense of place. Therefore, the findings do not adhere verbatim to Bott's scale items but rather speak to her categories broadly. Bott's categories are useful for investigating the otherwise nebulous concept of sense of place. Bott's work was thus a tremendous aid to assess, organize, and understand participants' sense of place.

Table 5.6 below presents a summary of the findings related to sense of place. The table offers instances in participants' use of locative media regarding a location where a sense of place was found by the researcher. Participants referred to many instances where elements of a sense of place could be seen, yet often they were speaking about places generally or collectively. The table below reports only instances where a sense of place was found that refers to a specific place. It includes representative instances of sense of place per Bott's category type of sense of place and identifies the participants and locative media applications used. Table 5.6 also lists features or functions of locative media participants used that played a role in their formation of that type of sense of place.

Table 5.6: Summary findings of sense of place and participants' use of locative media

This table is organized by Bott's (2000) domains and categories in the original order of her paper. Participants found to have that sense of place category are listed with their corresponding behaviours, associated applications, and the role of locative media in this relationship. Representative examples from the data are also provided.

Sense of Place Category	Participants, Behaviours, Applications	Role of Locative Media	Examples
Physical Setting			
Setting Natural	**Participants**: Evan, Heather, Ian, Vera **Behaviours:** creative expression, exploring and discovering, play, textual interactions **Applications:** Geocaching, Instagram, Letterboxing	• Encourages people to be in nature through game play and discovery objectives • Spotlights and recommends locations with unique or pleasant natural elements • Extends interaction and time spent with nature via game play • Provides means to capture and share experiences and representations of nature	Evan: "It's a [geotagged photo on Instagram of a] park in Davisville and some maple leaves. I liked the colour and the light of it – it was very pretty so I posted it and my friends really liked it too." Ian: [the geocaching app lead to] "a part of the park I'd never been to. It was at a nice spot on the lake that was quite pretty. It was nice to be outside today and explore." Vera: "It was through the [letterboxing] app that takes you to these beautiful places. Like I think of outside of Guelph, I don't know if it's a provincial park or a conservation area, which has the ruins of this mill through this river and it has these beautiful rock formations… what the app has done is allowed me to see how different each park is and what it has available to it so it differentiates all these areas..."
Built Environment	**Participants:** Alex, Bernard, Evan, Jacy, Parker, William, Zoey **Behaviours:**	• Encourages people to explore their surroundings and seek out new locations • Helps focus attention on aspects of locations	Zoey: "I was there [Toronto's Underpass Park] with my kid while she was enjoying the playground. I was looking at the various murals. There's quite a lot there and they're so beautiful, I just wanted to share this sort of unknown place with people I know and to start sort of a permanent record of what was there. So I took a photo of one of the murals and wrote a note and

	creative expression, exploring and discovering, play **Applications:** Instagram, Findery, Foursquare, Letterboxing, Waymarking	• Provides means to capture and share experience and representations of built environment	posted it to Foursquare." Jacy: "I saw it listed on Waymarking as this skating rink commemorating Barbara Ann Scott so I went to have a look and confirmed that there's no skating rink here. It's this derelict area that I had noticed. There is this plaque to her that I never noticed before. It's kind of sad." Jacy: "It [Findery] sort of got our eyes open to the neighbourhood and back through the ugly industrial neighbourhood and some factory type buildings and we saw the most beautiful door."
Character	**Participants:** Alex, Bernard, Evan, Jacy, Vera **Behaviours:** creative expression, exploring and discovering, play **Applications:** Findery, Geocaching, Instagram, Letterboxing	• Helps focus attention on qualities and aspects of a place • Provides information that may point out unique details or qualities of a location • Provides means to capture and share place experience and representations	Vera: "There is that grounded boat that looks like it's been burnt to the ground in the water outside near Grimsby there, right? So how many times have I driven past that? Well, there is a letterbox there and the letterbox had been there since 2004 or thereabouts, I believe. So when I found it, not only did that take me actually to the shore right beside that boat, but it took me through the background… now when I drive down that highway, seeing that pirate ship, which I still call it, it has more significance to me than when I had driven down the highway before and not really understood why that boat was there." Bernard: "There's a mural [pointing to a photo on Instagram] that I like - up the street. It says Transformation. It's an East End's arts installation. I posted that for the fun."
Socio-Cultural Setting			
Inherent Sociocultural	**Participants:** Alex, Evan, Frances, Jacy, Luke, Parker, William, Zoey **Behaviours:** exploring and discovering, information seeking, textual interaction **Applications:** Findery, Foursquare, Queerstory, Twitter, Whisper	• Enables people to create and read social and official history of locations • Directs people to locations • Spotlights and recommends locations often with a focus on novelty, history, or cultural appeal	Luke: "I've been by there [a café and performance venue] before and seen the big camera in front before and wondered why it was there. I [saw it on Findery and] now know that it is an old theatre and it used to play silent movies and then in the 1950s according to the app it started playing talkies." Jacy: "It [Findery] gave us a map with instructions to walk and see a giant mural… The mural is number five by artist/writer named Herakut, and it's really it's kind of disturbing… I had seen this mural before but never really stopped to look at it. I would love to see the rest of the images and read the book. It's in an industrial area that I've never walked in - discovering this in this industrial area was a surprise." Zoey: "I quickly looked through the user reviews [on Foursquare] and noticed one in particular about Resident Evil, a horror movie, and it was filmed here. It was really cool to know that a movie I know was filmed here. It's nice to learn about different things about City Hall beyond just the usual political stuff."

Transactional Sociocultural	Participants: Alex, Evan, Frances, Jacy, Heather, Mark, Parker, Rob, Susan, Tricia, Vera, Zoey	• Provides means to receive and share advice or commentary from other people about qualities of a location	Mark: "I used Foursquare to announce my location downtown Toronto [at the ROM] and thus telling my friends where they can find me…Once my friends know where I am, they can recommend places for me to go or things for me to do and see nearby."
	Behaviours: checking in, social coordination, social interactions, social navigation	• Offers geosocial networking features, such as venue for online conversations pertaining to locations	Frances: [Cleo Cloud app] "was good in the sense that if you didn't get to one session [at the conference], because there were sessions running concurrently, you could hear about what happened at another session even though you weren't there."
	Applications: Clio Cloud Conference App, Facebook, Findery, Find My Friends, Foursquare, Glympse, Grindr, Instagram, Letterboxing, Swarm, Twitter	• Shows presence and traces of co-located others (both currently and formerly)	Evan: "My hometown is [location withheld], and until I moved to Toronto, I didn't think there were very many gay people in [my hometown]. Then I used Grindr one weekend when I was back visiting my family and I found a lot of people using it there. So I found out there were a lot of gay people there and it really gave me a really different feeling of knowing [my hometown], and it made me actually feel more connected to it. I mean, I was happy to leave [my hometown], partly for that, to feel more included in the gay community in Toronto, but upon using that app, it made me really think about [my hometown] differently."

Affective Individual / Personal

Significance	Participants: Alex, Evan, Frances, Heather, Jacy, Luke, Mark, Oliver, Parker, Tricia, Vera, William, Zoey	• Encourages people to explore and interact with locations	William: "There was this path, that's a bike trail that you can take that's parallel to the Go Train [in Toronto's west end]… That was really interesting. I didn't know about it until I looked at a map, a GPS map. And I was like, what is this route that I've never explored? It's off, you can't access this by cars. So I just decided to walk to it and see what it is."
		• Spotlights and recommends special locations	
	Behaviours: checking in, creative expression, exploring and discovering, social interactions	• Offers information that may point out unique details or qualities of a location	Heather: "It [a geotagged photo] was more to say specifically that it was here in Toronto or here in Mississauga, because this bird can only be found way up north past North Bay, way up north in the mountains. So that reason for that was more like that this type of bird, or this exists, or this is happening at this location [International Centre in Mississauga]."
	Applications: Grindr, Findery, Foursquare, Ingress, Instagram, Letterboxing, Queerstory, TripAdvisor, Yelp	• Provides means to capture and share place experience and representations	William: [on using TripAdvisor to find points of interest in Guelph] "It was like Orthodox meeting Catholic architecture and murals and it was beautiful, absolutely beautiful. And we went to the museum, the Guelph Museum and learned about some fine, sexy Canadian history and we had a really good time and we used TripAdvisor exclusively to get information about those local locations."
Existential	Participants: Alex, Frances, Heather, Jacy, Mark,	• Provides means to capture and share place experience and representations	Jacy: "It's a new neighbourhood [for me] and I wanted to kind of figure out what's here, I started using the app [Findery] and it just got me thinking let's look around here a bit and see what's

			out there. And even though it's not a major historical area or anything like that, there are interesting things here. There are things that are worth looking at and interesting stories that can be told, so it [Findery] really got me looking at it differently"
	Parker, Tricia, Vera **Behaviours:** creative expression, exploring and discovering, personal history, reviewing and rating, textual interactions, social interactions **Applications:** Findery, Foursquare, Instagram, Letterboxing, Swarm, Twitter	• Ability to capture place experience, store it, and review it later • Offers ability to assume custodianship of a place (e.g., adding locations to database, making corrections, etc.) • Venue to be advocate for a place (e.g., writing a good review, answering others' questions about a location)	Frances: "It was a brand new restaurant [Spiceman Mexican]. They were actually having a soft launch and they haven't even opened yet. They weren't even on Swarm or Foursquare yet. I went to check in and discovered they weren't there, so I thought, well I'll add them in. I'll be the one to start this off. So that's what I did. I liked it. I liked the place. So I shared a photo. I ate the food so fast that I didn't really get photos of everything, but it was also a way to sort of let other people know, okay, here's a new place. It's good." See also Evan's comment above in Transactional Sociocultural
Memory	**Participants:** Alex, Bernard, Heather, Mark, Susan **Behaviours:** checking in, creative expression, personal history, reviewing and rating **Applications:** Foursquare, Google Location History, Ingress, Instagram, Swarm	• Records locations visited • Generates virtual reminders or souvenirs when interacting with a locations • Venue to store and review location history and representations or commentary on places	Susan: "The building is quite similar to what the building was like 30 years ago when the bathhouse raids happened. But in five years, the building will be gone. It will be completely gone and it will be a big giant condo. So the user will see archival material like rich news, photography, some videos of the way that space was and the way it never will be again, like the part that disappears in space will be preserved within the app." Bernard: [reviewing on Instagram his photographs of locations he has visited] "That's me at the college… That's me in the middle of October at college. And that was the one day it smelled. It was weird, but it didn't stay very long." Alex: "I used it [Ingress] when I was in Seattle and it's real fun to be able to, you can collect these items from Seattle and then bring them back home as well and sort of having that in your collection."
Aesthetic	**Participants:** Alex, Bernard, Evan, Ian, Jacy, Rob, Vera, Zoey **Behaviours:** creative expression, exploring and discovering, play, social navigation **Applications:** Findery, Foursquare, Geocaching, Instagram,	• Provides way to capture impressions of place (through photography) and to share that • Points out aesthetic appeal of locations that might otherwise be overlooked by other people's commentary or representations	Evan: "When I used to live in the Annex, I was checking out photos [on Instagram] that said they were near me and I found out there was this alley with some really creative graffiti right behind where I lived and I never knew about that. So I went out and actually looked for it and I loved it. It was one of the best graffiti murals I've seen and it was right behind me - I couldn't believe I hadn't found out about it earlier." See also participants' comment in Natural Setting and Built Environment and William's comment in Significance.

	Letterboxing, Narratives		
Transcendental	**Participants:** Alex, Vera **Behaviours:** exploring and discovering, play **Applications:** Ingress, Letterboxing	• Spotlights special locations • Helps focus people's attention on qualities and their experience of place • Venue to store and review location history and representations or commentary on places	Vera: "What I've got out of it [letterboxing and using the app], since I've been doing it, is that I grew up my whole life in Ontario, and I've not seen the kinds of things I've seen except for this activity… I've just gained seeing the most amazing natural formations, historical sites, and places that I just never would have thought existed, never would have had occasion to travel to were it not for letterboxes." Alex: "I think the experience [via Ingress] of having that additional layer of the world, it's sort of neat. You pretty much feel like there's a map of the world and all these glowing kind of portals."
Purposive	**Participants:** Alex, Bernard, Cathy, Dave, Evan, Frances, Heather, Jacy, Quinn, Parker, Tricia, Vera, Zoey **Behaviours:** fitness, information seeking, social interactions, social navigation **Applications:** Airbnb, AroundMe, Clio Cloud Conference App, Foursquare, LCBO Mobile App, Google Maps, GPS in-car, Grindr, Groupon, Next TTC, OpenTable, RocketMan, Runkeeper, Swarm, Tagwhat, TripAdvisor, Uber, Waze, Weather Network, Yellow Pages, Yelp	• Directs to proximal services or desired information aspects of a location • Provides means to search or browse for information about proximal locations • Provides proximal dating services • Promotes fitness goals • Recommends proximal businesses and points of interest based on profile and past usage	Parker: "I was travelling near the Eaton Centre and I would just browse through it [Tagwhat] and got to see different stores that were there and compare what kind of items they have, how the things look like. I think there were what I was looking for, if they were cheaper, or if they were, if they had the variety that I was looking for." Alex: "I used it [Grindr] to meet people, for hook-ups and it was great because it was a great way to meet people in different locations that I might not have expected there to be many gay people. I've been surprised sometimes by how many people are on the app in an area. So, it's really helped." Evan: "I use Yelp to find mostly restaurant recommendations. I like their reviews. I just recently had a diet change, I've become vegetarian, and I was looking for places to eat that are vegetarian near where I live and work too, so I've used it that way as it can be difficult to find places where I can eat and that are good. I recently found a Thai restaurant that way that I really liked."
Informational	**Participants:** Alex, Bernard, Cathy, Heather, Ian, Quinn,	• Offers maps or street view step-by-step directions	Heather: "I was at Niagara Falls, and I uploaded a picture with the tagged location [to Instagram], in that case when I have clicked on Niagara Falls for example, I could see, oh, these

	Tricia, William, Zoey **Behaviours:** information seeking, social navigation, wayfinding **Applications:** Airbnb, AroundMe, LCBO Mobile App, Instagram, Google Maps, GPS in-car, Realtor.ca, Tagwhat, TripAdvisor, Twitter, Waze, Yellow Pages, Yelp	• Ability to search and find contact information and useful details about locations • Provides possibility of receiving information about locations serendipitously through browsing content or highlighted recommendations	people went on the boat that can take you close to the Falls. Oh, you know, I should do that too, whereas if I hadn't done that I probably would have maybe not done some of the activities there." Tricia: "I used it [Realtor.ca] to help find the house we're currently living in. I'd drive around neighbourhoods and used the Realtor.ca app and pull up the map and can zoom in to see the neighbourhood and places for sale. I still use it occasionally to see houses for sale near where we live." Bernard: "Sunday we were out to a friend of mines who lives out in High Park, so we were going by transit. So the thing [Google Maps] gave it [directions] to us."
Prospect	**Participants:** Alex, Evan, Heather, Ian, Jacy, Parker, Tricia, Vera **Behaviours:** exploring and discovering, fitness, play, social interactions, social navigation **Applications:** Findery, Geocaching, Grindr, Ingress, Letterboxing, Narratives, Yelp	• Provides geotargeted information about desired services and promotions • Offers fictionalized narrative and visual layers to physical world and location-based objectives that encourage game playing or fitness • Encourages people to explore new spaces • Provides proximal dating services	Tricia: "I know recently my husband and I had date night, got a babysitter for the kids and went 'jeez, now where do we go?'. We were going out for dinner, and said, 'oh, let's look it up on Yelp and find a great place to go'. So we picked something off of Yelp nearby [to our home], went, had a great time, and then post a review on that." Parker: "I used it [Tagwhat] to discover what stores were there [at Dufferin Mall], and if the stores were fitting my budget for my to do list." Jacy: "There's these two weird houses that are connected. I took a photo, and then I posted it online [to Findery] and someone else posted 'there's a cool story behind that'. And that got me thinking, what could be the story here? What's the heck is going on? It just got me thinking more fancifully or in depth about what's around me."
Refuge	**Participants:** Bernard, Evan, Frances, Tricia **Behaviours:** information seeking, social coordination **Applications:** Find My Friends, Google Maps, Swarm	• Shares users' location (with permission) so friends or family know their location (for safety purposes) • Offers access to helpful information when and where needed	Bernard: "We got stuck. Our car broke down on a holiday weekend on the 400 just south of Newmarket. So one of the things that was fortunate was I was able to use the phone to [use Google Maps to] find the closest place where you could rent a car. That turned out to be extremely handy." Tricia: "It [Find My Friends] does, because, you know, otherwise I would probably go and check on [my daughter] more often. But she's right at that age where she wants a bit more independence, but I'm a little bit reluctant to give, it so it just lets me know that she's safe and she's close [to home] and I know where she is." See also Evan's comment in Transactional Sociocultural
Well-being	**Participants:** Alex, Bernard, Cathy,	• Provides real-time access to geotargeted information	Alex: "It's memories like being stuck in the pouring rain in San Francisco and trying to hail a cab. Before Uber came out, trying

	Evan, Frances, Ian, Parker, Quinn, Tricia **Behaviours:** fitness, information seeking, social coordination, wayfinding **Applications:** GPS in-car, Google Maps, Next TTC, RocketMan, Runkeeper, Strava, Swarm, Uber, Waze, Yelp	about transportation • Offers access to information about nearby emergency services or breaking news • Offers information on proximal services to supports health and wellbeing (e.g., fitness, dating, diet, etc.)	to get a cab in San Francisco was not a pleasant experience. It's expensive and it was difficult …Uber is just so much better user experience." Evan: "I was looking for places to eat [using Yelp] that are vegetarian near where I live and work too, so I've used it that way as it can be difficult to find places where I can eat and that are good. I recently found a Thai restaurant that way that I really liked." Ian: "We were in a town one time and my wife had wanted to go to a mall and we went there and then we came out and it was dark. It was hard seeing roads signs, so we put the GPS [device] on and it got us right back to the hotel with no problem, whereas if we had been just reading road signs as we got to them, dear knows where we might have ended up."

As demonstrated by Table 5.6, evidence was found to support all of Bott's criteria. However, this is not to imply that equal amounts of evidence were found for all of Bott's categories. Indeed, in the case of Transcendental and Refuge, very few instances were found. As this research study was exploratory and did not seek to test the entirety of Bott's instrument, it is impossible to discern if the paucity of findings in certain sense of place categories is indicative of the nature of place relationships locative media may or may not facilitate or if it is attributable to the research design.

5.9   Chapter Conclusion

This chapter began by providing information on the people, locative media applications, and settings of the study to provide a platform to examine participants' use of locative media as it relates to the study's research questions. Forty four different locative media applications were reported used by participants, representing a cross-section of types of locative media available. I then positioned Baym's (2010) media characteristics of mobility, reach, and interactivity and added geographic relevance and vocality as important aspects for understanding locative media as a unique and emerging media form.

From there, I identified behaviours participants engaged in while using locative media that pertain to space and place. These behaviours are wayfinding, checking in, social coordination, fitness, play, information seeking, personal history, creative expression, reviewing and rating, social navigation, and exploring and discovering. Although not an exhaustive list of all the ways participants can interact with locations via locative media, the behaviours I identified provide an in-depth and varied overview of how participants are interacting with locations in ways ranging from quick and simple to prolonged and rich and from practices in everyday spaces to special locations or tourist destinations.

Participant behaviours, along with the corresponding locative media applications, were then examined to provide evidence of how participants were found to use locative media for the spatial counter dynamics of collaboration, familiarization, refamiliarization, defamiliarization, and decommodification. Finally, participant behaviours were also discussed to report on findings of locative media use and the sense of place categories pertaining to affective individual, socio-cultural, and the physical. In the next chapter, the Discussion, these findings provide the basis for exploring the overarching role that locative media can play in people's relationship to place.

Chapter 6
Discussion

6.1 Chapter Overview

In this chapter, I analyze and elaborate upon the findings identified in the prior chapter. This discussion analyzes these findings as they pertain to my research questions:

1) What forms of spatial counter dynamics are manifested in people's use of locative media and how do they relate to people's relationship to place?

2) In what ways does people's use of locative media influence the affective, environmental, or social aspects of their sense of place?

Since scholarship in locative media and sense of place is still in its infancy, I conducted this exploratory study to identify the components and relationships amongst people, technology, and places as they pertain to my research questions. In the previous chapter, I provided evidence of how participants are actively engaged in using the features and the content of locative media to construct their own spatial meanings, addressing my first research question. The findings chapter also addressed my second research question by documenting how participants' use of locative media can play a role in influencing their sense of place.

This chapter now explores the study's findings in more detail. It focuses on key points arising from the findings that are the most novel and significant to the literature. The first section of this chapter, 6.2, discusses findings related to my first research question. I explore how spatial counter dynamics were manifested in the locative media used by participants and provide an analysis of the influence this had on their relationships to place. I argue that each of the spatial counter dynamics are present in participants' experiences with locative media. I believe that through such dynamic interventions and representations of and with place, participants created new relationships with their places.

The following section, 6.3, discusses my second research question. In section 5.8 of the previous chapter, I used Bott's sense of place framework to examine the means by which

participants used locative media related to each of the types of sense of place that Bott identified in the environmental, sociocultural, and individual-affective domains. As noted previously (page 142), my analysis of the data led me to the conclusion that there is persuasive evidence to support all of Bott's sense of place criteria. There are, however, three areas that in my opinion present the most novel and significant findings:

1) Geographically relevant information and social navigation accessed via locative media and their contribution to the sense of place domains of prospect and well-being

2) Locative media facilitating spatial pauses and spotlighting locations and their contribution to the physical setting and sociocultural sense of place domains

3) Interacting with place via locative media and its contribution to the sense of place domain of existential connection

This discussion of these main points is followed by a reflection on the conceptual implications arising from this study, followed by the conclusion.

6.2   Spatial Counter Dynamics via Locative Media and Place-making

Place-making refers to efforts people engage in to alter the qualities or representations of a place and to foster a new, and in the ideal, more meaningful, sense of place. As outlined in Chapter 2 – Analytical Framework, to investigate my first research question I used Crawford's 2012 work to devise five ways locative media functions to help people create and share their own meanings of place. These are: 1) collaboration, 2) decommodification, 3) defamiliarization, 4) refamiliarization, and I added the fifth, which is familiarization. I will now discuss each spatial counter dynamic individually, focusing on how participants' use of locative media played a role in their relationship to place.

6.2.1 Collaboration

Crawford (2012) identifies collaboration as an ideal underlying many of the counter dynamics. She notes that such collaborative efforts "takes innumerable forms" (p. 85), but are united in that they offer a way to achieve collective goals. From this study, we can see participants using locative media to achieve collective and individual benefits that make their physical spaces more useful and meaningful for them. The collaborative efforts I observed in the study range from intentional to spontaneous, organized to nebulous, temporary to permanent, local to international, and public to private. Collaborations may be between two or more locative media users and the parties may be known or unknown to one another.

There was one main area where participants' collaborative efforts (whether planned or unintentional) have implications for their relationships to place. That is in an act that can be characterized as databasing the world for collective utility. Media scholar Bowker coined the phrase "databasing the world" (2007) for the phenomena he observed of increasing documentation of human life being recorded and stored in computers, including items that would not necessarily have been documented before. In this study, I found that participants were frequently uploading information about their world and their life experiences via locative media. As opposed to other media that depend upon professional content creators and distributors, I found participants exhibiting a do-it-yourself mentality at work here. It is everyday people providing facts, reviews, and imagery of locations. Participants also reported adding locations into the application database – essentially writing a place into existence for that application. The end result of their and other users efforts are the ongoing creation of an unprecedentedly large and global database of our physical world. Much of the collaborative efforts found in this study support their desire to have such information available when and where it is needed. For locative media applications oriented towards place discovery and social recommendation, whether for locals or tourists, these efforts are needed to achieve the degree of content reach and geographic relevance necessary for these applications to realize their collective utility. The fact that participants are performing unpaid labour that benefits corporations was not identified as a concern by participants, although, it has been identified as form of corporate exploitation in the literature (Petersen, 2008).

Motivations for such acts was found to arise either from either highly positive or highly negative encounters with a location or out of a sense reciprocity and altruism. Participants indicated they benefitted from the content of others and feel they should in turn provide content. For example, participants reported using Yelp or Foursquare to find good restaurants, and in return they updated the applications with their own content to maintain the timeliness of the database. Some participants clearly expressed that they were motivated to add such content for altruistic purposes – to help other users, businesses, or organizations. The ethos of helping anonymous others by uploading information about locations is evidenced in Alex describing why he wrote a Foursquare tip about a confusing bus stop:

> Only people who live there would know that or who take the bus frequently. So when people are new to the city or you're a student who hasn't experienced that before. You buy the wrong ticket and it's just a shitty situation….I was sending a warning flare. Like, hey, heads-up. It's a small thing to do. I mean that one sentence can save I don't know how much pain for other people.

This spirit was also seen with participants sharing news about locations, such as a bomb threat Heather experienced on her university campus or a traffic accident William encountered on his morning commute. He describes the situation:

> I got to Spadina and Dupont and right before there, there was this massive car, there was, like, this big, big truck that was completely on fire! ...so I made a tweet about it…. Just to give people a heads up to avoid that part of their commute and also just to bring attention to it.

A sense of reciprocity as well as altruism was also seen in Alex submitting corrections about Google Maps, Tricia sending updates on traffic conditions via Waze, and with Vera planting letterboxes. When Jacy found outdated information about an outdoor artwork on Findery, she decided to update the application, "so nobody else will go on that walk and not see anything….It's just helpful. It's everybody helping each other out." Other motivations are more personal in nature. Adding content, particularly in the form of reviews, was found to arise out of participants indicating they had a highly positive or negative experience with the location (the motivations for negative reviewing is discussed in the next section, see also Section 5.6.9 for further discussion on participants motivations for reviewing).

It is not just the existence and access to this database that is valued by participants, it is also its crowdsourced nature. That is, the content is made by citizens rather than corporations.

With citizen authored content that participants expressed valuing, the content can be seen as tapping into Geertz's concept of local knowledge (1985) or Relph's notion of insider authenticity (1976). Frances describes the appeal of this type of content with regard to one locative media application, "The benefit of it really is that it is people who have created it are using it." Frances refers to this approach as offering more useful and "honest" information about the world. Many participants cited a skepticism of official sources of information about locations, particularly when arising from corporations (discussed further in section 6.2.2). Yet, the content users create about their world is not unfettered, because for many locative media applications, the structure and types of content that can be created is controlled by profit-driven companies. As well, the application companies often retain the right to remove any content they believe violates the terms and conditions that they require users to accept in order to use the application (Hartzog, 2013; Rosen, 2013). However, no participants mentioned feeling confined by terms of use or having their content rejected.

Participants also identified problems with relying exclusively on user generated content opposed to professionally authored and overseen content. Quality control of information varies, as content can be outdated, inaccurate, irrelevant, or spam. Participants were highly critical of these types of information problems, yet seem resigned to the situation. Although the scale of maintaining editorial quality would be difficult for many applications that rely on user generated content, it would substantially improve user experience.

Despite concerns, in this section we can see user collaborations with a goal (intentionally or otherwise) of achieving the collective utility of the locative media applications. It is a sense of the spirit of everyday people creating content together primarily for their own benefit. Such efforts bring local knowledge to a wider audience and assist people to control the information they find useful and meaningful when and where they want it. In subsequent subsections, we see how collaborations can have the effect of decommodifying locations or enabling others to familiarize or refamiliarize with locations.

6.2.2 Decommodification

Decommodification refers to efforts people make (intentionally or otherwise) that supplant a location from its commercial or economic functions (Crawford, 2012). Such efforts may entail creating representations counter to economic purposes, undermining commercial activity, or other actions that reimagine or assist in repurposing a space for people's own uses independent of the intended commercial purpose. It should be noted that I view decommodification not as a binary state, but rather as a continuum of efforts that serve to assert citizen control over their spatial interactions and commentary, regardless of whether the effect entirely removes a location from its commercial context. Decommodification efforts in this regard can be seen as giving people the tools to create interactions and meanings of place that better serve their own interests rather than hegemonic interests. While some scholars have argued that mobile media create "brandscapes" (Manovich, 2006) where cities are overrun with content promoting commercial interests, the findings of this study suggest a blending of commodification and decommodification of spaces via locative media. Participants were found to frequently use locative media for commercial purposes and to support commercial interests when they aligned with their own interests or values.

Participants were found to use locative media in ways that support the commercial function of locations. Sometimes this was to check-in, post a photograph, or write a review in exchange for a promotional offer or for impression management, a "humble brag" (as Alex described it) of being associated via the application with a high-status location. Another motivation includes participants wanting to help out businesses owned by friends or feeling an affinity for a business. Even while using locative media for commercial purposes, participants still, and occasionally simultaneously, used it to support their own objectives, such as finding the best price or a restaurant to suit their tastes or diet preferences.

Commodification of both commercial and public space is also readily seen by corporations themselves. Corporations were quick to realize the potential of locative media as a marketing and advertising avenue. Bernard is concerned about corporate surveillance as he believes that companies will access his location from these applications as "they want to know where you are and what you're looking at so they can pitch harder to you." Several participants also expressed concern that some locative media had been co-opted by corporations in the form

of astroturfing. Astroturfing is the presence of corporate content disguised to appear to have been written by an average user or through the spamming of commercial content (Bienkov, 2012; Luca & Zervas, 2016).

There were three predominant ways I observed participants using locative media within the realm of decommodifying spaces. The first way was using locative media to write reviews or provide ratings critical of businesses. The second was using locative media to find better prices, deals, or promotions. The third was using locative media in commercial spaces for non-commercial purposes.

For the first instance, where participants were decommodifying space through reviews or ratings, participants were observed uploading critical commentary of businesses mostly through textual reviews and providing a star rating on the applications Yelp and Foursquare. Participants expressed feeling motivated to write critical reviews when they are unsatisfied - in a sense providing them with a form of retribution. Evan related that his anger over poor treatment at a restaurant prompted him to write a tip:

> So there was this chicken wings place that I wrote a review and I was upset because the price they said as a special wasn't really the special they were offering so I wrote a review to correct that. That review got a lot of feedback from other people that appreciated that review.

Other participants reported writing reviews on Yelp or Foursquare of businesses based an unsatisfactory experience. Such reviews written by participants were observed to be factual and cautionary more so than emotional or hostile – although these types of reviews can be readily found on the applications as well.

Participants expressed an appreciation for such user reviews due to skepticism of official (particularly corporate) sources of information. William puts it directly, "I'm just generally skeptical of all corporate speak or marketing – pardon my French – bullshit." Jacy also finds reading material from users of locative media can provide a desirable alternative source of relevant information: "It's great where people can share their own content, and I like content that's not commercial content, it's just people entering interesting things. I'm more interested in that." Tricia, who works in marketing and public relations, notes she is aware of the spin placed on official content and instead prefers citizen-supplied information on locative media:

> I would value a user review slightly more than a corporate written statement about a place....the user is going to give you a bit more accurate review of how the user experience was. And I think the restaurant, you know, when they position it, they're talking about how they want you to feel and they're talking about their product and what they're selling, whereas a user gives more of an experience of how it is for someone not working there.

These participant comments demonstrate social navigation and how participants make their own judgements regarding which businesses to visit due, at least in part, to information gathered via locative media. Participants were seen being resistant to conventional marketing or visiting businesses based solely on proximity. In this regard, they are asserting through their use of locative media their own power over corporations, yet still within a commercial context. The impact of such consumer reviews has been found in other studies to significantly help or harm companies, particularly independent ones (Luca, 2011).

Another way participants were using locative media to undermine commercial efforts or to maximize their own benefits when dealing with corporations was through seeking and sharing better prices and promotions. Locative media applications allow users to easily compare prices, as Parker stated on his use of Tagwhat at a local mall: "I was looking for nearby restaurants and I found them, and was able to save because I compared the prices nearby." The application Groupon provides a way for users to receive promotional offers or pricing on proximal goods or services. Tricia describes using it this way, and although this is supported by businesses that subscribe to Groupon's service, it nonetheless was found to be a means for consumers to take more control not only of their money, but also in the decisions regarding which locations they do business with.

Perhaps the most dramatic way participants were decommodifying locations via locative media was to repurpose existing corporate or institutional spaces for purposes completely unrelated to their intended purposes. As graffiti art or parkour has done before (Iveson, 2013), locative media was found to be used to create new uses for existing space to suit users' goals rather than the goals of the owners of that space. One participant even describes their use of locative media contents as "virtual graffiti". These acts are unsanctioned by the owners of the location and entail a precarious legality. This dynamic was seen in Vera planting letterboxing at university campuses and businesses where show knows they are not officially permitted. It is also seen in Alex playing location-based games at monuments. In comparison to Pokémon Go,

these location-based games were limited in their general adoption. Yet all these examples are instances of a location transmogrified into a playground of sorts that fits the objectives of the game and overall notion of play rather than the official purpose of the location.

These behaviours taken as a whole demonstrate participants engaging in commodification and decommodification behaviours as mediated by locative media.

6.2.3 Defamiliarization

Unlike the two prior spatial counter dynamics, defamiliarization via locative media is a media effect more so than a user behavior or activity. Defamiliarization is a media process that occurs for people already familiar with a location, wherein the media form or content serves to break down prior conceptions of place and opens people up to receiving new, alternative or counter-hegemonic meanings (Crawford, 2012). As discussed in Section 3.4.4.3, locative media, through its ability to defamiliarize locations, has frequently been declared manifestations of Debord's détournement (1956a) and dérive (1956b). In this study, I found that locative media can present the familiar in a jarring manner, leading to new interpretations (i.e., détournement) and direct participants to new locations in unexpected or haphazard manner (i.e., dérive).

I found that locative media achieved a defamiliarizing effect for participants in two ways. First, in some instances, a defamiliarizing effect is a deliberate goal of the application developers. Some locative media applications, such as Queerstory, were designed with the intended purpose of presenting familiar locations to users in a new or jarring manner that encourages people to reconceptualize their spaces. This may arise out of developers' geo-political goals or for predominantly entertainment purposes, as seen with location-based games. The second way in which I found a defamiliarizing effect via locative media in this study, was through participants being exposed to content that was so unanticipated, surprising, or novel that it served to defamiliarize them.

Intentional defamiliarization through locative media was found through participants using applications presenting a fictional version or overlay upon physical reality. Defamiliarization can be seen with how Vera describes Zombies Run. Superimposing a zombie apocalypse narrative onto user's surroundings during their fitness routine is done for fitness motivation, as the goal is

to run faster to avoid zombie attacks. But, as Vera describes, the novelty and entertainment value of the zombie narrative enlivened her regular routes in her residential neighbourhood, encouraging her to think about her familiar surroundings in a way that was interesting and was also an effective motivational technique. Similarly, the location-based games of Ingress and Parallel Kingdom superimpose science fiction and fantasy elements onto the physical world for entertainment, but they also result in participants approaching and recalling their physical world in new ways. As Parker mentions, the game world of Parallel Kingdom can occur in a dull space, such as the suburban landscape he passes by on his bus ride, but it was given a new vibrancy and relevance for him through using the game. Alex notes his use of Ingress provided him with a new perspective on regular spaces he traverses as, "the world essentially becomes the game field, like literally the entire world." He adds: "I think the experience [via Ingress] of having that additional layer of the world, it's sort of neat. You pretty much feel like there's a map of the world and all these glowing kind of portals." Interestingly, no participants reported using augmented reality forms of locative media, that is, where one views the world through a mobile device with information or layers overlaid on the physical world. Augmented reality has well known user experience difficulties (e.g., Cocciolo, & Rabina, 2012) which may explain the lack of any participants reporting using it.

Defamiliarization efforts were found in ways not involving fiction, but still displaying a jarring or disruptive view or interpretation of locations. Rob and his Narratives application can defamiliarize users through providing a way for people to see things about their locations quite different from what they would see there without the application:

> Our app allows you to see around the corner, to see beyond walls, almost like being God, and being able to look around quickly and see what's happening, actually what people are doing…. content that's being provided is not necessarily going to be what's happening that day. It could be historical photographs. It could be a way of looking at your city that you've never seen before.

We can also see defamiliarization achieved via locative media with the application Queerstory. Not only are the application's creators, Susan and Oliver, documenting the LGBTQ history of Toronto locations, they also show that queer stories and lives happen in locations where queer history was marginalized or forgotten. In developing Queerstory, an objective was to map and make queer history more visible. Susan describes their efforts as putting up "digital plaques" around the city. Oliver reported Queerstory users, "were intrigued to discover several

sites and neighbourhoods not traditionally associated with the gay community and its history."
They also made use of abstract, performance art videos by local artists to aid in re-creating
interpretations of familiar places. With both Queerstory and Narratives, there was an intentional
effort to use locative media to show users what is normally not seen and in ways, such as through
multimedia, that prompt their users to consider or reconsider aspects of a location.

The second type of defamiliarization I found in this study does not necessarily derive
from an intent on the behalf of the developer or author to defamiliarize, but is the result of
exposure to certain content via locative media sufficiently surprising or novel that it has the
effect of defamiliarizing users. Thus, locative media can also be defamiliarizing inadvertently.
Evan seeks out such content on Instagram while at a location because he believes it offers
dimensions he might otherwise miss. William describes using Pixifly in a location and viewing
photographs on the application of

> things that no longer existed, like old buildings and things or very temporary
> settings or views or events that other application users took photos of. And it was
> really interesting to compare what it was like now with that thing absent
> compared to what it looked like in his photo.

This juxtaposition of past and present viewed simultaneously in situ provided William not only
with a historical sense of the locations, but also a sense of the fleetingness of time.

Defamiliarization does not necessarily result in a positive outcome for locative media
users – it may result in developing a negative perception of a location. Some participants
described feeling disconnected or disjointed when at a location and it does not match the images
previously seen on locative media. Parker describes looking at geotagged photographs on
Instagram of a location while there: "I'm surprised, sometimes I'm just like, oh, the photo made
it look much better than it actually is." Similarly, Jacy's use of locative media presented textual
information that was in contrast to her existing impression of a familiar outdoor area near her
workplace. Jacy describes looking up information about the area on Waymarking and finding an
entry listing a skating rink dedicated to a famed Canadian skater, but in years of working at this
location she had never seen a skating rink there. After confirming a "derelict looking area" was
the former skating rink, it changed her feelings about the place from "non-descript" to "sad", due
to the disappointment that an area meant to honour an accomplished athlete had been allowed to
become so run-down.

William provides a summary of the defamiliarizing effect of locative media, as he comments that using it will "provide you with almost like a different lens with which to see the world around you."

6.2.4 Refamiliarization

Refamiliarization can overlap with defamiliarization as both are a process or media effect wherein a locative media application serves to challenge people's familiar notions of their physical world and present new information, interpretations, or representations. In this context, refamiliarization differs from defamiliarization in that the process is less jarring of prior conceptions and more of an informational process. Crawford notes refamiliarization efforts may make, "harsh places feel more like home" (2012, p. 84), yet this might not always be the result or even the goal. Refamiliarization via locative media may not be a deliberate action and the outcome is not necessarily positive. However, the findings in this study show how locative media can play a role in the ongoing, evolving relationship of people to their places. As Deleuze and Guattari argued (1987), place is a process – not an unchanging end-state – and refamiliarization can be part of this process.

For some participants, using locative media provided them with new and valuable information about familiar locations. William's use of locative media is a good example of this. He is fond of using locative media to learn about locations or to receive recommendations of sites or businesses even in locales he knows well. William notes that it can help point out aesthetic aspects of a location or provide factual details, which he feels he might otherwise miss or mischaracterize:

> It might be something invisible to your eye in person because it's just become part of the scenery. That's why I don't take it for granted. I look on Yelp and see if – like, this hole-in- the-wall restaurant that looks like nothing on the outside might be one of the best restaurants in the city on the inside, which is why I go to Yelp even in places where I'm completely familiar.

William also reported that his use of the geocaching application lead him to extend his explorations of familiar locales: "It helped me explore a lot of neighbourhoods that I was familiar with but not *that* [his emphasis] familiar with." Luke also relates using locative media to

discover information about locations he has been to already, such as learning about a local gas station's history as both a risqué cinema and a church, when he had no prior indication the location had such a long and colourful history before using locative media.

In both William and Luke's cases, there was a deliberate effort on their parts to use locative media to learn about their locations. Evan provides a good example of participants being refamiliarized with a place while using locative media for other purposes. Evan relates an instance where he used Grindr to arrange romantic encounters in his former hometown. Through this, Evan got a different sense of his hometown [location withheld to preserve confidentiality], than he had ever had before:

> Until I moved to Toronto, I didn't think there were very many gay people in [my hometown]. Then I used Grindr one weekend when I was back visiting my family and I found a lot of people using it there. So I found out there were a lot of gay people there and it really gave me a really different feeling of knowing [my hometown], and it made me actually feel more connected to it. I mean, I was happy to leave [my hometown], partly for that, to feel more included in the gay community in Toronto, but upon using that app, it made me really think about [my hometown] differently.

Evan also uses the application Whisper to read anonymous posts of people who live near him. He finds it consistently lets him see different and new sides to life in his neighbourhood as, "It gives me fragments of the life of people around me." With place perceived as an ongoing process (Deleuze & Guattari, 1987), we can see participants using locative media in a way that revises and refreshes their knowledge of their places and, consequently their relationships to those places.

6.2.5 Familiarization

The concept of familiarization assumes that one has not physically been to a specific location before, or if they have visited the location, they recall no distinguishing details. I added familiarization as a spatial counter dynamic to broaden the range of this process beyond Crawford's refamiliarization and defamiliarization. Locative media was found to aid participants in becoming familiar with a location by gaining knowledge of its existence, becoming oriented

or directed to its physical location, learning facets about it, having an experience there, or reflecting on the location.

All participants in the study reported using a locative media application as a wayfinding aid. At its most basic functionality, locative media applications can aid people in finding their way to and from locations. Although a basic functionality, wayfinding was found to provide a strong contribution not only to place familiarity, but also to providing a sense of well-being, as discussed in the Section 6.3.2.

The second most reported use of locative media for familiarization was using it as an information seeking tool to retrieve information pertinent to a user's location, that is, geographically relevant information. Mark summarizes this type of experience: "It gives you an idea before you get there or while you're there of what to expect." Cathy notes simply that locative media, "gives an insight into the area and makes me feel more aware of my surroundings" and provides "far more knowledge and awareness of the area."

Learning of a location's existence via locative media through highlighting proximal sites was also a frequent experience for participants. This was found to occur as a result of planned information seeking, a planned foray for exploring, or from an alert provided by the application. One of the main reasons Jacy reported enjoying her use of Findery was that it provided suggestions of points of interest to see and information to explain what was there. She states, "I wouldn't have had any of that information. Sort of being able to look things up where I am and then going out and discovering." Mark reported being in a new city and finding out via Foursquare about a local museum nearby. As a result of this information, he decided to visit the museum and enjoyed it. This type of experience was also reported by William after finding previously unknown scenic walks near his home through his use of locative media. William uses locative media as his primary information aid – essentially a travel guide – for his frequent travels with his partner, as he recounts during a weekend trip:

> We used it [TripAdvisor] because we had no idea what to see in Guelph. We'd never been. We just decided to go one Saturday afternoon. And then we just ranked, we went on the Guelph page for TripAdvisor and we went on the attractions and things to see subpage and ordered it by highest rated.

Vera has had experiences similar to William's through her use of the letterboxing applications. For example, Vera described the applications as facilitating her explorations into her region's wilderness and conservation areas. Not only has this lead her to locations she has not been to before, but it has also provided a ready means for her to learn about facets of her locations' history. She notes that this information enabled her to have a unique sense of each location in areas she found otherwise indistinguishable.

Rather than completely prepare for a visit to a new location before departing, as they might have before the arrival of locative media, some participants reported enjoying just using locative media upon arrival as needed. In these instances, they relied on the social navigation features of locative media. Tricia describes how Yelp fulfills this function for her:

> Well, if I'm in an unknown neighbourhood, I mean, I might not even know where to drive through to find any kind of restaurant or store or anything like that. If I open up Yelp, I can search based on my current location and it'll show me all the coffee shops in the area, all the restaurants nearby. And then, it also will give me a rating on each of them and this is a great place, people really like it, I think I'll feel comfortable there. And just even to know which main streets to head to, to have a whole bunch of places to pick from. If you're in an unfamiliar neighbourhood, how do you find them?

Alex describes using Airbnb in a similar manner to arrange nearby accommodations during his travels.

As mentioned in Chapter 2, a place can be of any size - so although individuals may be intimately acquainted with the building housing their workplace, they may have only a passing visual familiarity with the buildings or businesses on the same block. A person may have a sense of a location at a city level without having a street-by-street knowledge of it. The locations users might learn about or discover can be quite near where they live or work. Evan describes one such experiences with Instagram:

> When I used to live in the Annex, I was checking out photos that said they were near me and I found out there was this alley with some really creative graffiti right behind where I lived and I never knew about that. So I went out and actually looked for it and I loved it. It was one of the best murals I've seen and it was right behind me – I couldn't believe I hadn't found out about it earlier.

Similarly, Ian was encouraged through using a geocaching application to visit a scenic vista area of a familiar park but noted that this vista "was someplace you wouldn't have went to if it hadn't

been for that." In these cases, participants reported finding locations via locative media to be a positive experience. It was interesting that the discoveries participants made closer to home through their locative media use spurred more delight in them than those using locative media for foreign travels. By pointing out proximal points of interest, locative media in effect shows these users secret treasures next door.

Yet, through helping people become more familiar with their surroundings, locative media can have simultaneously positive and negative implications, as Evan points out: "My experience of places is more colourful now [due to locative media]. I certainly am able to find my way more easily now. But there is a sense of loss of adventure or chance. Everything is more certain now." Parker, also reported a downside of having such ready access to information (as discussed in the prior chapter on page 138) as information gained from locative media can remove the thrill of surprise and a sense of discovery. As Schwarzer cautioned (2010), locative media can remove a sense of uncertainty, experimentation, serendipity, or discovery, which can be personally rewarding. These participants, although they also report valuing locative media's information, provide contrasting cases that highlight the possible downside of having ready access to such information.

Most participants reported instances of using locative media as an information tool to learn about the existence of locations and details about their world. Such place familiarity is integral to forming a sense of place and making a place one's own.

This study demonstrates that spatial counter dynamics are a useful framework for examining locative media and its media affordances and user practices. Crawford's framework is shown to extend beyond only urban settings, such as to wilderness areas. We also see that locative media provides a venue for citizens to resist hegemony by asserting their power to create their own places and share their own spatial narratives and representations. Non-commercial applications, such as Queerstory or Narratives, as well as location-based games, offer strong potential to make and remake place in new and effective ways. Yet, such acts were also found to exist in participants' use of more limited and commercial applications. User issues, however, remain – particularly in relation to information quality. Locative media is a young and emerging

medium, yet it offers some intriguing potential for aiding and improving people's ongoing relationships with space and place.

6.3 Geographically Relevant Information and Social Navigation Accessed via Locative Media and Sense of Place Feelings of Prospect and Well-being

As discussed in the Section 3.4.3, the literature review, some scholars have expressed concern that locative media removes a sense of discovery of place or that it distracts from place. Although participants did report instances of this, I also found evidence to indicate locative media can foster positive relationships to place – particularly with regard to Bott's sense of place types of prospect and well-being. This is at least partially attributable to the geographically relevant information and social navigation locative media provides.

Geographic relevance, as previously discussed in Section 5.5.2, concerning locative media refers to the degree to which the topical geographic footprint referred to in returned information matches the physical location of a user (de Sabbata and Reichenbacher, 2012). Social navigation, as discussed as a user behaviour in Section 5.6.10, refers to people using the information or traces provided by other people to base their paths and destinations upon. Participants were found to retrieve a diversity of geographically relevant information in the form of tips or recommendations regarding proximal points of interest. Users were found not only to use and value this information, but they also reported that they appreciated locative media as their preferred means of accessing this type of information. Additionally, some participants reported locative media was the only method they used to access this type of information.

Geographically relevant information was also found to play a role in the information, purposive, and refuge types of sense of place that complete Bott's sense of place domain of Functional Individual / Personal Domain. The findings that I found to be the most novel and substantial are for well-being and prospect, and will thus be the focus of this section.

6.3.1 Prospect type of sense of place and locative media

Bott itemizes the Prospect type of sense of place as being when a person exhibits any of the following feelings towards a place: "feel like there are opportunities here for me, feel like exploring, feel like I have options, feel a sense of mystery" (2000, p.58). Although Bott does not have a type of sense of place for the inverse of Prospect, some participants, specifically Mark and Parker, mentioned their locative media usage returned geographically relevant information that resulted in them feeling the opposite of some of these items. For instance, they reported that feeling elements of surprise and self-discovery were at times absent from the locations where they used locative media. However, I found that overall, participants were more apt to report that their use of locative media encouraged their spatial explorations and fostered opportunities.

Participants exhibiting feelings related to exploring were most apt to use Findery, Waymarking, geocaching or letterboxing applications – even locative dating applications. Jacy and Luke reported using Findery to aid their sense of discovery of locations near them. Heather also uses locative media in this way and appreciates the suggestions it offers about the locations she is at, "It makes me feel excited or thrilled to learn something that I don't know myself."

Interestingly, participants did not report many instances of locative media use leading to a sense of mystery. This might be because locative media is used more for exploring by suggesting proximal points of interests or game locations and generates a sense of discovery by providing geographically relevant information. Based on the study's participants, a sense of mystery or similar feelings of curiosity towards the unknown was most often generated as the result of viewing geotagged photographs. However, Jacy did mention that her desire to share content with other users on Findery encouraged her to approach her surroundings with the intent of spotting interesting locations. She describes finding "two weird houses" and posting a photograph of them to Findery. The ensuing conversation with other Findery users (strangers to Jacy), "got me thinking, what could be the story here? What the heck is going on? It just got me thinking more fancifully or in depth about what's around me." In this instance, it was the other users and the innate characteristics of the location that provoked Jacy's feeling – however, it was posting and geotagging this photograph to Findery that facilitated this experience.

Believing that a location provided opportunities or options for them was also identified by participants. It was most often Yelp, Foursquare, and TripAdvisor that influenced these

feelings. Participants use these applications as they appreciate the guidance to nearby points of interest or businesses with corresponding user generated recommendations. The aspect of social navigation is particularly relevant here. A good example of this is Tricia and her use of locative media to find a location for a "date night". She noticed positive ratings and reviews for a nearby fish and chip restaurant. This convinced her and her husband to try it and resulted in a good discovery for Tricia and "a great time".

It is not only recommendations from locative media that contributed to participants feeling like a location they were at provided opportunities or options. Parker describes using locative media to look up information related to his location to see if they fit his budgetary needs: "I used it [Tagwhat] to discover what stores were there [at a local mall], and if the stores were fitting my budget for my to do list." Alex reported using Yelp in his hometown and in San Francisco to locate businesses near him that are open at night, something he previously found quite difficult to do, and has allowed him to avoid searching unfamiliar streets at night. Alex has also used locative media, in the form of Airbnb, to find accommodations while travelling that were near him. Other participants also reported instances of being in a new and unfamiliar location where they were able to use locative media to find the type of business or attraction to visit that met their needs.

6.3.2 Well-being type of sense of place and locative media

Bott itemizes her Well-Being type of sense of place as being when a person exhibits any of the following feelings towards a place: "safe, comfortable, warm, serene, reassuring, revitalizing, feel in control, feel peaceful, feel comfortable, feel calm, feel a sense of comfort, feel serene" (2000, p.58). Considering the geographic relevance and referrals to proximal services that locative media provides, combined with the ubiquity with which people carry around their mobile devices (and with content reach and widespread network access), participants expressed numerous instances where they used locative media that resulted in a well-being type of sense of place.

Participants, through their sharing of real-time location via check-ins or automated location tracking, were found to have feelings of safety through knowing the location of family

members. Tricia provides a good example, as she relates her family's use of an automated location sharing application to keep tabs on their young daughter: "She's right at that age where she wants a bit more independence, but I'm a little bit reluctant to give it, so it [Find My Friends] just lets me know that she's safe and she's close and I know where she is." Frances relates another way locative media facilitates feelings of safety, as it helps her feel at ease when she is out by herself at night because she knows close friends are aware of her location through her check-ins that she shares with them.

Having access to geographically relevant information at any time and location, as provided by locative media applications, was often stated by participants as having a positive impact on their experience of a place. There are many instances in the study where participants were found to have feelings for a place along the lines of feeling in control, safe, reassured, calm, and comfortable. Such information was found to take various forms for participants, such as real-time traffic and route conditions updates when travelling, alerts on the status of public transit, weather forecasts, fitness recommendations, and breaking news. Quinn reported regularly using a public transit application, RocketMan, to provide assurances to herself on the status of a bus at her regular stop as, "It's very helpful to see if your bus/streetcar is actually three minutes away, or more like ten minutes." Alex describes a similar feeling when he uses Uber to track his hired car's location in real-time. He notes that this provides him peace of mind by giving him more control of the situation opposed to traditional taxi service.

Geographically relevant information influencing participants' well-being type of sense of place also took the form of participants using locative media to find and receive recommendations on services, often related to food that met their diet or location needs. Bernard describes an experience that would have likely resulted in him being stranded and quite concerned if he had been unable to use locative media:

> Our car broke down on a holiday weekend on the 400 just south of Newmarket. So one of the things that was fortunate was I was able to use the phone to [use Google Maps to] find the closest place where you could rent a car. That turned out to be extremely handy.

Similarly, Evan notes how he used Yelp to facilitate his transition to a vegetarian diet: "It can be difficult to find places where I can eat and that are good. I recently found a Thai restaurant that way [via Yelp] that I really liked."

As a wayfinding aid and proximal referral service that is readily available, locative media has enabled participants to find their way in unfamiliar locations to such an extent that some participants report never getting lost anymore or "randomly wandering around" to find desired locations. They can quickly get their bearings via locative media of their position and their surroundings. As Frances states, "it also helps me get a sense of where it is I'm going as well as what to look for around it." Tricia's use of Yelp to orient, recommend, and guide her to locations and services she needs, lead her to feel "comfortable" even in an "unfamiliar neighbourhood". When Tricia was asked, "How is experiencing a place with locative media different than without it?" she replied, "It's more convenient and handy. You don't have to know where you are to feel familiar. So much info is all right there in the apps. This gives a higher sense of security and familiarity of places than without it." These examples indicate ways people use locative media that demonstrates how this use could contribute to a well-being sense of place.

6.4 Locative Media Facilitating Spatial Pauses and Spotlighting Locations and Sense of Place within the Physical Setting Domain and Sociocultural Domain

In this study, I found that participants' use of locative media encouraged them to pause in space, and through the spotlighting of locations, this could potentially aid the development of sense of place in both the physical world domain and the sociocultural domain. Both Seamon (1979) and Tuan (1977) refer to pauses in our spatial movement as being essential to forming a sense of place. These pauses may be in time, in thought, or both – but they are instrumental in forming sense of place, as they provide the opportunity for us to really perceive the experience and character of the location and form a lasting impression. Spotlighting locations refers to the ability of locative media to recommend or highlight nearby points of interest prominently via its interface.

A way that participants reported using locative media in this manner is through information seeking or discovery wherein one becomes attuned to characteristics, aesthetics, or the sociocultural history of a location. Jacy describes how her use of locative media, in this instance Findery, prompts her to stop and consider facets of the locations she traverses regularly:

> I wouldn't have been mindful about what was around me. Findery is like a little trigger to help you figure out things you might want to go and see and it puts you in the mindset of noticing things more…. Prior to using the app, I would just walk down these streets with the intention of getting somewhere, like going to the mall or doing my shopping and not even thinking about what was around me.

Jacy had this experience with an outdoor artwork in her neighbourhood that she only passively noticed before learning about it on Findery: "I probably passed by it a hundred times and had never really even processed it. And it's actually quite a beautiful and provocative artwork…. It's something I can notice now when I go by and know the context of it." After learning about the artwork on Findery, she read more about the artist, providing a spatial pause while she processed information about the space. Participants' reports indicate that these pauses in space and thought were facilitated by their locative media use and provided them time and focus to learn and experience dimensions of their locations.

Another way I found that participants used locative media that potentially influenced their physical or sociocultural domains of sense of place, was by encouraging participants to take a moment to interact with their location. Through such user behaviours as creative expression, social interaction, and game play, participants' locative media usage was also found to encourage them to engage with their spaces in a more focused and detailed manner than they otherwise do. An extensive traveller, William, reported using TripAdvisor and AroundMe to interact with his destinations "in a different way than just gawking and sightseeing. You sort of, like, engage in a more educational and informative level". Alex reported that playing Ingress resulted in him engaging with his surroundings, in particular with cultural and heritage locations in his hometown, at a deeper level than he would normally engage with these places:

> I have paid attention to some of these monuments that I may not have otherwise been aware of like the statue on University [Avenue] and certain structures or pieces of art that form where portals are... As I walk by, I can feel a personal tie you know, that I know a little bit more about the finer details. I'd say it's knowing the city in higher fidelity.

The use of location-based games, geocaching and letterboxing, as well as the applications Findery and Waymarking, were found to encourage participants to go outside in the first place. Use of these locative media applications lead to participants' reporting that they deepened their appreciation or knowledge of places where they used these applications, potentially contributing to their sense of place for a natural setting or built environment. Participants expressed using

locative media and appreciating specific locations that the games spotlight, whether as points of interest or prize locations. Although people enjoyed being in nature prior to the advent of locative media, these applications have found a ready audience with participants seeking structured activities or a specific objective for their leisure-time experiences of the physical world. Vera is an avid letterboxer, and the activity itself and the consideration given to where people plant letterboxes enhances her appreciation of the natural settings where most of her letterboxing takes place. She credits locative applications for facilitating this experience:

> It was through the app that takes you to these beautiful places. Like I think of outside of Guelph, I don't know if it's a provincial park or a conservation area, which has the ruins of this mill through this river and it has these beautiful rock formations that are geologic in formation. Well, that's completely different than other conservation areas or municipal parks or provincial parks. And so what the app has done is allowed me to see how different each park is and what it has available to it so it differentiates all these areas in a way that to me before was just this glut of all these parks that were all the same in my mind.

In contrast, however, locative media was also found to lead participants to encounters with a physical space that do not necessarily result in a positive sense of place for the physical world. This was seen when Jacy, as previously discussed, discovered a former skating rink near her workplace through Waymarking.

Sense of place for the physical and sociocultural domains was also found to arise through participants' use of locative media, by bringing locations to participants' attention, alerting them to events happening at nearby locations, or spotlighting new sites or trendy businesses. The findings indicate that locative media may help participants feel connected to the sociocultural domain of sense of place. For example, Evan describes why he likes to check Yelp regularly on the latest news for his city: "It gives me a sense of what's happening in the city. I guess you get other, more personal things when you use locative media. I enjoy that." Vera had a similar experience, leading her to comment: "The tech shows us these amazing things that are so close but we don't see. Maybe it's because we are too busy or wrapped up in things in our lives."

Spatial pauses and spotlighting of our spatial encounters were also found when participants described taking the time when visiting a location to share it with their social network through locative media. In this sense, places become a social object, whether through a geotagged photo, a check-in, or textual commentary. Participants reported using locative media

when they encounter a site they find visually appealing or significant in their physical world and want to capture it and share it with their network. Mark describes a visit to the Royal Ontario Museum in Toronto and having this experience via Instagram, "There were a few exhibits that caught my eye. So I wanted to share that." Evan describes being in a park and having a pleasant experience of the natural environment. He decided to share his experience and appreciation of the place with his friends by taking a photograph with his mobile device and then posting it to Instagram while still at the location. "It's a park in Davisville and some maple leaves. I liked the colour and the light of it – it was very pretty so I posted it and my friends really liked it too." Heather and Bernard also describe using mobile photography posted to Instagram and geotagging the location to share their experiences with nature.

The ability of locative media to encourage people to pause in their spatial movements and contemplations, to spotlight points of interest and to highlight dimensions of a location was seen to help participants' coalescence an experience of physical location and recall it later. Locative media may have helped crystallize the moment, which in turn may lead to a sense of place for the physical and sociocultural aspects of a place.

6.5 Interacting with Place via Locative Media and Sense of Place Feelings of Existential Connection

Through their interactions with locations via locative media, I found participants essentially imprinting themselves onto places by uploading their thoughts, impressions, and experiences to locative media. This took the form of user behaviours such as photographing, geotagging, checking in, playing, and self-tracking. Such interactions can potentially foster a sense of place in the form of an existential connection. Bott itemizes her existential type of sense of place as occurring when a person exhibits any of the following feelings towards a location: "feel a sense of connection, feel a sense of my own identity, feel a sense of attachment, feel a sense of ownership" (2000, p.58). An existential sense of place is an intermingling of a person's sense of self with their feelings for a place.

Writing place reviews, rating locations, uploading and geotagging pictures, and creating a visited places list are ways that people can record their personal experiences of place via locative

media. Although such acts may not seem in themselves like meaningful activities, it is through many of these small acts that participants' made these places their own. This engagement was found to provoke participants' reflection and recall of their impressions and experiences of a place and may contribute to their development of an existential sense of place.

Before discussing this, it should be acknowledged that several participants, when asked whether locative media augments or detracts from their experience of the physical world, expressed feelings at both ends of the spectrum, from fostering a deep, meaningful connection to creating distance from their locations and events. William describes this distancing feeling arising from using a mobile device:

> I am certainly in the camp that using your phone as a medium through which to interpret the world can be limiting. And one of my biggest pet peeves is if I ever go to a music show or a game or the bar to watch a game or a sports game and people are filming it on their phones, and they're looking at their phones at the show. And I'm like, this is so missing the point. It's so self-evident how much. And what are you doing for? So you can put it on YouTube along with the other 54 shitty recordings of this concert…It certainly takes something away from having an experience in the moment.

Heather also commented that use of mobile devices for videoing and photographing removes her attention from the location and event, such as a concert, "because I'm too busy seeing the concert through my cell phone rather than through my eyes". Other participants expressed such concerns, but stated they strived to use their mobile device judiciously so as to be "more present" in certain spaces and times.

6.5.1 Feelings of connection and attachment to a place

Tricia commented that locative media, "does foster a connection – especially with places that are unfamiliar. I think it enhances the experience of the place. It gives us access to more information and data." The findings of this study indicate that locative media can enable participant interactions with a location that influences their sense of connection. A sense of connection is one of Bott's components in an existential sense of place.

As we have already seen, location-based gaming facilitates game play in and with locations that may foster meaningful connections to that place. Vera's use of the letterboxing

application when travelling lead to a place connection through giving her the sense of being like Relph's (1976) insider and having what she deemed an authentic experience:

> I had an amazing experience exploring Charleston. I was there for a day and I didn't have any money so I went around letterboxing all day. And I saw more of Charleston than the people I was with who did some tours and stuff like that because I'm seeing what the locals see.

Authenticity is a fundamental value for theorists such as Relph (1976) for creating a strong sense of place. Mark also uses locative media, specifically Yelp, to filter destinations to find "authentic" locations:

> I would use Yelp to get reviews of good places to eat. But when I go to, like, a strange city, I try to not go to a typical place like say McDonald's or like a chain store that is everywhere. I try to look for something that is authentic for that city.

Several participants noted that locative media helps them find such authentic encounters through prominently featuring unique, i.e., not chain, locations (often via user recommendations) and offering local inside type tips.

Locative media was also found to foster a sense of connection through interactions that allowed participants not only to record their presence (e.g., via a check-in) or impressions of a place, but also to recall that experience later through accessing their history or profile information on the application. Rowles describes profound relationships between people and places as having autobiographical insideness (1983), which is when people mentally write aspects of their life story into their places. I found participants exhibited autobiographical insideness via their locative media use. Their spatial impressions becomes an artifact of the self and embedded in hybrid space. Rob describes his use of his locative media application as not only interacting in the space, but when uploading content it is, "recording a part of yourself to exist in space." Frances stated that storing her memories is one of the features she values most about locative media, as it enables her to have recurring experiences with a place, as she relates with one favoured location in particular: "Japanese Brasserie – I just love it and I go there any time I'm in New York… I'm like always trying to remember, what's that name of that place again and trying to remember it, so this is a place to keep it." The act of recording such memories was seen in itself to foster a spatial connection, but also having the ability to store and recall such memories later via locative media extends, and may deepen, this relationship.

6.5.2 Feel a sense of ownership for a place

Through an analysis of user interactions, such as allowing users to add locations to the applications or upload commentary, I found locative media influenced participants' existential sense of place by allowing them to foster a sense of ownership of place (per Bott's item), although a better term might be a sense of custodianship. Frances' discovery of a new restaurant that she liked, Spiceman Mexicana, is a good example, because although locative media did not lead Frances to this location, a sense of custodianship of the place was stirred in her through her ability to enter the restaurant into Foursquare's database. Locative media fosters a sense of custodianship by providing a means for one to be an advocate for a place by writing a good review or providing helpful information.

6.5.3 Feel a sense of my own identity in a place

The main form of participants' interactions with locative media that suggest feelings of their identity (per Bott's item) were tied to specific places was their check-in behaviour. Although some participants were most frequently observed checking into a location without providing additional commentary, the simple act of a check-in enabled users to project qualities of visited places to their social network. As previously discussed, participants were more apt to check into high-profile, novel, or symbolic locations (e.g., nightclubs, travel destinations, art galleries, and monuments) thereby associating their identity with the perceived qualities of the location. Heather describes such a behaviour when she was at a concert for a famous performer and posted her location to Instagram to her friends via a geotagged photograph. Alex notes that he actually values the sense of authority that locative media can provide in this regard:

> It's like the difference between saying "Oh, here I am at the Billy Bishop Toronto City Airport" and typing it out feels like it's not as official, whereas if you geotag it than I was actually here at this vantage point or whatever. It has a bit more authority to it, like it's actually from the system that geotags versus you declaring that you were there. The app itself is lending itself to verifying that you were actually there.

Projecting or feeling aspects of one's identity through an association with a location was found to occur at an individual level and at a communal level. In discussing how users of Queerstory responded to learning about Toronto's queer history through using the application, Susan recalls

how it lead some users to feel a sense of membership in a spatially-grounded community, "On an emotional level people will be able to imprint themselves onto these experiences… as part of a community, part of the group."

One of the strengths of locative media is its ability, through a variety of features, to enable people to engage with place through textual, technical, or social interactions (as discussed in the previous chapter). I found that this not only prolonged participants' experience with a place but also added dimensionality as well as cementing a spatial encounter.

6.6 Conceptual Implications

Arising from this study, there are a few conceptual implications that I would like to reiterate. To begin, the findings from this study demonstrate that people's use of locative media can range from utilitarian purposes, such as for wayfinding and proximal referral services, to interactive features and multimedia content that engage users with place and a multiplicity of geographically relevant information.

Despite the polarized debate regarding the role of locative media and people's relationship to place, my analysis of participants' behaviour indicates that this relationship is more nuanced. Participants reported locative media having a role in their interactions and experiences with locations that appeared to contribute to a deeply meaningful sense of place, which is an existential connection per Bott's framework (2000). There were a few reports by participants in this study of a negative reaction to place as a result of locative media use. Although there are fewer such negative reports than positive ones, they have been identified in this chapter and the preceding chapter to highlight the diverse, and at times, conflicting role locative media can play in one's sense of place. For instance, locative media was found to help people discover the existence of locations and expand their knowledge about facets of these locations, but it was also found to lessen serendipitous discovery of locations and to potentially lead to a negative sense of place when locations did not meet expectations formed via locative media use.

Through the lens of spatial counter dynamics, arising from Crawford's work (2012), my analysis identified the various ways that people can use locative media or be influenced by it, in the form of collaboration, decommodification, defamiliarizing, refamiliarizing, and familiarizing. These dynamics can assist people to make spaces their own and use locations for their own purposes that may go beyond the original intent of the hegemony. Participants were eager to use locative media to support their commercial goals and the commodification of spaces, although they approached such activities in a more informed and skeptical manner. Contrary to Sample's assertion (2014) that locative media is an impoverished tool to represent the complexity of place, this study indicates that although locative media may not be ideal to represent the totality of a place (if any medium could) we see a diversity and richness of representations and experiences of place via locative media.

Spatial counter dynamics, as we have seen, demonstrates the various ways people are active in creating place. This may be through the user practices of the medium or the features and affordances that the medium offers, yet, nonetheless, people are active in using locative media, deciding which applications to use or not use, what specific features to use and how to use them, and the content they create, share, or read. This demonstrates that through locative media, people are not passive observers of space, but instead are active in using locative media to create their meanings and uses to influence their sense of place. Although we have seen difficulties with locative media and the loss of serendipity or difficulties with the loss of information quality, it would be a stretch to declare, as some scholars have, that locative media, carte blanche, detracts from sense of place.

6.7   Chapter Conclusion

The goal of this study was to explore the role locative media has upon how people create their own spatial meanings through spatial counter dynamics and the role people's use of locative media has upon their sense of place. In this chapter, as well as in the preceding findings chapter, I have argued that participants are engaged in using the features and the content of locative media to actively construct their own place relationships and meanings. My analysis indicates that such user behaviour appears to influence people's sense of place, particularly with regard to Bott's sense of place categories of existential, prospect, well-being, and within the physical

setting and sociocultural domains. I also found that participants use spatial counter dynamics in ways that contribute to place-making, which is, people making locations their own. The final chapter of this dissertation will summarize the pertinent findings and discuss the contributions these findings make towards place and locative media scholarship.

Chapter 7
Conclusion

7.1   Chapter Overview

As the final chapter in this dissertation, this conclusion summarizes the totality of this research. First, I begin with an overview of the dissertation. The subsequent two sections reiterate the main findings and highlight the methodological, theoretical, and design contributions of this research. The limitations, both anticipated and unanticipated, are then discussed. The chapter concludes with participants' thoughts on the future of locative media, followed by the researcher's final impressions.

7.2   Recapitulation of Dissertation

This dissertation began by introducing sense of place as a foundational human need that is under threat by modern life and commercial interests. Due to the recent emergence of locative media, its role in people's place-making activities and sense of place is not yet fully understood. Locative media, through its media characteristics of reach, mobility, geographic relevance, interactivity, and vocality, may influence place-making and sense of place. This lead to my research questions:

1) What forms of spatial counter dynamics are manifested in people's use of locative media and how do they relate to people's relationship to place?

2) In what ways does people's use of locative media influence the affective, environmental, or social aspects of their sense of place?

To answer these questions an exploratory, qualitative study was necessary. The resulting study utilized field reports and semi-structured interviews with 22 people predominantly from Ontario, Canada. Participants reported using 44 locative media applications in a variety of

contexts and locations. Crawford's urban counter dynamics (2012) and Bott's sense of place work (2000) were employed as analytical frameworks.

The next section highlights the main findings of this study, followed by my contributions to theory and praxis.

7.3 Summary of Study Findings

This study produced various findings regarding people's use of locative media and their relationships to place. This section outlines the main findings positioned to highlight my contributions to the understanding of people's use of locative media and the relationship to spatial counter dynamics and sense of place.

The locative media applications participants reported using represent all except one (i.e., Health and Disability) of the types of locative media I identified (see 2.4.3). Of the 44 locative media applications reported, the scope of applications ranged from niche, local applications (e.g., Next TTC, Queerstory) to global, high-profile applications (e.g., Facebook, Foursquare, Instagram, Ingress). Participants reported using locative media in a variety of locations and contexts. As locative media was found to serve both utilitarian and recreational purposes, it follows that the context of usage includes a large array of people's everyday life from work, leisure, liminal moments, commuting, workouts, to running errands. Participants also reported using locative media during their domestic and foreign travels for both business and recreational purposes – although the high cost of roaming fees was often raised by participants as a barrier to greater use.

Locative media was used by participants to access information about a large array of the types of locations encountered in participants' everyday life and travels. Overall, participants were most apt to report using it for finding businesses, predominantly restaurants and cafés. Yet, they also reported accessing information about locations ranging from the small (e.g., a mural, a tree) to the large (e.g., city, region), from the familiar (e.g., workplace, campus) to the new (e.g., monument, festival ground), and from domestic (e.g., home, neighbourhood) to foreign (e.g., hotel, airport). Although the variety and type of locations accessed differs based on the specific

application and its purpose, it is nonetheless interesting to find such a diversity of spaces and places where locative media is put to use.

Locative media was identified in the first chapter as an emerging medium with its characteristics not firmly identified in the literature. To gain a sense of how people's use of locative media may be different from other media, I examined the media characteristics, derived by both Baym (2010) and my prior studies, which I deemed applicable to locative media. From Baym, the media characteristics are mobility, reach, and interactivity (technical, social, and textual), with my additions of geographic relevance and vocality. I found evidence to support the contention that these criteria are present in participants' locative media use and that these characteristics supported functions and features in locative media that participants particularly valued. Evidence was found and presented to support all these criteria. In particular, geographic relevance and vocality were found to be particularly relevant to locative media use. Before the advent of positioning technology and mobile computing, the ability to fully utilize the geographic relevance of information was severely limited (e.g., to print travel guides and in-situ media such as billboards). Locative media was found to offer an extensive degree of geographic content reach and ubiquity of access that enables geographic relevance. Participants reported that locative media allows them to access, create, and share geographically relevant information in ways that would have been difficult, if not impossible, before the advent of locative media. Similarly, vocality of a medium was similarly severely limited before the advent of online media. Yet locative media, through offering user generated content, has enabled a medium to present a multiplicity of content authors simultaneously. Both geographic relevance and vocality were found to be particularly useful and valued by participants.

By combining these media characteristics, locative media was found to be tremendously valued by participants to aid their everyday life and travels. Two quotations from participants highlight their belief that locative media offers them something new, valuable, and that enhances their connection to place. Vera notes that locative media is "giving us more opportunity to discover places. Location [identification] connected with mapping frees the entire world for you. You can find anything now. We didn't have that before. It can free you up to get closer to people and places." Oliver, in describing his application, Queerstory, notes how applications such as his offer "the layering of hidden stories, rare archival material and on-site interviews [that] create a unique sensory experience of place." It is my assertion that locative media offers new and

powerful ways for people to engage with and experience place by offering user interaction and customization of place-related content and experiences and by providing access to diverse, multimodal and polyvocal sources of geographically relevant information.

Based on my ongoing monitoring of locative media literature, this study appears to be the first to observe and document a wide range of people's behaviours while using locative media applications. The user behaviours that I identified in this dissertation are wayfinding, checking in, social coordination, fitness, play, information seeking, personal history, creative expression, reviewing and rating, social navigation, and exploring and discovering. These findings demonstrate that people's use of locative media range from utilitarian purposes, such as its original function as a wayfinding aid, to its more recent inclusion of recommendation engines for proximal referrals, as well as for more rich and imaginative purposes, such as framing space as a platform for creative expressions, explorations, and play.

My first research question posed the question of what forms of spatial counter dynamics are present in people's use of locative media. Evidence in this study was found to support the presence of all of the spatial counter dynamics: collaboration, decommodification, defamiliarization, refamiliarization, and familiarization. These dynamics can be seen as forms of place-making in that they were found to aid people in making spaces their own.

This study found that participants engaged in collaboration through the creation of location related content (e.g., providing facts and imagery, reviewing) to realize mutual goals or the collective utility of the applications. As opposed to other media that rely on professional content creators and distributors, there is a spirit of the people or a do-it-yourself type mentality towards user generated content. This not only makes certain applications possible, but also affordable (or free) and readily available.

Familiarization and refamiliarization efforts were also found to be present in the actions of participants in this study. This occurred when participants were introduced to new locations or learned new aspects of already known locations through their locative media usage. Participants valued being presented with familiar places in new ways or seeing new facets of their places. Locative media was found to draw upon personal experiences, sociopolitical histories, artistic works, and cultural associations pertaining to locations that serve to familiarize or refamiliarize

participants with these locations. Jacy recounts how she used locative media to learn about her new residential neighbourhood:

> I think it's [locative media] been really helpful in helping me feel more connected to this new neighbourhood that I live in. It helped me discover some areas and helped me think about what I might want to share with others. It's sort of helped me look at my surroundings with a new eye, sort of take a little bit of time to notice what's here and what's interesting and not just marching from place to place but actually looking around and trying to feel a connection with what's around me.

I also found that locative media enables participants to learn about places through the virtual presence and traces of their friends and family. As we visit and engage with places, we usually do not leave a physical trace of our encounters. Often, our accounts and experiences occurring in spaces are fleeting and undocumented. Even when a space's multidimensional stories are documented, they may not be readily available to people passing through. Locative media changes this by facilitating opportunities for accounts and experiences of people in a particular place to be documented and then later accessed by others while in that same location. Participants found this ability of locative media to be particularly valuable. I found that participants frequently use locative media for social navigation, which is to find and understand physical sites based on the records of others. Through such features as point-of-interest ratings, reviews, and proximal and category searches, locative media was found to facilitate users' ability to see, learn from, and act upon the experience and advice of others. Such information can be crowd-sourced (such as ratings) or individually authored (such as reviews) and can be based on an entire user base, one's friend network, or both. All this allows people the ability to see, learn from, and act upon the spatial experiences of others in new ways.

Decommodification was also found to be present in the locative media usage of many participants in this study. Participants expressed a desire to relate to places independent of their commercial function or undermine or circumvent the full commercial goals of businesses, and engaged in decommodification efforts through their use of online reviews and opinions of themselves and other consumers accessed online via the affordances of locative media. The pressures of application owners to monetize their applications to run a profitable business and the desire for users to find and purchase commercial goods and services free of undue corporate influence provides a constant tension. Another interesting dynamic or tension that I found with

participants' use of locative media was that there were instances of participants using locative media for commercial and commodification purposes as well as decommodification – sometimes by the same participant and sometimes even in the same use instance of an application. It is the combination of mass appeal with conflicting user and corporate goals that make locative media rich for study.

Two different participants described the content that locative media enables, one described it as "digital plaques" and the other as "virtual graffiti". Digital plaques represents the officially sanctioned place representations, whereas virtual graffiti represents citizens marking up their spaces for their own purposes. I feel that these terms, at odds with one another, represent both the reality and the tension that continues to exist with locative media use and makes it such an exciting dynamic.

The spatial counter dynamic of defamiliarization was also found to be present in this study. Participants were found to use locative media in two ways that allowed fantasy or elements of surprise to provoke feelings of disconnection or wonder from a location, which lead to new interpretations and relationships with place. The first way was through participants' intentional use of locative media applications that overlay a fantasy layer onto physical reality (whether for gaming or fitness purposes). The second way defamiliarization occurred was when participants unintentionally read or viewed online place-related content accessed via locative media that was somehow jarring or thought provoking. William sums up this effect by noting that locative media "provide you with almost like a different lens with which to see the world around you."

My second research question asks in what ways people's use of locative media influences their sense of place, with particular focus on the affective, environmental, and social aspects of sense of place. A main finding of this dissertation is that locative media can contribute meaningfully to an individual's positive sense of place. Evidence was found to support all of Bott's sense of place types with regard to participants' use of locative media. However, this is not to imply that equal amounts of evidence were found for all of Bott's categories. Indeed, in the case of Transcendental and Refuge, few instances were found. Findings pertaining to two domains, sociocultural and physical settings and three types of sense of place in the internal domain, specifically existential, prospect, and well-being, were shown in the preceding chapter

to present the key types of sense of place where locative media was found to appear to have the most substantial influence.

Although it was not a primary goal of this study to identify ways in which locative media can impede a sense of place or influence the formation of a negative sense of place, locative media was also found to sometimes detract from sense of place, specifically in the area of prospect. Various participants mentioned that mobile use in general did detract from their experiences of place. However, as the participant Tricia noted, locative media "offers so much information about places that overall it enhances more than that it detracts."

This study also found that participants enjoy being able to interact with places in novel or playful ways. Locative media applications offer a diversity of geotargeted information sources, genres, and modalities as well as interactive, playful and user generated content features that offer extensive and diverse experiences of and with place. Many locative media applications also enable users to create content, thereby fostering bidirectional relationships between people and place. Locative media can give users the ability not only to write reviews of a place or upload photos or videos about places, but also to create places into the database. Writing place reviews, uploading and geotagging pictures, and creating a visited places list are ways that people can record their personal experiences of place via locative media, contributing to feelings of autobiographical insideness (Rowles, 1983). Although such simple acts of rating or reviewing may not seem in themselves like meaningful activities, they are representative of some of the ways that locative media facilitate interaction with place.

These interactions and engagement with place were found to encourage and prolong relationship with place and foster reflection and recording of place-based experiences. William describes the power of such interactions:

> I think they [locative media] foster a connection [to places] by making you more present…. it brings me, it brings the environment around me into focus. And I engage. It makes you engage in it in a different way than just gawking and sightseeing. You sort of engage in a more educational and informative level. So I think that's the benefit of those kind of apps.

Overall, locative media use was found to appear to influence a positive sense of place, specifically including what many consider to be the most profound relationship with place, an existential connection.

7.4   Contributions of This Study

This section highlights the contributions this study makes to future studies in the form of methodological observations, contributions to praxis, and contributions to sense of place theory and locative media studies.

7.4.1 Methodological observations and contributions

This subsection highlights the potential contributions to future studies in this area by providing examples of effective methods of studying this topic. The research design of the final study provides an example of an effective combination of methods to explore this topic. This study used mobile-enabled field reports, semi-structured interviews, user walkthroughs, and user content probes. Field reports were highly useful, as a source of place-specific data, a contextual use record, and an interview probe. The walk-through provided specific human computer interaction details and opened up the interview to discussing applications of which a researcher might be previously unaware. Interviews are a mainstay of qualitative research, yet they tend to solicit abstract and summative data. However, by combining interviews with field reports, it was possible to obtain useful, concrete data. This combination of methods not only aided participant recall, but also provided a means of data source triangulation.

Although sense of place is often studied, there are few published works providing a comprehensive and robust means to examine the phenomenon. To date, Bott's work appears to be the most useful in this regard. However, Bott's work is seldom cited and remains, in the opinion of this researcher, underutilized. This study is the first to test Bott's work by studying sense of place as meditated by locative media. In this study, Bott's instrument was useful in explaining what otherwise is a nebulous and contradictory concept. It also assisted in structuring data analysis codes. The challenges and benefits, as well as the necessary adaptations to using Bott's work, are discussed in detail in Section 2.2.5 and Section 5.8. In short, the items on her scales need adaptation from their original purpose of studying the Colorado State University campus and need to be interpreted broadly to fit the purposes of qualitative research. The main shortcoming of Bott's work for this research is its bias towards a positive sense of place and its

neglect of negative aspects of sense of place. Indeed, the aspects of an individual's valence or emotional scale are not teased out in any way through this instrument. A contribution of this dissertation is demonstrating the ability to adapt Bott's work for studies of digitally mediated sense of place and for negative sense of place by conceiving of her scale items broadly, rather than relying exclusively on her individual scale items. Overall, this study demonstrates the utility of Bott's sense of place instrument for conducting empirical investigations into the presence and types of sense of place.

In addition to demonstrating the utility of Bott's sense of place framework, this dissertation demonstrates that Crawford's work, reframed by me as spatial counter dynamics, offers a useful lens through which to examine locative media and associated user practices. This study also makes methodological contributions by identifying an effective mix of methods in the form of field reports, interviews, and user walkthroughs.

7.4.2 Contributions to praxis

By providing greater understanding of locative media users' motivations and interactions, findings from this study can be used to contribute to guide locative media development towards the provision of fulfilling and socially-relevant user experiences. With mobile applications and mobile friendly websites being offered by many organizations, insight into people's usage and on the value they place upon geolocative functionalities is of particular use to practitioners in the fields of forestry and resource management, urban planning, tourism, recreation, and cultural and heritage organizations. The ongoing use and possibilities of geographically relevant information is of particular relevance to practitioners in libraries, archives, marketing and business.

Geographic relevance – in the form of spatial proximity – was tested in the field via this study and was shown conclusively to have value to the participants. Locative media is possibly the first medium to make such extensive use of geographic relevance and offer such user convenience and readily updated information. Participants were found to use and appreciate locative media over other media for its geographic relevance. Other forms of geographic relevance via locative media were not raised by participants, however it would be useful for application developers to consider offering different aspects of geographic relevance to further

their offerings and user appeal. Organizations, such as libraries, archives, and heritage organizations hoping to increase their use and value should consider increasing the amount and quality of the geographic metadata in their information objects and offer retrieval aids that maximize geographic relevance.

7.4.2.1   Contributions applicable to mobile media practitioners

The findings of this dissertation also offer insight and guidance to locative media designers, developers, and owners. The main benefits participants identified with locative media was providing wayfinding aids, proximal recommendations, a means to capture and share place impressions and visit histories, entertainment and play, increased place knowledge, and supporting their health and daily activities. The main concerns raised by some participants was the loss of serendipity and the thrill of discovery, information quality problems arising from inaccuracies and commercial tampering, and the overall distraction of mobile device use when experiencing a place.

7.4.2.2   Guidelines for the design and development of locative media

The list below represents a distillation of the findings from this research into a series of short guidelines for the design and development of locative media that more fully meets the needs of users as identified from my analysis of participants in this study. These guidelines are meant to be used, when feasible, based on the unique qualities and goals of specific applications.

1) Offer short textual information, as it is more valued than long-form text, audio, or video.

2) Consider bandwidth and roaming fees when offering multimedia content.

3) Enable users to find desired information quickly.

4) Eliminate or greatly reduce spam and astroturfing (i.e., fake, commercial content) and prominently indicate commercially sponsored content.

5) Work to improve capacity for indoor use and for locations-within-locations.

6) Try other forms of geographic relevance.

7) Find ways to facilitate serendipitous place discovery.

8) Offer or enhance the ability of people to record, store, and manage their visit history and place-related impressions.

9) Allow location visit history and associated commentary to be recorded privately or shared among one's social network or publicly.

10) Aid people in inputting their place-related ratings, reviews, or commentary (based on the difficulties of typing on a mobile device).

11) Ensure content has an extensive geographic content reach.

12) Surprise and delight users by finding ways to present something new or unexpected.

13) Consider ways that play and interactivity with place can be offered or enhanced.

Locative media developers would be wise to address these concerns in future design through improved user interfaces and editorial content policies. However, responsibility also lies with locative media users who would be wise to more critically consider their own use of the medium and develop individual and social practices and norms. It is hoped that these guidelines will contribute to more research and innovation that will lead to improvements in locative media that better serves the needs of users and can assist in delivering individual and social benefits.

7.4.3 Contributions to the Literature

This dissertation makes contributions to the literature investigating locative media, sense of place and the intersections between the two.

This dissertation contributes to place theory by examining the role of locative media in the formation of sense of place, which has seldom been investigated empirically. Collecting empirical data on people's actual use of locative media and then examining this data within a comprehensive sense of place framework contributes to the literature by documenting the

interplay between people, space, and technology. The findings of this study demonstrate how locative media can play a role in the ongoing, evolving relationship of people to their places, supporting Deleuze and Guattari's (1987) notion that one's relationship to place is not static, but rather it is a continuous process. Locative media was found to have the potential to influence sense of place not just for special or tourist spaces, but also for the everyday places people traverse and occupy – the spaces of their daily existence. Sense of place was found to occur for people in a diversity of locations, from the banal to the special. There is meaning in the mundane – everyday practices and seemingly nondescript locations can produce meaningful sense of place, providing a challenge to Auge's notion of non-place (2009) and Relph's notions of placelessness (1976) in which they both postulate only special or aesthetically pleasing locations can result in meaningful human experiences and feelings. Additionally, sense of place can result in fleeting or seemingly trivial place experiences, as some locative media users have reported. The findings of this study support the position that activities of everyday life such as locating transportation information, reading a restaurant review, or posting geotagged photographs of a park can all contribute to a sense of place. For example, finding access to nearby transportation can lead to the well-being type of sense of place in a location and wayfinding aids can provide one with the confidence to explore a new location, leading to the prospect type of sense of place. This finding presents a challenge to scholars who privilege the monumental and special and denigrate or ignore everyday settings as sites of meaning.

This dissertation contributes to the fields of human computer interaction and communication and media studies by offering insight into locative media and the theoretical debates on the role of locative media in our relationship to place. To begin, this dissertation provides a history of locative media (see section 3.3.1), which has not been substantially documented before. In addition, it provides a typology for classifying locative media applications (see section 2.4.3) that substantially expands and updates on Raper et al.'s (2007) work. This typology is a comprehensive classification of the medium that is useful to understanding the primary functionalities and user behaviours of locative media applications by type. I demonstrated the usefulness of this typology in my classification of the 44 applications participants reported using in Table 5.2 in chapter 5. I believe this will be similarly useful in other studies of locative media.

This dissertation also contributes to locative media scholarship by proposing and finding evidence to support media characteristics, as derived in part from Baym's 2010 work, which may differentiate locative media from other media. These criteria are mobility, reach, interactivity – technical, textual, and social – and my additions of geographic relevance and vocality. An additional contribution to locative media literature is my identification and analysis of various user behaviours that include using locative media for utilitarian, recreational, health, personal expression, memory, and social goals.

This study provides evidence to support the inclusion of vocality and geographic relevance with other media characteristics to general studies of media. In particular these two criteria were particularly found to reflect the current iterations of new and emerging digital media.

Further insight into locative media – both in how people use it and how it functions – was offered through expanding upon the work of Crawford (2012). Spatial counter dynamics were found to be a way that locative media users made place their own. Aspects of locative media, such as its ability to provide geographically relevant and social navigation information, encourage spatial pausing, spotlight locations, and offer interactions with place, was found to play a role in forming people's sense of place. Sense of place was further demonstrated to be a useful framework to examine the value people derive from locative media.

Despite the polarized scholarly debate regarding the role of locative media and people's relationship to place, my analysis of participants' behaviour indicates that this relationship is much more nuanced. People's use of locative media with regard to their relationship to place was found at times to augment or improve, to detract or disappoint, and sometimes both simultaneously. This study however, refutes scholarly and popular dismissals of the medium as only detracting from or eliminating users' sense of place.

There are various benefits of this study's contributions to praxis and theory. Insight from this study can be applied to design media interventions to enable newcomers to a country or region to become familiar with and attached to their new home. Findings from this study also can contribute to offering more fulfilling tourist (whether foreign or local) experiences, which in turn has been found in prior studies to lead to improved satisfaction rates and economic benefits. Even for locals, use of locative media applications can aid one's experience and relationship with

place. Having a positive sense of place has been found in prior studies to foster feelings of custodianship and actions that aid conservation and advocacy efforts for natural or heritage sites. Thus, insight from this study can be applied to develop locative media applications to aid such organizational efforts. From a user perspective, this study demonstrates the value people place on having the ability to create, share, and use their own content about places within hybrid space – which ideally will assist in maintaining citizens' free access to participate in this space.

7.5   Limitations of Study

The limitations of this study will now be examined, to demonstrate the boundaries of this research as well as to suggest possible future research approaches from which to study this topic. The goal of this study was to offer insight into the interplay between people's use of locative media and sense of place. Although discerning a causal relationship between people's use of locative media and a resulting sense of place would be methodologically challenging (if not impossible, as teasing out intervening variables would be difficult), a pre and post-test study, possibly with a control group, would be useful to generate more generalizable findings.

This study looks at one of many possible mediums people use to access information about their locations. People undoubtedly use various media for representations and information about locations before, during, and after encountering them. A comparison study that examines one or multiple mediums compared to direct engagement with the physical world would assist in understanding the overall media ecology of people, place, and technology, as well as issues related to spatial representation per medium. A longitudinal study might yield additional insights into long term effects of locative media use and autobiographical insideness – answering such questions as what are the benefits to helping us remember in situ and what are the possible problems of not forgetting?

Despite efforts to recruit outside of my home base, I was only partially successful. Participants were predominantly from southern Ontario. Although this had the benefit of enabling more interviews to be conducted in-person, it limits the scope to a more metropolitan and western perspective. It would be interesting to gain perspective on both ranges of the

spectrum, from smaller towns and lesser developed regions to metropoles known to have higher rates of mobile device adoption and usage.

7.6 Future Directions

The locative media market is rapidly evolving, and new features and innovations will likely continue to be introduced for the foreseeable future. As a qualitative research study, I wanted to give participants the opportunity to have a last word. As part of the interviews with participants, I asked them what they thought the future of locative media was and how they believed they would use locative media in the future. Including their thoughts here provides insight into possible directions for this still emerging medium, the possible development of user norms and practices, and ongoing commercial tensions and technical issues. Not every participant elected to answer this question, but all those who did are included below.

Alex:

> I'm hopeful that Google will pull it together and get a Google Glass that is consumer friendly and that people won't be ashamed to use it in public. I think having a layer on the world and having geolocative elements apps on top of that would be incredible. If I'm travelling or doing whatever and just having that layer on the world that it will just prompt you and inform you.

Bernard:

> If it integrates seamlessly and if it's there and easy to use, I see it being used. But I think there are still a lot of technical issues.

Cathy:

> I would use it [locative media] a lot more if my data roaming was cheap.

Evan:

> I think as the tech gets better I'd probably use it very similar. I think for instance, typing might get better. The interfaces might get better. I can see myself sharing my experiences even more if that was to happen.

Frances:

There's always the question around things like retail service and that, whether they'll be able to serve you better. I think when Foursquare first started there was a whole excitement around that they might be able to give you a deal whenever you go in and I guess that's still possible, but I don't think that's so exciting anymore.

Jacy:

What will it be like in the future? Hopefully it will go more this way, with more users and more and more people sharing their own thoughts and ideas and mapping out the world for us, because I think it's a really interesting way to learn about the world. It's a way to learn about the world unfiltered. I guess it could go the other way too, where everything gets more and more commercial and people get shut out, and hopefully it won't go that way.

Kevin:

Geolocative technology is still not getting mainstream attention, but for the past few years everyone in the tech community was talking about location, but they [apps] all looked the same, all wanting to do things like pushing ads for a shoe store. This didn't capture people's imagination. By 2012, people didn't want to hear about location based. But that's starting to change and Ingress is partially responsible for that. People are starting to believe in the sphere again.

Mark:

It depends on my social network, basically. If my friends are into it, I'll be into it. If they're not, I'll be less interested in doing it…. I don't think they [locative media applications] can improve much more than they already are. I think they're really advanced.

Parker:

Just the same way I've been using now. If my friends tell me something new comes out, I'll check it out. But about the same way that I've been using now. Yeah, nothing new.

Rob:

I very much see a huge opportunity for geolocative media. I feel like we're almost at the forefront of what we can do with it, especially with mobile technology, which is still very young.

Susan:

> Right now I see it just strictly as a tool, like a digital Yellow Pages, right, where it is now. But where it goes? Definitely there will be a way of telling stories, there's no question about that. The question is, what are those stories?

Tricia:

> I imagine it will continue to get more and more convenient, and easier to find stuff, so I will keep using it for that. I don't have any concerns with sharing my location so I imagine more apps will want that to be able to offer things nearby.

Vera:

> I think we will probably see much more cross integration across apps and devices. For example, my car can communicate with my mobile… I can have it give me directions from my mobile. I just did one quick Google search for a good restaurant on my mobile and it gave me a recommendation and I sent it to my car and it gave my directions door to door – it's magical. I see more and more cross-integration like this.

Zoey:

> I'm sure mobile devices will keep changing, evolving so it probably won't be long until things are quite different. I'm thinking about getting a smartwatch – that might be quite a different experience. But I'm sure I'll still be using my mobile in some way for directions and maps and stuff like that. And probably posting photos too in a similar way too.

Not all people are prognosticators, although through these comments we can get a glimpse of the possible and desired new geolocative functionalities and features, as well as concerns regarding repressive corporate control. Some participants anticipate doing much the same things with locative media as they do now, but ideally with more sophisticated and user friendly applications. On the other hand, some participants are put off by technical barriers and are not optimistic this will alter enough for them to drastically change their locative media use habits.

Possibly the most dramatic of participants' predictions for locative media is the cross-integration with other devices. Locative intelligence arising from mobile devices and shared with other technologies will increasingly become a bedrock for more useful and pervasive mobile and

domestic technologies. This is consistent with Dennis Crowley, founder of Foursquare and Dodgeball, who predicts: "It's a piece of software that changes people's behavior in the real world…. Location services are going to power everything in the future. They're going to be involved in everything we touch" (as quoted in Isaac, 2016, para. 9-11).

My own thoughts on the future of locative media echo many of the items raised by participants. I think we will see corporations asserting more control of their brand image and associated commentary as existing in hybrid space and accessed via locative media. Companies are already shaping the experiences people can have in the hybrid space surrounding their business through establishing "geo-fences" that push corporate messaging to people. Such geofences and legal actions will likely be used to assert corporate interests and restrict place-making. Governments have been slow to enact legal frameworks regarding digital media and the regulation of hybrid space remains largely an open issue. I believe, however, that we need to assert the importance for citizens to have free access to our hybrid spaces, so that we will continue to see people interacting in vibrant and meaningful ways with locative media.

Additionally, at present the user experience of much locative media is severely limited by the small size of the mobile device and design of content that generally requires users to look down at it (instead of up at the world). During the course of this study, participants readily shared an extensive array of problems they encounter both specifically with locative media and in general with mobile devices – to such an extent that I have compiled enough data on this to comprise an additional paper on this topic alone. As both a user and researcher of locative media, I would like to see substantial improvement to the usability, accessibility, and user experience of locative and mobile media. However, overcoming the innate limitations of the medium will no doubt pose a difficult, but not insurmountable, obstacle for developers.

Various participants noted their eagerness to try alternatives such as Google Glasses that will ideally offer the opportunity to deliver sophisticated spatial mediations. Two participants reported using smartwatches with simple locative media interactions (i.e., wayfinding). Yet I believe the potential for omnipresent but non-obtrusive locative media will be a fundamental goal of developers for years to come. Wearable technology and possibly cyborg implants present understudied and underdeveloped areas, but represent a core area for innovation in this area.

Despite these concerns, as evidenced by the wide variety of locative media applications participants used, and the wealth of types of interactions and content, people are already having meaningful experiences with place via locative media. As technology continues to develop, I anticipate we will see innovations in this sphere. However, attention must be paid by developers and designers to offer locative media that is responsive to the needs, behaviours, and concerns of users such as the ones identified in this study.

7.7 Conclusion

When I began following and researching locative media over eight years ago, locative media functionality was still primarily used in mobile applications only for wayfinding and proximal directory services. With ongoing maturation of the field, combined with the ubiquitous presence of mobile networked devices, locative media has created new possibilities for widespread creation and dissemination of diverse and multimodal forms of geographically relevant information. With the launch of Foursquare in 2008, it was arguably one of the first prominent mobile applications where place was the central feature. This, combined with a large user base, opened up new possibilities for the role of locative media in our relationship with our places. Foursquare and similar locative media applications which followed, grounded us to our place while opening up our world to our social network. Gay asserts the opportunity of locative media, "after years of heralding the anytime, anyplace nature of technology, we can now return to exploring the sacredness of a particular time and a particular place" (2009, p. 59).

Many of the applications studied in this dissertation are profit-driven enterprises, which results in different goals and structures from those of non-profit organizations. The difficulties many locative media applications have had finding successful paths to profitability continues to exert pressure on applications, with the result that some of the applications discussed in this dissertation have already shut down or removed geolocative functionalities.

Yet, the field of locative media still continues to grow, evolve, and capture the public's attention. As I was putting the finishing touches on this dissertation, Nintendo's location-based game Pokémon Go was released and quickly became a sensation with the public and popular media (Keogh, 2016). Months before its release, a participant, William, presciently informed me,

This is basically an augmented reality game that is linked to your phone where the cartoon Pokémon will show up in random spots in your city and you can see them through your phone. So it takes the input from your camera in real-time as if you're shooting a video, it's just not recording. And then it'll show the Pokémon walking around and I'm guessing it'll be programmed and it'll be very geolocative. And I can see that exploding in popularity as I think you can imagine. And you can go hiking to find them, because you get clues for where they are on the Internet. There's only like 500, you know, there's limited quantities of them to be caught. So people will be scrambling to catch them before others, so there's that element of exclusivity. It's gonna explode when it happens!

As many new technologies have engendered criticism upon their release for their apparent role in distancing users from their physical and social worlds (Rutledge, 2013), so too has Pokémon Go and locative media broadly. News broadcasts and websites shared stories of how players were not paying attention to the physical world and suffered accidents and injuries as a result (Hashish, 2016). Nintendo responded by adding a prominent disclaimer when opening the application to: "Stay aware of your surroundings." Yet, Dodds, in critiquing the hype and backlash of the locative game, concluded,

Like every other way of seeing and engaging with the world, it filters out some things and makes others more visible. Pokémon Go players aren't ignoring reality; we're discovering it differently, and in some cases, we're changing it. The really important question is: how? (2016, para. 17).

Although not directly studying Pokémon Go, this dissertation has begun to answer the important question of how this location-based game and locative media overall are changing reality. Specifically, in this dissertation, I identify some of the ways in which people's use of locative media influences their experiences of place and their sense of place. This may be through place discovery, defamiliarization, and location-based gaming, as I surmise is the case with Pokémon Go, or in any number of user behaviours or media affordances that I have identified here. Although Pokémon Go generated what amounted to among the greatest amount of hype and quickest user adoption of a mobile application, developments in locative media will likely continue over the years, both in dramatic and more subdued fashion. This dissertation provides future scholars with methodological guidance and proven analytical frameworks to investigate new locative media, such as Pokémon Go, or other applications yet to come.

Despite the growing prominence of locative technology, its potential influence on our relationships to our places has not been well understood. The debate over the effects of mobile media on place relationships continues. On one side, some scholars argue that mobile media contribute to feelings of urban alienation and placelessness. They argue that locative media creates social and cognitive distance between people and their spaces. On the other side, some scholars claim that locative media opens up avenues for place representation and fosters spatial familiarity and sense of place. People making such claims on either side of the issue, however, often have not explored the issue empirically or have failed to sufficiently unpack the phenomenon. People's use of locative media in relation to place can be more nuanced than acknowledged by scholars on either side of the debate. Instead of seeing locative media as either entirely formative or oppositional to our relationship to physical place, this dissertation has demonstrated that the relationship is mutually integrative and varied. I believe that future studies in locative media that start from this position will better aid in understanding the interrelationships between people, space, and technology.

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Appendix A
Participant Consent Form

Consent to Participate In Locative Media Research

This document constitutes an agreement to participate in the research project, Locative Media, led by Glen Farrelly. This research is conducted towards the fulfillment of a doctorate degree at the Faculty of Information, University of Toronto.

My doctoral research examines the role locative media has in shaping people's sense of place. Your experience and thoughts will provide insight that may be helpful to improve future applications.

You will be asked to use mobile applications and send the researcher three to five communications about your app use. You will then be requested to complete a follow-up interview. The anticipated duration for all components of the research is two hours.

Participation is voluntary and open to anyone 18 years of age or older who is able to communicate fluently in English.

You may refuse to answer any question or withdraw from participation at any point without penalty. With your permission, the interview will be audio recorded. If you elect to withdraw from participation, all records of your participation will be destroyed.

Your participation will be confidential. At no time will your name, likeness, or any identifying details or images be published or shared with third parties. Your name and contact information will be used only to arrange an interview – it will not be linked to your data. All records with your name and contact information will be destroyed after the completion of the research project. There are no known risks for participating.

By agreeing to participate, you grant permission for the researcher to use excerpts from the research session, screenshots, and interviews in the final report and in any subsequent publications or presentations. Data gathered from this study will be kept for six years.

Participants that complete the research session of the study will be given a $25 gift card as compensation for their time (any expenses you incur will not be reimbursed). You must complete the study to receive any compensation. You may request a copy of a research findings report.

Contact Information:

Researcher: Glen Farrelly, PhD Candidate, Faculty of Information, University of Toronto
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For questions about your rights of participation, you may contact University of Toronto's Office of Research Ethics at 416-946-3273 or ethics.review@utoronto.ca

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CONSENT

I acknowledge that my participation has been explained to me and that any questions that I have asked have been answered to my satisfaction. I have agreed to participate. I know that I may ask, now and in the future, any questions that I may have about this project. I understand that I can withdraw from participation at any point. I have been assured that my participation will be kept confidential and that no information or images will be released or printed that will disclose my personal identity.

Please sign below with your name and date. Signing below confirms your consent to participate in this research and asserts that you are over the age of 18 and are legally able to provide your consent to participate.

Name (print):

Signed:

Date:

Appendix B
Interview Guide

A. INTRODUCTION (key points to make to participant)

1. "Thank you for your time and assistance."
2. "For profiling information, can I have your age and occupation?"
3. "Do you have any questions about your participation? Feel free to ask any questions at any time during or after the interview."
4. Define locative media for participant.
5. "Are you okay if I record this session?"
6. "I've found it helpful to use your smartphone during the interview, so please bring out your mobile device if you want."

B. USER WALKTHROUGH OF LOCATIVE MEDIA USED

1. "I was thinking that the best place to begin is if you could turn on your smartphone and walk me through the geolocative apps you use. Let's start with [insert app name the participant reported during field reports.] "

> *Possible probes:*
> i) "Can you tell me more about that?"
> ii) "Describe what would be a typical usage of [insert app name]?"
> iii) "How did you last use [insert app name]?"
> iv) "How did you feel about this experience?"
> v) "Do you use [insert app name] in any other ways?"
> vi) "What prompted you start using it?"
> vii) "Was [echo participant's term] a main reason you started using [insert app name]?"

2. Repeat process of #1 above with the next locative media app participant reported using. Continue repeating this process until completing all the apps the participant mentioned using in his or her field reports.

3. [If applicable to individual participant] "You also mentioned in an early email that you have used [insert app name]. Can you walk me through how you use this app?"

C. USER FIELD REPORTS

"Now I'd like to go the field reports you sent me of your use of locative media."

1. Read out loud the first field report the participant sent.
"Can you tell me more about your experience of using this?"

> *Possible probes:*
> i) "Recount the experience that lead to this"?
> ii) "How did you feel about this experience?"
> iii) "Did this change your impression of this place?"

2. Repeat process of #1 above with the participant's next field report. Continue repeating this process until completing all the participant's field reports.

D. GENERAL USAGE QUESTIONS

"I'll turn now to your experience with locative media and the spaces you use it."

1) "Tell me about the different ways you use locative media?"

2) "If you were seated at a coffee shop, how might you use locative media?"

3) "How might you use locative media, if you were in a hotel room in a new city and were looking to plan your next day?"

4) "When using locative media what social interaction might you have with other people?"

   Possible probes:
   i) sense of belonging ("Do you feel connected to friends, family, other users, or strangers when using locative media?" or "How so? Can you give an example?")
   ii) collaboration ("Do you participate in any collaborative efforts via locative media?")
   iii) friends or strangers ("Do your friends use locative media?" or "What has been your experience of content from stranger users?")

5) "Describe your experience and thoughts on the information locative media provides."

   Possible probes:
   i) encouragement ("Can you share anything surprising you may discovered via locative media?")
   ii) valuing of information ("How might you use this information?")
   iii) place ("How might [echo's participant's words] affected your experience with that place?")

6) "Is there an experience of locative media presenting aspects of a place that were different from what you might expect or going against the grain?"

7) "Can you describe any instances where using locative media made you think about or experience a familiar place in a new or different way?"

   Possible probe:
   i) encouragement ("What are your thoughts on the presence in some locative media apps of commercial content compared to non-commercial?")

8) "How, if at all, does locative media foster connection to the spaces you use it?"

   Possible probes:
   i) personal ("Does it tie into your past memories of the place? How so?")
   ii) significance ("How might it affect how you think or feel about a space?")

9) "How might locative media augment or detract from your experience of the physical world?"

10) "How is experiencing a place with locative media different than without it?"

   Possible probe:
   i) encouragement ("What might locative media offer that other media forms might not?")
   ii) comparison ("Is there any place you decided not to use locative media? Why is that?")

E. CONCLUSION

1. "How do you see yourself using locative media, if at all, in the future?"

   Possible probe:
   "What do you think is locative media's future?"

2. "Before finishing – is there anything you would like to add?

3. "Is there anything that you feel I may not have understood?"

"Thank you for your time. Please contact me if you have any questions in the future or anything you would like to add. I have your gift card for you."

Appendix C
Interview Guide for Key Informants

Note: The questions below were customized based on the nature of informant's application and the length of time the participant had available for the interview.

A. INTRODUCTION

"Thank you for your time and assistance."

1. "For profiling information, can I have your age and job title?"

2. "Do you have any questions about your participation? Feel free to ask any questions at any time during or after the interview."

3. "Are you okay if I record this session?"

B. INTERVIEW

1) "Tell me about your application?"

2) "What motivated you to develop this application?"

3) "What would you say is the typical usage of your application?"

4) "Is there a social element to the application? Can you describe it?"

5) "How do you use your application?"
   Possible probe: "Can you share anything surprising you may discovered via your app?"

6) "How are people are using your application?"
   Possible probe: "Can you share any instances of people using your app in different or surprising ways?"

7) "How is experiencing a place with your application different than without it?"

8) "What has the response been to your application?"

9) "Mobile media, broadly, has been criticized for distancing people from places. Can you comment on this?"

10) "What do you think is the future for locative media?"

CONCLUSION

1) "Is there anything else that people should know about your application?"

2) "Before finishing – is there anything you would like to add?"

3) "Is there anything that you feel I may not have understood?"

"Thank you for your time. Please contact me if you have any questions in the future or anything you would like to add. "

Appendix D
Coding Definitions and Samples

The table below presents the codes used in data analysis, my operational definitions of codes, and sample data excerpts coded accordingly. The samples were selected to highlight exemplary dimensions and the commonly expressed sentiments regarding the concepts associated with the code. Although not included below, data that suggest contrary evidence were coded the same way as passages that suggest the reverse.

Code	Definition	Samples
Spatial Counter Dynamics		
Collaboration	working with other people for: a shared project (online or offline), a collective goal, or for altruistic purposes through the use of locative media	"I would say Foursquare is the closest, like creating the content in there, for sure. Like a lot of that content is just generated by the people, so adding the locations in, like the locations are all added by us, all of the tips and the reviews. So pretty much, they [Foursquare] create the platform and the people create the content." *And* "So as you're going along, it'll show you where other Wazers [users of Waze app] are driving on the road, so you can know, I'm mean you don't know that exact car, but you know that there is a Wazer driving three or four cars ahead of you, and another one 20 cars ahead of you. And so as you are approaching a hazard it will say, someone just reported that there is a car on the shoulder here. And you can give a thumbs up, saying yes, the car is still on the shoulder..."
Commodification	presenting or considering spaces for a commercial purposes or the general commercial aspects of locative media	"It's the ability for a business [to use locative media] to be able to deliver relevant advertising to people when they are most interested in it. Like if you can geolocate someone at two a.m. who's within 500 meters of a pizza place, chances are they are probably hungry and there's not many places open at 2 a.m. " *And* "That's the way technology gets, they [companies] want to know where you are and what you're looking at so they can pitch harder to you."

Decommodification	presenting or considering spaces beyond their commercial functions or to undermine its full commercial function through use of locative media	"If you have Yelp and you [a business] have a bad review and then you go there then it's your own fault." *And* "It's great where people can share their own content [via locative media], and I like content that's not commercial content, it's just people entering interesting things. I'm more interested in that. I like arts or cultural things or just beautiful sites in the neighbourhood. I like all of that."
Defamiliarize	feeling a sense of strangeness towards a space, or having familiar places presented in a new or jarring manner through use of locative media	"But Flickr [app], for example, is really interesting because it gives you that snapshot of what it used to be like…. it was really interesting to compare what it was like now with that thing absent compared to what it looked like in his photo." *And* "The tech shows us these amazing things that are so close but we don't see. Maybe it's because we are too busy or wrapped up in things in our lives."
Familiarize	learning about the existence or facets of a new space through use of locative media	"[By using Ingress] I'm more able to learn about the finer details, the kind of punctuations of the landscape, the art pieces, and various things." *And* "… I can feel a personal tie you know, that I know a little bit more about the finer details [from using locative media]. I'd say it's knowing the city in higher fidelity would be a more apt description."
Refamiliarize	thinking or feeling differently about familiar spaces or learning about a new aspect of a familiar place through use of locative media	"Whisper provides anonymous little tips, not tips, comments about life in a given area. I like reading about other people. It gives me fragments of the life of people around me [referring to his home]." *And* "I've been by there [Zero Gravity Circus] before and seen the big camera in front before and wondered why it was there. I now know [from Findery] that it is an old theatre and it used to play silent movies and then in the 1950s according to the app it started playing talkies. But what I really found interesting was that it was a Presbyterian church and a pool hall..."
Mobile Characteristics		
Geographic relevance	locative media content having geographic relevance (i.e., the geographic footprint of returned	"It's okay to roll into a city and not have a reservation and just open up the Airbnb app and see what's around you and just book a place instantly."

	content matches the physical location of a user)	*And* "I used the app [Tagwhat] there to discover what food was nearby, and I was really happy as it provided detailed description of the food that was nearby, as well as types of food."
Interactivity – interface	user interactions with the interface of locative media	"I used the Facebook app to take pictures of wildlife birds and post it to my Facebook instantly. It was easy to use and tag my location at the same time." *And* "The mobile [geocaching] application was pretty good on it... It maybe said it was a meter away and it might have been 10 meters away but it was fairly dead-on and it was very easy to follow."
Interactivity – social	user interactions with other people (often other users) directly or indirectly via locative media	"Foursquare and Swarm are very much [for interacting with] my friends, in terms of what they like to do or where they like to hang out and stuff. To be able to share that with them." *And* "It [Grindr] was great because it was a great way to meet people in different locations that I might not have expected there to be many gay people. I've been surprised sometimes by how many people are on the app in an area."
Interactivity – text	User interactions with the content (e.g., words or images) available via locative media	"Now how about [Foursquare] tips to see if there's anything interesting. [Reads tip out loud] 'East York is my home too! Thinking of buying or selling here?... Looks like some spam." *And* "I personally see the value in information layers, alternate narratives and digital annotations on places are useful and beneficial as long as you're objective and can filter the info to enhance your personal experience of place."
Mobility	portability of locative media, which is the ability for the physical device to be moved and accessed at various locations	"Using Swarm a few times to check into the airport, various places, to remember for future reference." *And* "I have in the past used the TopTable app to find a restaurant for the night. I found one and made a reservation while walking towards it."
Reach	ability of locative media to be accessible across geographic distance and having its content cover a wide geographic area	"I found with planting letterboxes was that I'd find these awesome trails and not have a great way to record where I was because I'll get to a location, where, I'm like, 'I'm in the middle of the woods but where am I?'. On a map, if I looked at an aerial view of where I am, 'where am I?'. And that app was great because you'd go in the woods

		and you come back out and the route exists somewhere else that you could use..." *And* "Ingress I feel is the first where like the world essentially becomes the game field, like literally the entire world."
Vocality	ability of locative media to present content created by multiple authors simultaneously or in quick succession	"If I'm using something like Findery or Waymarking, I'm reading things posted by other people about what's in the area and their feelings about it or sometimes it's their experiences in that area, which is really cool." *And* "[Some locative media content] is more user generated, whereas a traditional source of information about a destination is written by some organization or institution or an individual working for an institution that like who knows how long ago they wrote that about that place, right. Whereas when it's user generated information, it's a lot more up-to-date"
Place		
Place	general comments about the notion of place, which is a meaningful location, or experiences of places collectively	"Sometimes if I'm in a location, I'll use the location hashtag that Instagram has and I'll check out other people's photos of the place. It gives me a colour of the places around me." *And* "If I liked the place and I want other people to go to the place then I'll tag the location."
Place – new	references to a new place, new part of town, new city, etc.	"I just noticed a new restaurant called Spiceman Mexican and decided to try it. It's a new restaurant so I added the first review of it on Foursquare." *And* "because it's a new neighbourhood and I wanted to kind of figure out what's here, I started using the app and it just got me thinking let's look around here a bit and see what's out there."
Place – specific	references to a specific, geographically bounded, place	"When I used to live in the Annex, I was checking out photos [on Instagram] that said they were near me and I found out there was this alley with some really creative graffiti right behind where I lived and I never knew about that. So I went out and actually looked for it and I loved it. It was one of the best graffiti murals I've seen and it was right behind me."

		And
		"Al Purdy was a well-known Canadian poet... and somebody, they don't know who, somebody has set up a Twitter account for the statue and it tweets. Somebody tweets on behalf of the statue. So it's just kind of funny. So the first thing I did was I went to Queen's Park after I saw the movie and added the statute in to Foursquare."

Sense of Place		
Sense of place	general comments related to sense of place	"With mobiles you get a different sense of place than you would have without it." *And* "I believe that the layering of hidden stories, rare archival material and on-site interviews creates a unique sensory experience of place."
Aesthetic List of items from Bott (2000)	beautiful, aesthetically pleasing, pleasing to look at, generates a positive sensory experience, feel a sense of awe, feel a sense of appreciation	"It [Findery] sort of got our eyes open to the neighbourhood and back through the ugly industrial neighbourhood and some factory type buildings and we saw the most beautiful door." *And* "[on using TripAdvisor and finding a cathedral to see in Guelph] Yes. It was like Orthodox meeting Catholic architecture and murals and it was beautiful, absolutely beautiful."
Existential List of items from Bott (2000)	a participant's cognitive or affective state in which one indicates a place has certain qualities or generates feelings as follows: feel a sense of connection, feel a sense of my own identity, feel a sense of attachment, feel a sense of ownership, feeling of dwelling	"...it's a new neighbourhood [for me] and I wanted to kind of figure out what's here, I started using the app [Findery] and it just got me thinking let's look around here a bit and see what's out there. And even though it's not a major historical area or anything like that, there are interesting things here. There are things that are worth looking at and interesting stories that can be told, so it really got me looking at it differently" *And* "My hometown is [location withheld for confidentiality], and until I moved to Toronto, I didn't think there were very many gay people in [my hometown]. Then I used Grindr one weekend when I was back visiting my family and I found a lot of people using it there. So I found out there were a lot of gay people there and it really gave me a really different feeling of knowing [my hometown], and it made me actually feel more connected to it… it made me really think about [my hometown] differently."
Insideness	a participant's cognitive or affective state in regards to place that indicates: having a deep	"There's a letterbox [found via the app when in a new city] that's down a cobblestone path between two buildings into a public space and things that you'd otherwise never get to… you're also seeing the

	personal connection with a place or feeling like an insider (one who is intimately acquainted with a place through habitual encounters)	site that the locals are used to seeing and it's a cool view that the tourists aren't seeing because they're doing formal tours just seeing the very basics." *And* "We did it [used Flickr app when visiting] in Edmonton a while back, like many many months ago when we were celebrating Christmas with her brother and when we explored Edmonton. I mean, that man has been around that entire city and that was really interesting [seeing his photos around] a lot of spots that he'd explored"
Informational List of items from Bott (2000)	understandable, provides a sense of direction, has distinct landmarks, is easy for me to find my way around, makes wayfinding seem intuitive, provides info	"I was at Niagara Falls, and I uploaded a picture with the tagged location [to Instagram], in that case when I have clicked on Niagara Falls for example, I could see, oh, these people went on the boat that can take you close to the Falls. Oh, you know, I should do that too, whereas if I hadn't done that I probably would have maybe not done some of the activities there." *And* "I had a friend who wanted to go to some vegan vegetable bunny restaurant and I was anticipating the dread. I just wanted to know what it looked like. It was a little whole in the wall. So I thought it was going to be some big open place, but when I saw the pictures [on Instagram] I was able to connect with that, if you will, and say, oh dear"
Memory List of items from Bott (2000)	a participant's cognitive or affective state in which one indicates a place has certain qualities or generates feelings as follows: familiar, well-known, memorable, feel a sense of connection, feel like I know it well, feel a sense of nostalgia	"If I'm within Toronto, like downtown, it'll just be, maybe a few motivations [to use locative media]. Like I just want to remember that I was here, or that it was notable, or else that maybe I want to look back, you know, years from now, like 'oh yeah I was there'." *And* "It's [Findery] a nice tool help me to remember places I've been and jog my memory with emotions that I felt at that time. Some of these entries that I've made or some of these photos that I've posted and also even the comments that I've received were meaningful for me and created good memories"
Prospect List of items from Bott (2000)	a participant's cognitive or affective state in which one indicates a place has certain qualities or generates feelings as follows: feel like there are opportunities here for me, feel like exploring, feel like I have options, feel a sense of mystery	"I know recently my husband and I had date night, got a babysitter for the kids and went 'jeez, now where do we go?'. We were going out for dinner, and said, 'oh, let's look it up on Yelp and find a great place to go'. So we picked something off of Yelp nearby, went, had a great time, and then post a review on that." *And* "I used it [Tagwhat] to discover what stores were there [at Dufferin

		Mall], and if the stores were fitting my budget for my to do list."
Purposive List of items adapted from Bott (2000)	meets my expectations of [the] setting, supports my role at [this location]	"I was travelling near the Eaton Centre and I would just browse through it [Tagwhat] and got to see different stores that were there and compare what kind of items they have, how the things look like. I think there were what I was looking for, if they were cheaper, or if they were, if they had the variety that I was looking for." *And* "I used it [Grindr] to meet people, for hook-ups and it was great because it was a great way to meet people in different locations that I might not have expected there to be many gay people. I've been surprised sometimes by how many people are on the app in an area. So, it's really helped."
Refuge List of items adapted from Bott (2000)	non-threatening, has obvious boundaries, offers shelter, feel a sense of refuge	"We got stuck. Our car broke down on a holiday weekend on the 400 just south of Newmarket. So one of the things that was fortunate was I was able to use the phone to [use Google Maps to] find the closest place where you could rent a car. That turned out to be extremely handy." *And* "It [Find My Friends] does, because, you know, otherwise I would probably go and check on [my daughter] more often. But she's right at that age where she wants a bit more independence, but I'm a little bit reluctant to give, it so it just lets me know that she's safe and she's close [to our home] and I know where she is."
Significance List of items from Bott (2000)	a participant's cognitive or affective state in which one indicates a place has certain qualities or generates feelings as follows: meaningful, significant, interesting, valuable	"It [a geotagged photo] was more to say specifically that it was here in Toronto or here in Mississauga, because this bird can only be found way up north past North Bay, way up north in the mountains. So that reason for that was more like that this type of bird, or this exists, or this is happening at this location [International Centre in Mississauga]." *And* "There was this path, that's a bike trail that you can take that's parallel to the Go Train [in Toronto's west end]… That was really interesting. I didn't know about it until I looked at a map, a GPS map. And I was like, 'what is this route that I've never explored?'. It's off, you can't access this by cars. So I just decided to walk to it and see what it is."
Transcendental List of items from Bott (2000)	a participant's cognitive or affective state in which one indicates a place has certain qualities or generates feelings as follows: inspirational, magical, sacred, a spirit of place, feel	"What I've got out of it [Letterboxing and using the app], since I've been doing it, is that I grew up my whole life in Ontario, and I've not seen the kinds of things I've seen except for this activity… And I've just gained seeing the most amazing natural formations, historical sites, and places that I just never would have thought existed, never would have had occasion to travel to were it not for letterboxes."

	alive, feel inspired, feel connected to a higher power, feel fulfilled, feel a sense of romance, feel strong emotions	*And* "I think the experience [via Ingress] of having that additional layer of the world, it's sort of neat. You pretty much feel like there's a map of the world and all these glowing kind of portals."
Well-Being List of items from Bott (2000)	a participant's cognitive or affective state in which one indicates a place has certain qualities or generates feelings as follows: safe, comfortable, warm, serene, reassuring, revitalizing, feel in control, feel peaceful, feel comfortable, feel calm, feel a sense of comfort, feel serene	"It's memories like being stuck in the pouring rain in San Francisco and trying to hail a cab. Before Uber came out, trying to get a cab in San Francisco was not a pleasant experience. It's expensive and it was difficult. And the same with Seattle. It's those kinds of memories. The old style of having to call a cab and wait, Uber is just so much better user experience." *And* "I was looking for places to eat [using Yelp] that are vegetarian near where I live and work too, so I've used it that way as it can be difficult to find places where I can eat and that are good. I recently found a Thai restaurant that way that I really liked."
Built Environment* Adapted from Bott (2000)	participant's experiences or feelings to the constructed, human-made physical world	"I'm at Toronto's Underpass Park playground and art space....Recently they've added a series of graffiti style murals. And I was there with my kid while she was enjoying the playground I was looking at the various murals. There's quite a lot there and they're so beautiful, I just wanted to share this sort of unknown place with people I know and to start sort of a permanent record of what was there. So I took a photo of one of the murals and wrote a note and posted it to Foursquare." *And* "It [Findery] sort of got our eyes open to the neighbourhood and back through the ugly industrial neighbourhood and some factory type buildings and we saw the most beautiful door."
Natural Setting* Adapted from Bott (2000)	participant's experiences or feelings to the natural, physical world or outdoors	"But, it was through the [Letterboxing] app that takes you to these beautiful places. Like I think of outside of Guelph, I don't know if it's a provincial park or a conservation area, which has the ruins of this mill through this river and it has these beautiful rock formations… what the [Letterboxing] app has done is allowed me to see how different each park is and what it has available to it so it differentiates all these areas in a way..." *And* "It's a [geotagged photo of mine on Instagram of a] park in Davisville and some maple leaves. I liked the colour and the light of it - it was very pretty so I posted it and my friends really liked it too."
Character	clean, alive, peaceful, distinctive,	"There is that grounded boat that looks like it's been burnt to the

List of items from Bott (2000)	harmonious, balanced, well-maintained, simple, spacious, open	ground in the water outside near Grimsby there right. So how many times have I driven past that? Well, there is a letterbox there and the letterbox had been there since 2004 or thereabouts, I believe. So when I found it, not only did that take me actually to the shore right beside that boat, but it took me through the background of that boat… And now when I drive down that highway, seeing that pirate ship, which I still call it, it has more significance to me". *And* "There's a mural [pointing to a photo on Instagram] that I like - up the street. It says Transformation. It's an East End's arts installation. I posted that for the fun."
Inherent Socio-cultural List of items from Bott (2000) except the last item is by Glen Farrelly	participant indicates a place has certain qualities or generates feelings as follows: historic, authentic, has a spirit of the people, fits within the larger context of the area, supports the activities of area, feel a sense of history or has cultural associations	"I took a photo of the ticket [to see comedian Trevor Noah] that I had gotten because they were pretty up-front tickets. Up front and close tickets. So I took a picture of that and there as well I could just type in Casino Rama for the geotagging…" *And* "It [Findery] gave us a map with instructions to walk and see a giant mural… The mural is number 5 by artist/writer named Herakut, and it's really it's kind of disturbing. Herakut is making a children's book with pages on walls all over the world. This one is a picture of a boy meeting a monster with Medusa like hair… I had seen this mural before but never really stopped to look at it. I would love to see the rest of the images and read the book. It's in an industrial areas that I've never walked in - discovering this in this industrial area was a surprise."
Transactional Sociocultural List of items from Bott (2000) except the last item is by Glen Farrelly	participant indicates a place has certain qualities or generates feelings as follows: offers a sense of belonging, provides opportunities for interaction with others, offers civility, generates respect for individual, has a distinct energy, feel a part of community, feel a sense of belonging or feel or see traces of people who have been here before	"I used Foursquare to announce my location downtown Toronto [at the ROM] - and thus telling my friends where they can find me --as 'checking in'….Once my friends know where I am, they can recommend places for me to go or things for me to do and see nearby." *And* "It [Cleo Cloud] did, because some of us were able to talk [about the conference] … it was good in the sense that if you didn't get to one session, because there were sessions running concurrently, you could hear about what happened at another session even though you weren't there."
Sociality		
Sociality	social interactions, feeling of social connection, or a sense of presence or contributions of other	"It [Yelp] gives me a sense of what's happening in the city, some events and what restaurants are popular. I like that too."

	people through use of locative media	*And* "That's the main problem [with Foursquare and Swarm]. It takes time for a network to grow and people to start using it. I think the advantages will increase when more of my own network is using it."
Friends & Family	as above, but in regards to people already known, specifically one's friends or family	"It does make me feel more connected [posting his location at restaurants to locative media apps] because the people sometimes relate well to food and talk to me. And it's an easy way to strike up, start up conversation. So yeah, it's good. It makes me feel less awkward." *And* "Usually [checks into places] more so when I'm travelling because I'm far away enough from my, I guess central groups of friends that it doesn't matter. For people that are in the city where I'm travelling in they can see me where I'm hanging out and if they want to hang out too…"
Strangers	as with "Sociality" code but in regards to people not previously or ever known, i.e., strangers	"I actually value, say, reviews, more from strangers more than friends, maybe it's because I know what my friends or family will say. Like with my sister always everything is positive, but strangers can just be more honest or they don't know you, they're not trying to tailor what they're saying to what they think you will like, it's just a more direct and honest evaluation." *And* "So I really like the idea of playing this basically hide and seek game [geocaching] with people that I'll probably never meet, but we can communicate with each other through these little messages and items that we find and then we replace or whatever."
User Behaviour		
Check-in	use of locative media to indicate one's presence at a specific location via the app and optionally to one's social network on the app or elsewhere	"I've used the check-in feature Yelp during a promotion a few years back wherein each participating restaurant location offered a featured burger at only $1.To receive this special pricing I had to check-in on my Yelp mobile app at each location and present the check-in offer to my server." *And* "I'm about to go into my pilates class here at Studio Pilates. I checked-in using Swarm and then checked to see what my friends are doing nearby."
Counter Mapping	use of locative media to tell and geographically demarcate events	"Most of the mapped sites in Queerstory [app] could easily be overlooked – for example the site of the Barracks Bathhouse… is a

| | at an individual, group, or cultural level that may be felt by mappers to be untold or to be marginalized | key historic queer space linked to one of the most important events of Canada's gay liberation movement - the 1981 Toronto bathhouse raids and riots"

And

"But what this [letterboxing app] is a showcase, kind of, of people's favourite sites. Because people primarily plant letterboxes closer to where they live, based on availability of the locales right, and so I've planted letterboxes in places where I know other people haven't seen which are close to me. So when they go online, they'll go, you know I'm travelling through that area and they find a box and they go to that place, they're discovering that place because I wanted to showcase [it]." |
|---|---|---|
| **Creative Expression** | use of locative media for creative purposes or for creating art (e.g., photography) or for viewing such creations | "My picture that I took there that I called 'Impossible Growth', that I really like and I shared it online on Findery and had a good response too."

And

"There's a mural [pointing to Instagram photo] that I like up the street. It says Transformation. It's an East End arts installation. I posted that for the fun." |
| **Diversion** | use of locative media during idle moments or for entertainment | "I'm at Red Rocket, a coffee shop using Foursquare. I've been here before. I was just killing some time by myself, so I decided to see what other people have said about this café. I thought it was really fun because two of my friends have been here and written reviews and I had no idea."

And

"...if I went into the town and had time to kill. It [geocaching] would probably be a good experience and maybe take you to a new part of the town where you wouldn't go to normally." |
| **Exploring & Discovering** | use of locative media to physically or mentally explore locales often with the goal to discover new places or learn more about places | "Just like around the history of little tiny cities that you drive through, because we purposely programmed our GPS to take us off the highway so we could explore the forests in Pennsylvania. And we'd drive through these tiny little cities that you would have never heard of…"

And

"The journey's part of a lot of the fun [with geocaching]. Yeah, so those are the areas that I went into. It [the app] helped me explore a lot of neighbourhoods that I was familiar with but not that familiar with." |
| **Fitness** | use of locative media to improve one's health and fitness activities | "Just tracking where I've walked [via Runkeeper] and I think it's an advantage to actually track exactly how far you've gone as opposed to estimating, because I always find I haven't gone as far as I think I |

		have. And it encourages me."
		And
		"…it [Strava] also shows me new paths that I didn't know were available in Toronto. Like bike paths and hills and stuff like that. And it can track how fast I ran it or the elevation as well."
Play	use of locative media for fun or enjoyment, such as location-based games	"It [geocaching] was fun doing it with somebody like that because they put in different kinds of questions, something that you would never even think of and so it really opens your eyes up and it's fun doing it with kids, seeing their expression and views and whatnot on looking for things."
		And
		"So we built CodeRunner [location-based game] and it has elements of dead drops like geocaches. This encourages people to use their actual environment to get the game…Probably the biggest surprise with CodeRunner was how effective the adaptive content approach is. Even very subtle changes to the content based on what we know is nearby makes the experience feel very personal."
Reviewing & Rating	use of locative media for the creation or reading of a textual critique, rating, description, or helpful information about a business or point of interest	"I've always felt that the reviews are a bit more genuine [on Yelp] than some of the other ones. I sort of feel that some of the other apps are more paid reviews and things like that. And Yelp I find, from my experience, has been more user generated content… I've always felt that the reviews accurately described the experience."
		And
		"... all of a sudden we got this alert [from Waze] saying, up ahead, dangerous situation, roads are suddenly icy, you're going to be delayed 15 minutes, and so we were able to kind of slow down and sort of prepare for it. As we got up closer the roads did suddenly turn very icy… So it was kind of nice to have a heads-up that that was coming so we could prepare for it and not be involved in it."
Social Coordination	use of locative media to track the location of friends or family possibly to arrange get-togethers	"Send a Glympse [notification] to keep them apprised of when I would arrive. Generally positive experience with app, convenient to give location access for twenty minutes so I don't have to keep on sending text updates."
		And
		"My [young] daughter will take – we've got her on Find Friends [app] too, and if she's going to visit her friend down the street, she's started to want to walk to her friend's house on her own without us walking with her, so if she takes her phone, we'll say, yeah, you can take your phone and go five houses down the street, and let us know when you get there. But sometimes she'll forget to tell us and I can check on

		Find Friends and see if she's at her friend's house or if she's not."
Social Navigation	use of locative media to be guided by the experiences and traces (including reviews) of other people	"I would use Yelp to get reviews of good places to eat. But when I go to a like a strange city I try to not go to a typical place like say McDonald's or like a chain store that is everywhere. I try to look for something that is authentic for that city. But I look for the mostly highly rated restaurant or and I'd go there." *And* "I've used Foursquare that way as well, especially if I'm new to a place, or if I'm in an area and I'm in the middle and I'm trying think where's there to eat or where's there to get something and gone on to Foursquare to see what's in the geographic location. What is near me, and look to see, and look to see what's the ratings or tips that they have."
Wayfinding	use of locative media to get directions to a specific location or as a wayfinding aid	"We were in a town one time and my wife had wanted to go to a mall and we went there and then we came out and it was dark. It was hard seeing roads signs, so we put the GPS [device] on and it got us right back to the hotel with no problem, whereas if we had been just reading road signs as we got to them, dear knows where we might have ended up." *And* "I used Google Maps to help me plan my bike route across the path that I don't really know. And it was really helpful to guide me along in a safer manner, avoid the big streets and to avoid the uphill streets."
Information Seeking	use of locative media to look up simple facts, such as address, phone number, etc.	"I used the app [Tagwhat] to discover nearby sushi places [at University of Toronto], and I found them, and I was happy because it saved me time looking as it's easier than Google Maps." *And* "I use it [locative media] to find out about a new area that I'm in. I like things like finding public art; I think that's really cool. Because I have a child, I definitely use it to find a playground or a restaurant, shopping – both utilitarian and also just to find interesting things to discover, find places to go."

Appendix E
Screenshots of Locative Media Used by Participants

The pages below present screenshots of locative media reported used by participants. Screenshots are only of the application's geolocative or place-related features and provide a representative sample per application. The number of screenshots included per application thus vary based on its complexity. When an application presented a list of items, the screenshots show the first list item. No screenshots are available for Clio Cloud Conference App, CodeRunner, Find My Friends, GPS in-car, Narratives, and Pixifly due to access issues.

I took the screenshots on October 22, 2016 on my mobile device, an LG G3 Android, in the Fashion District of Toronto, Ontario. Screenshots only include publicly available content – with the exception of some from my profile pages. All identifying information from individuals is removed for privacy purposes. Screenshots are in alphabetical order by application name.
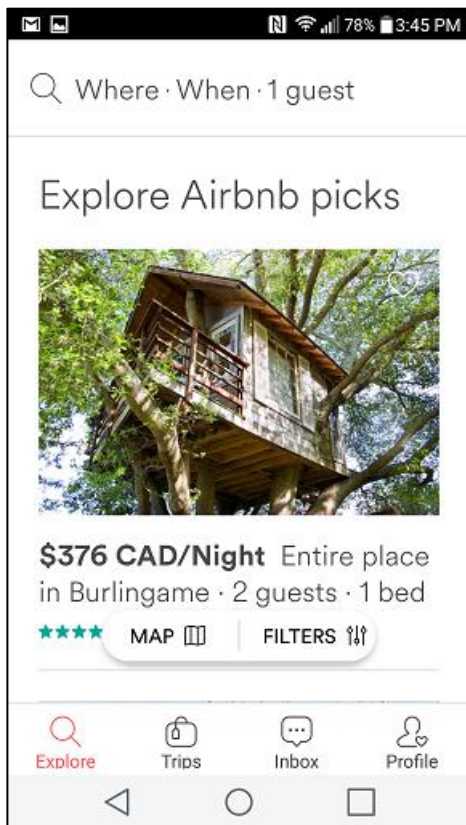
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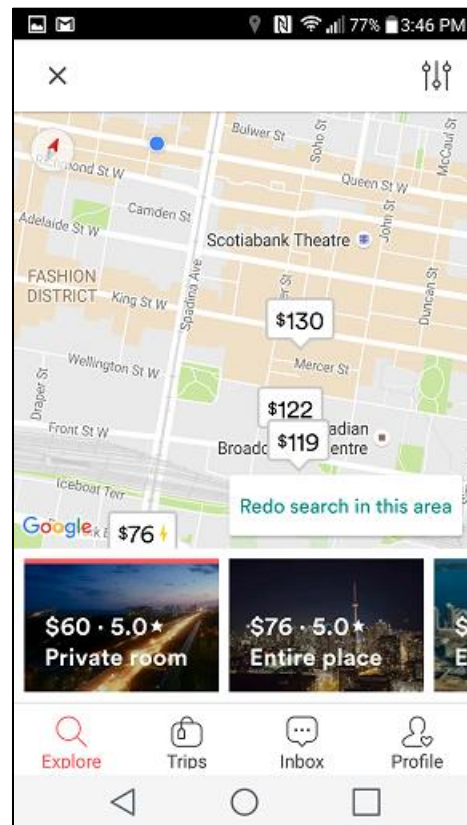
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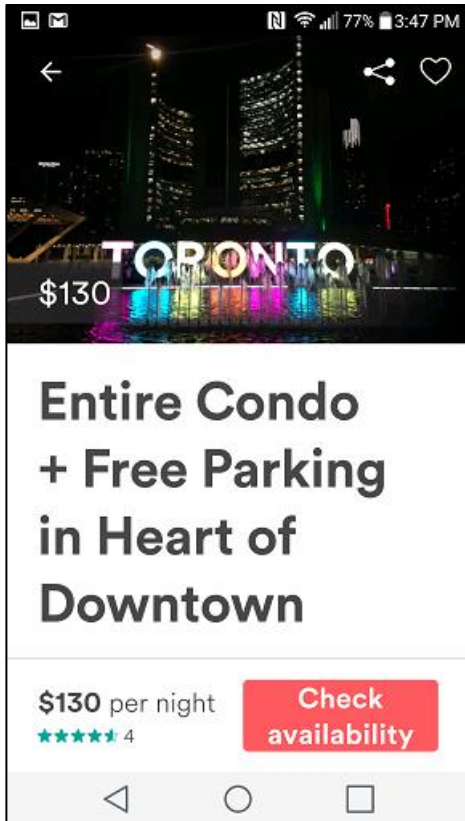
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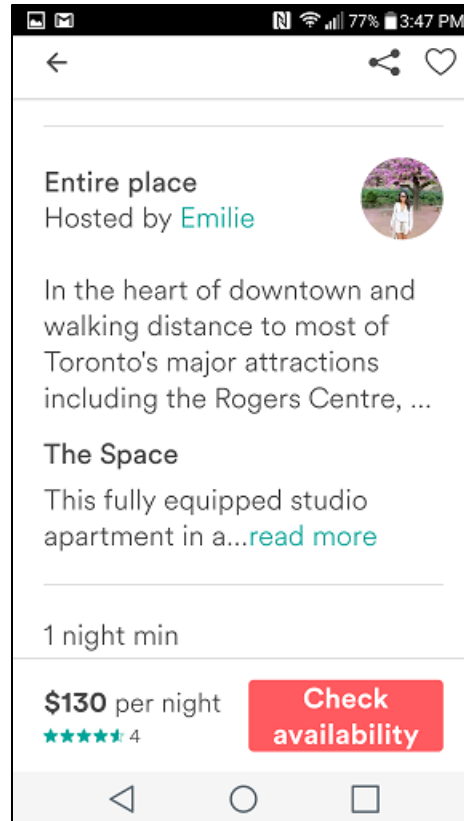
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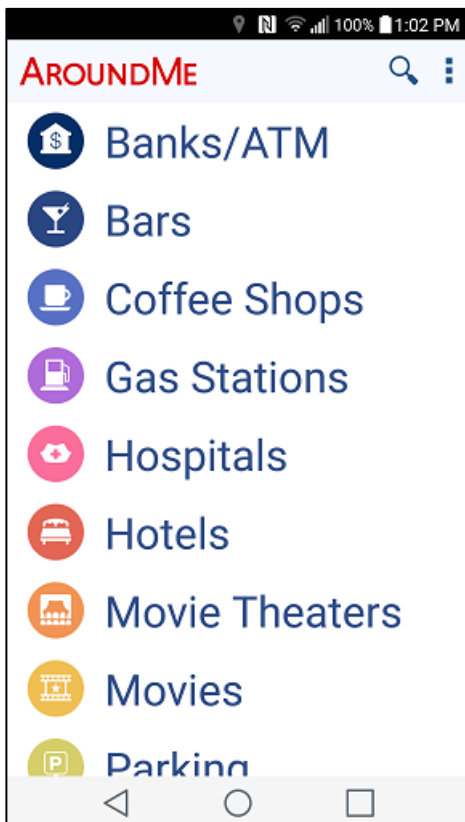
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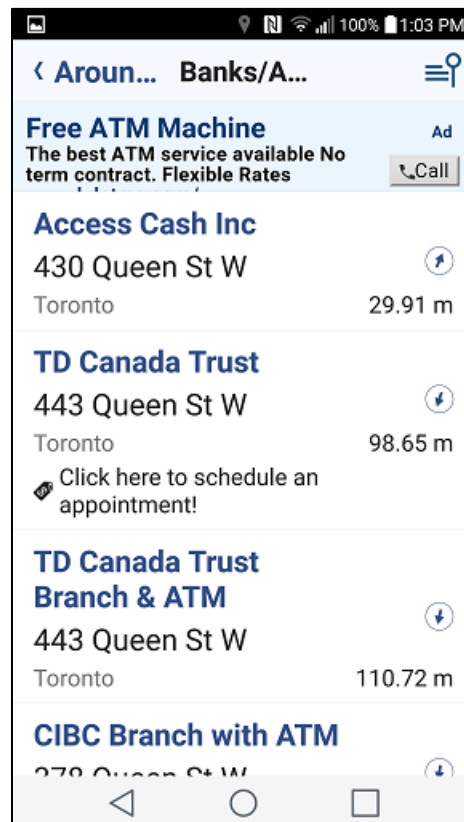
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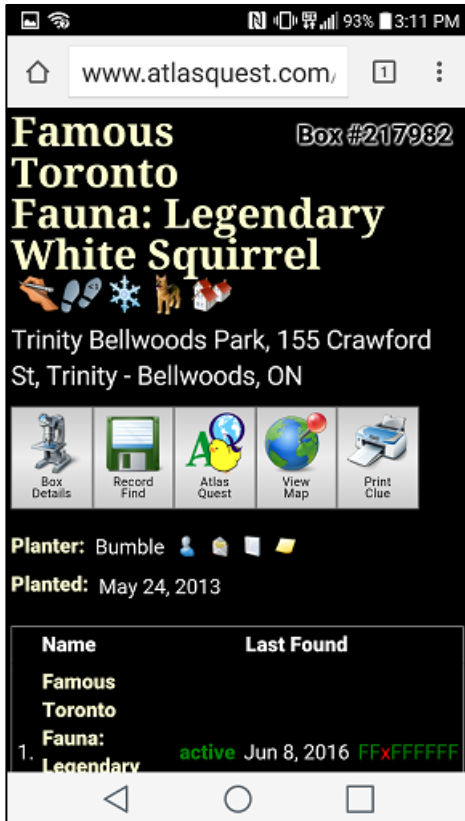
Atlas Quest (letterboxing app)
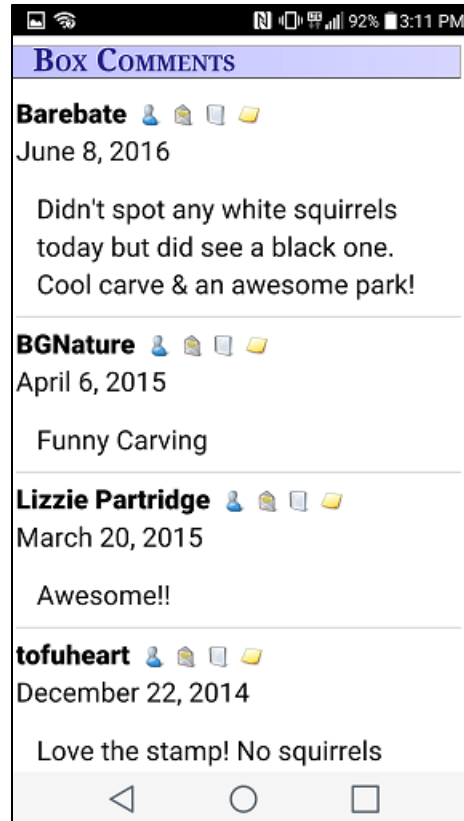
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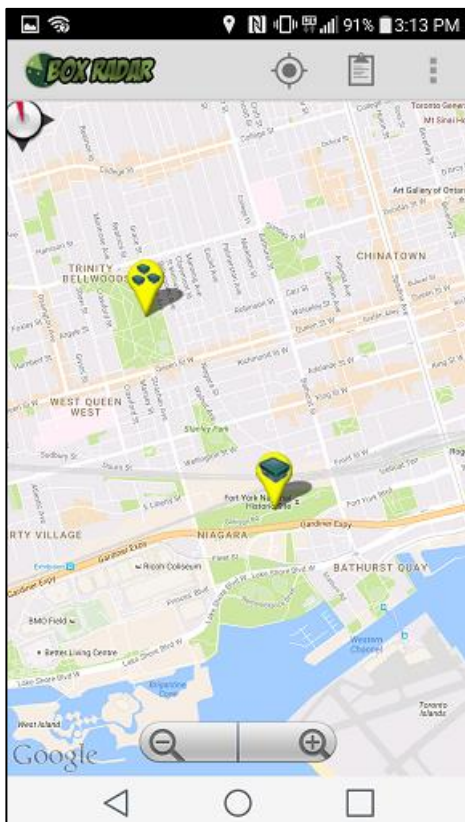
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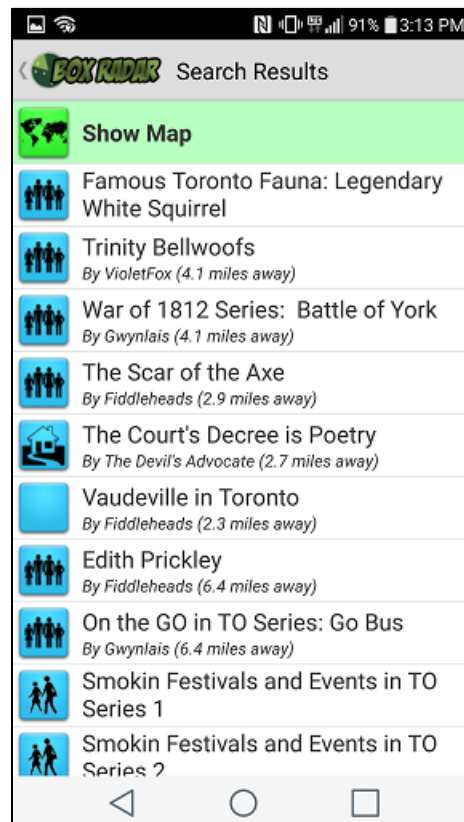
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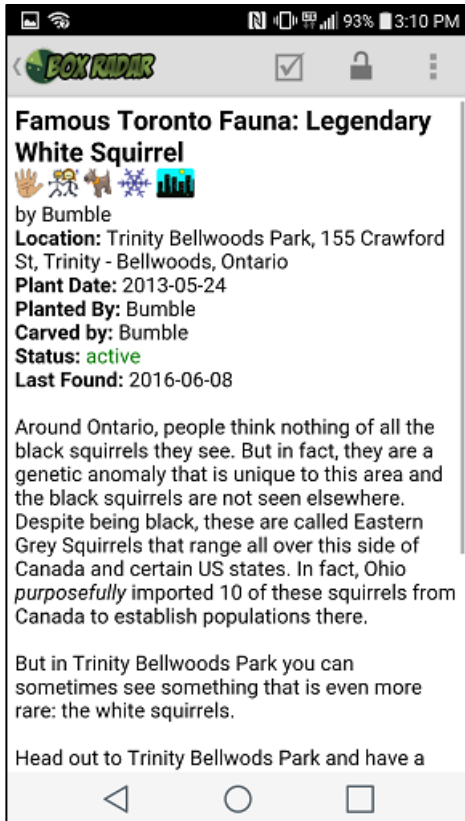
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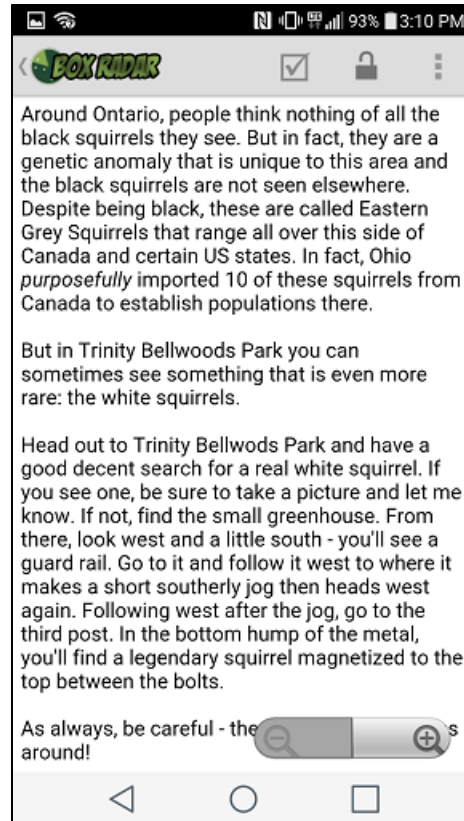
Box Radar (scroll down of prior screen)
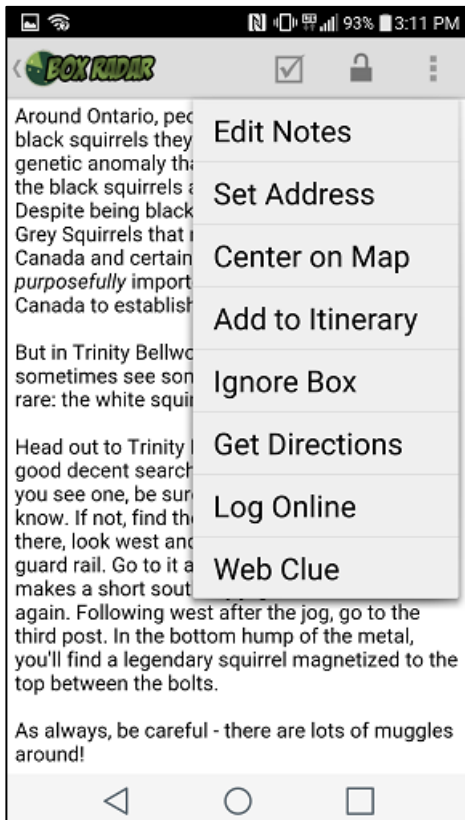
Box Radar (drop-down menu of prior screen)
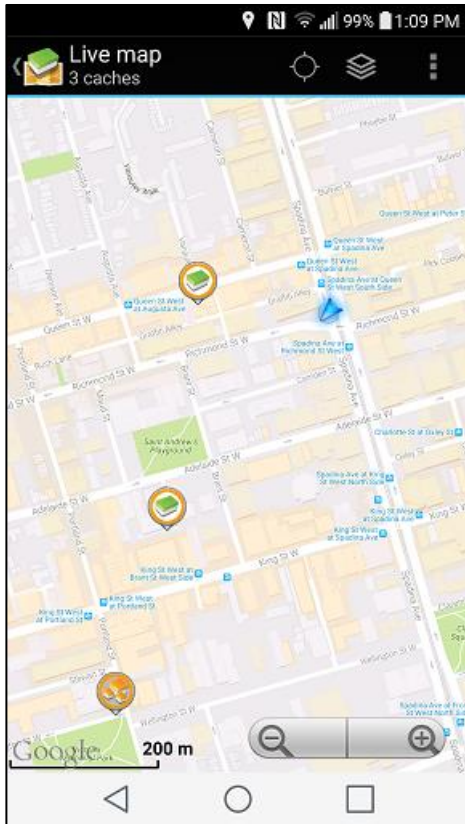
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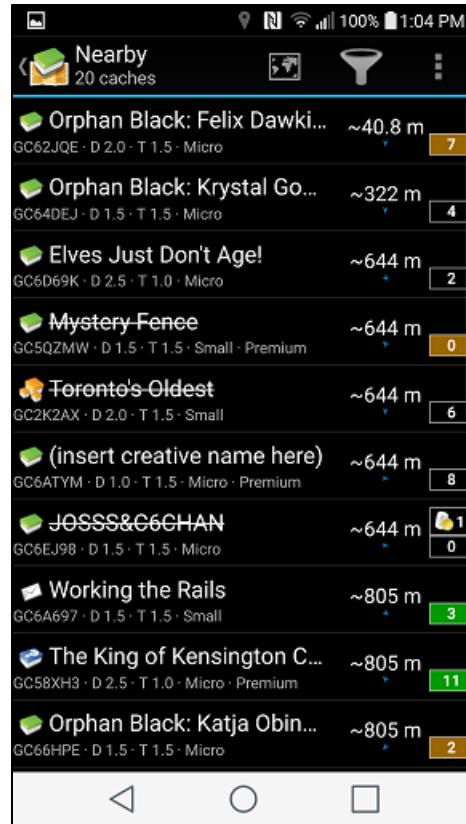
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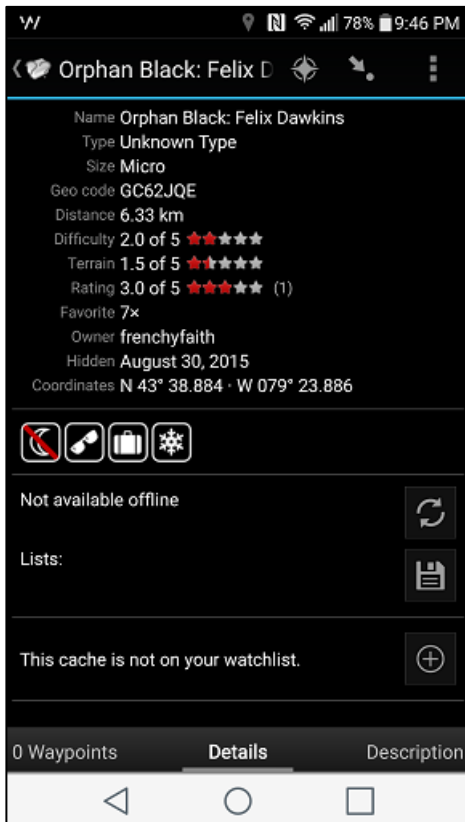
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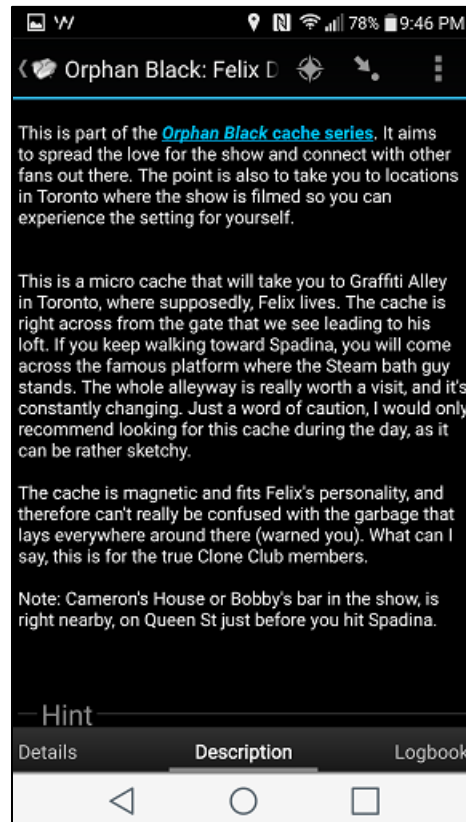
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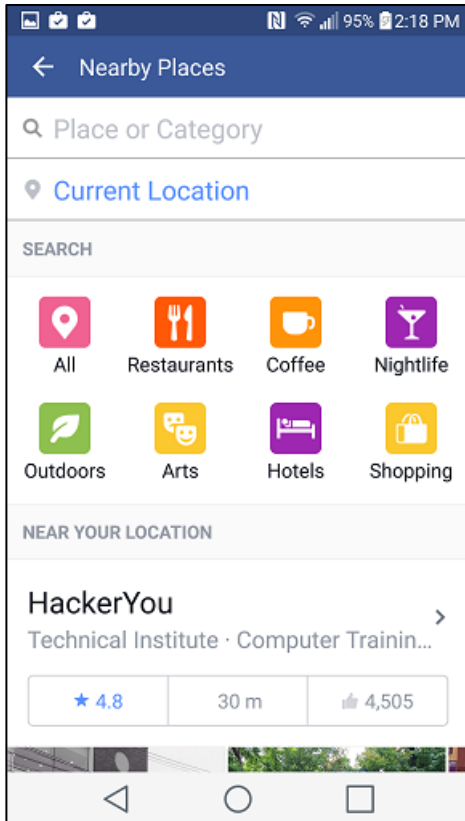
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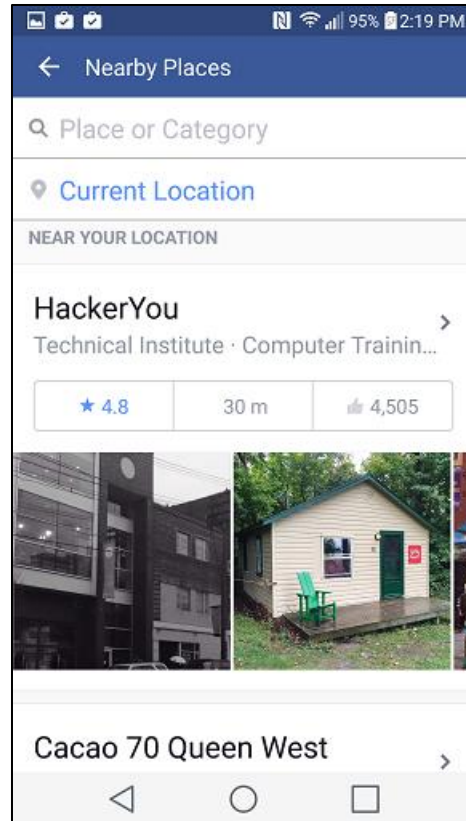
Facebook (scroll down from prior screen)

Facebook
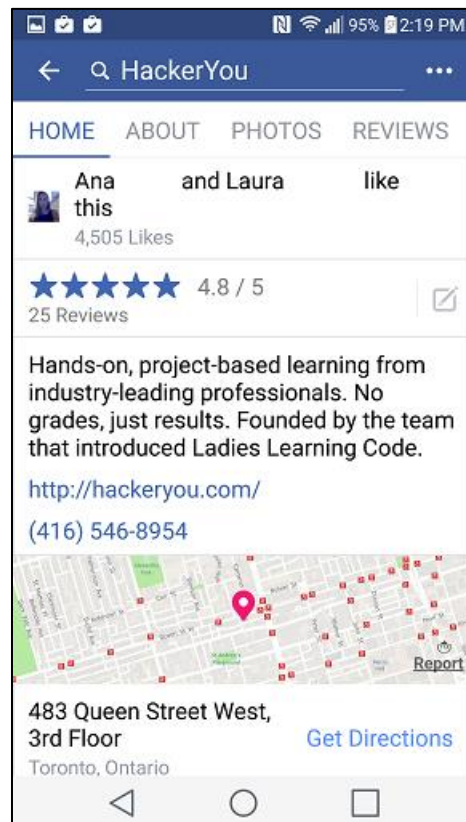
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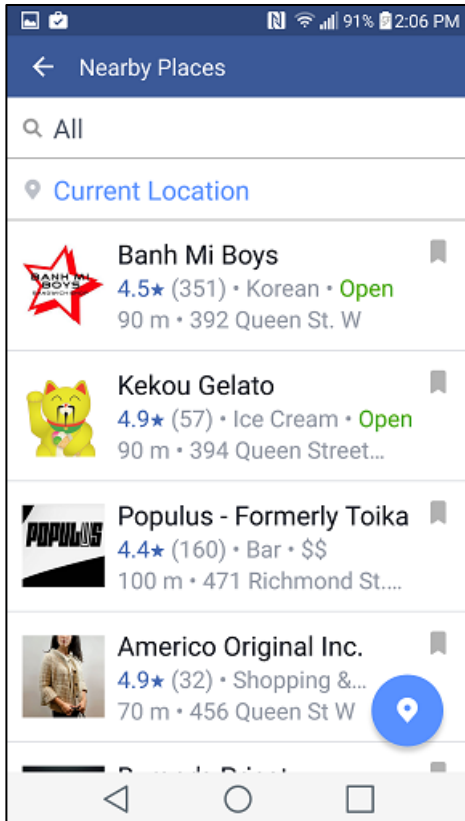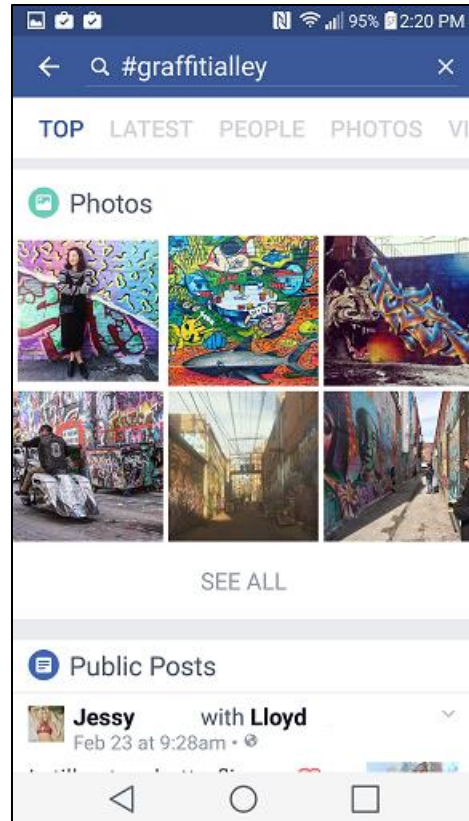
Facebook

Facebook

Facebook
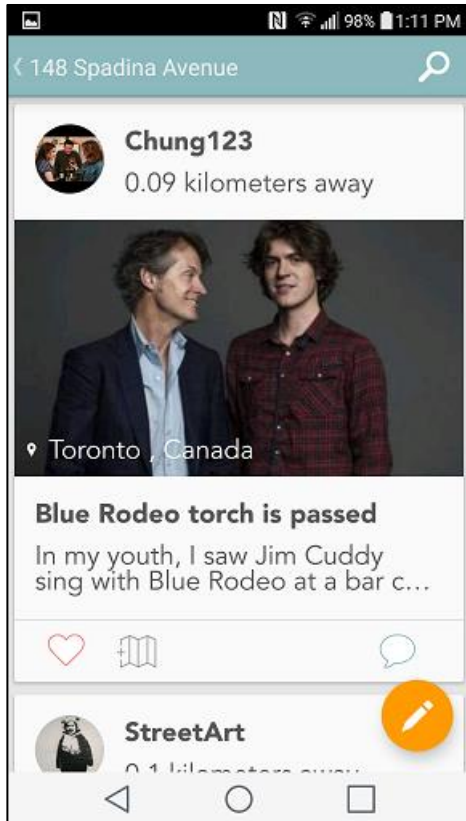
Findery

Findery

Findery

Foursquare
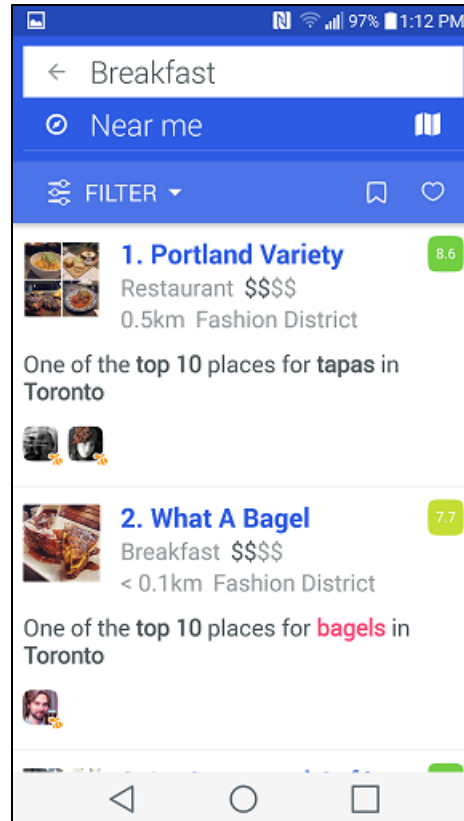
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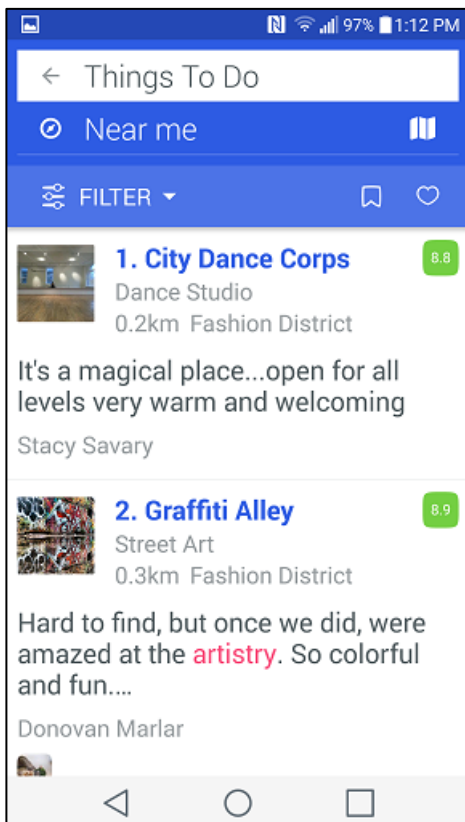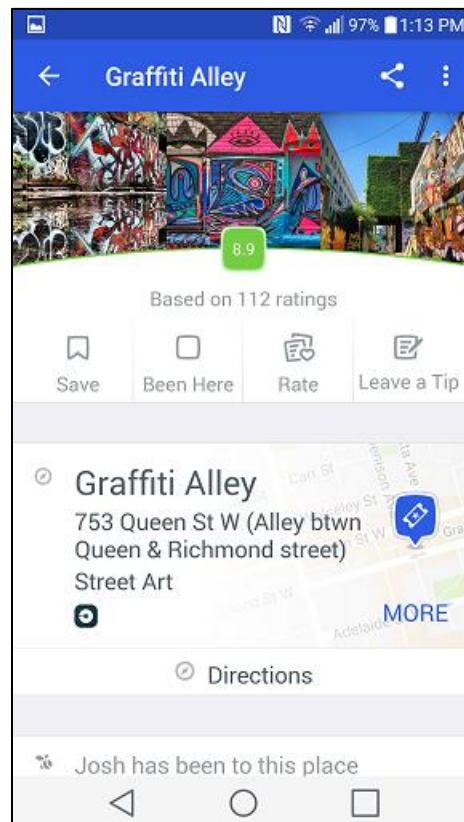
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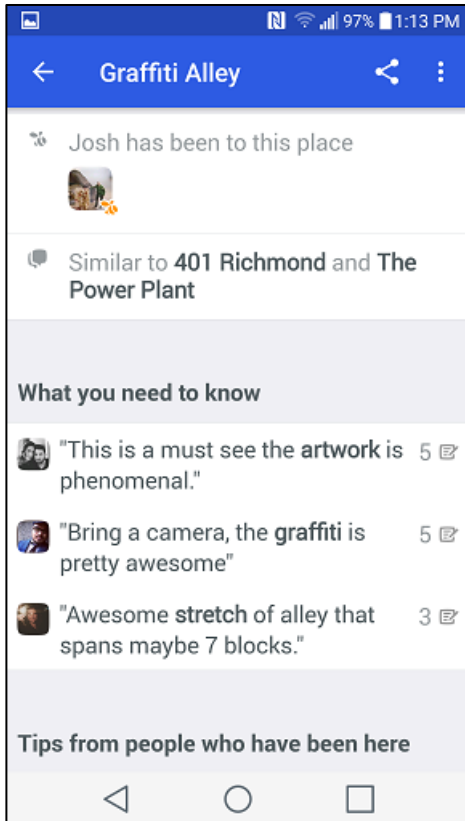
Foursquare

Foursquare (scroll down of prior screen)
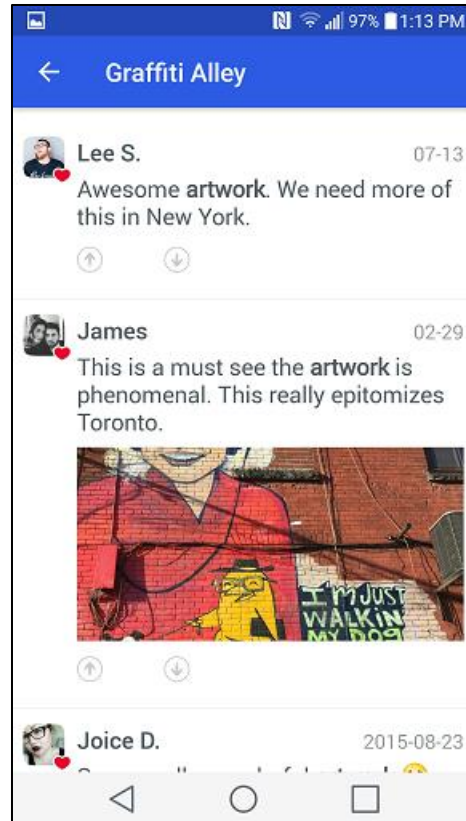
Foursquare

Foursquare
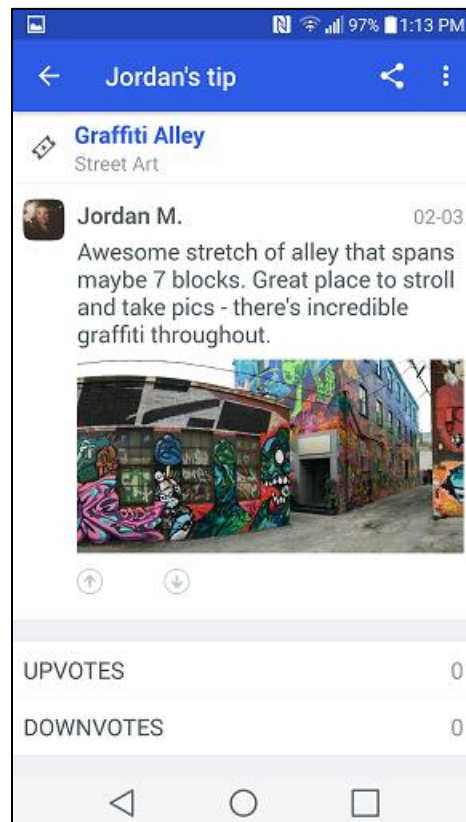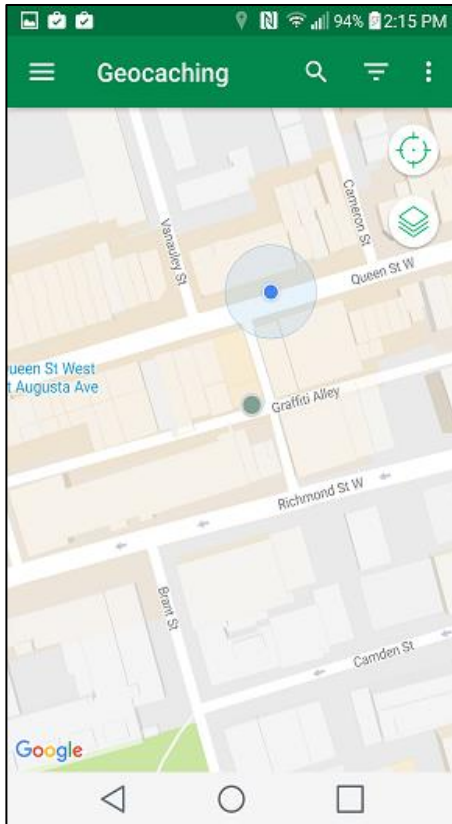
Foursquare

Foursquare

Foursquare

Geocaching (official app)
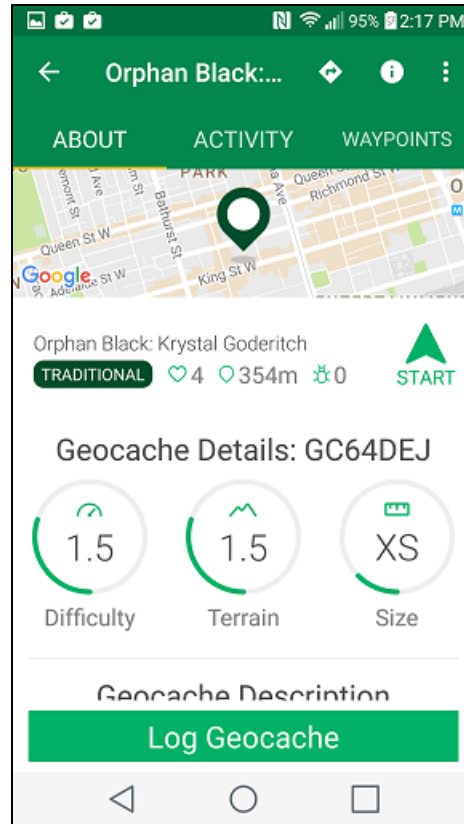
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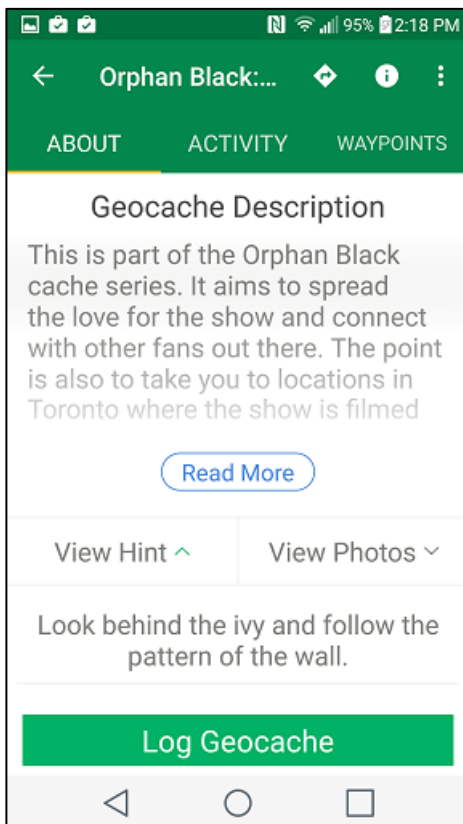
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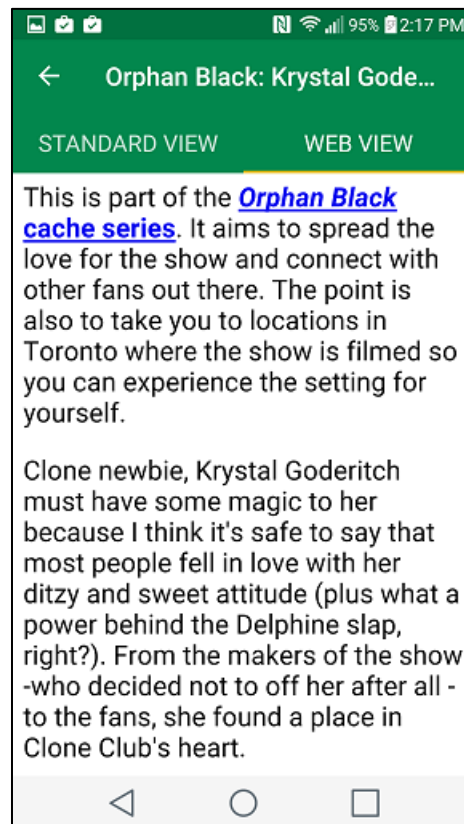
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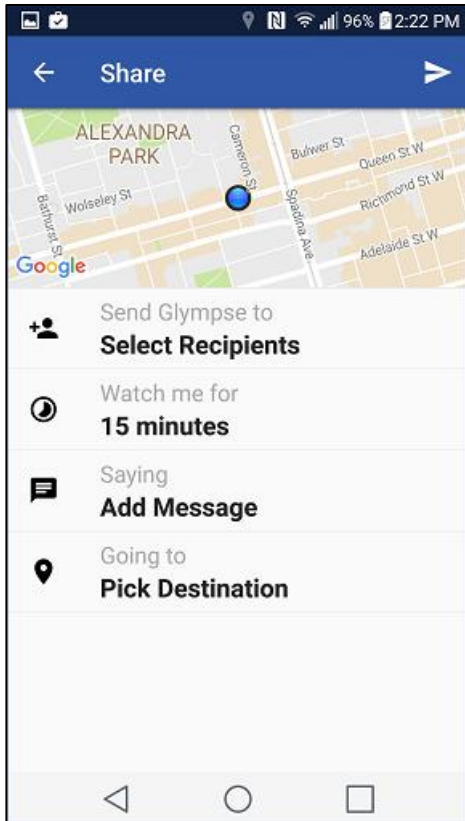
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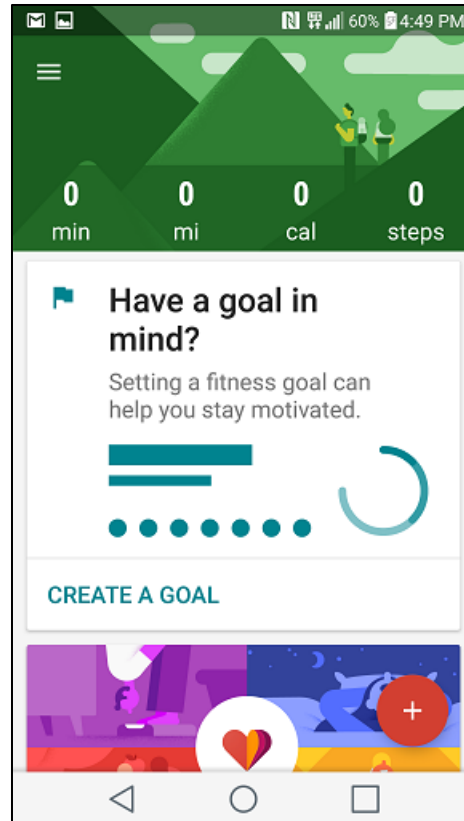
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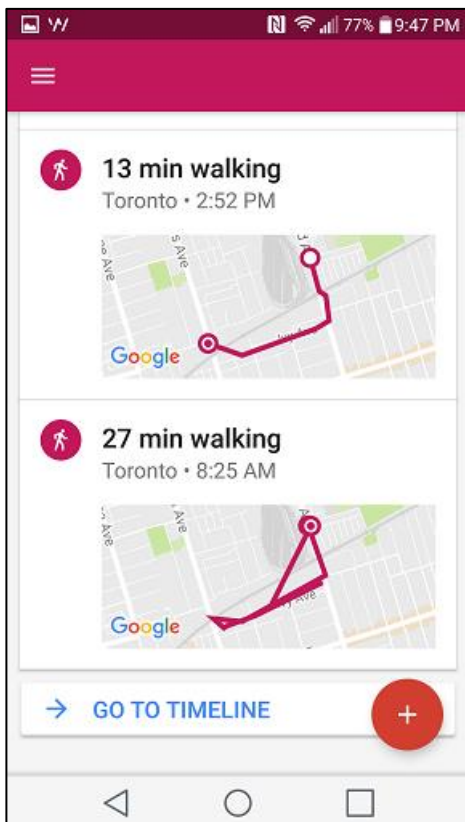
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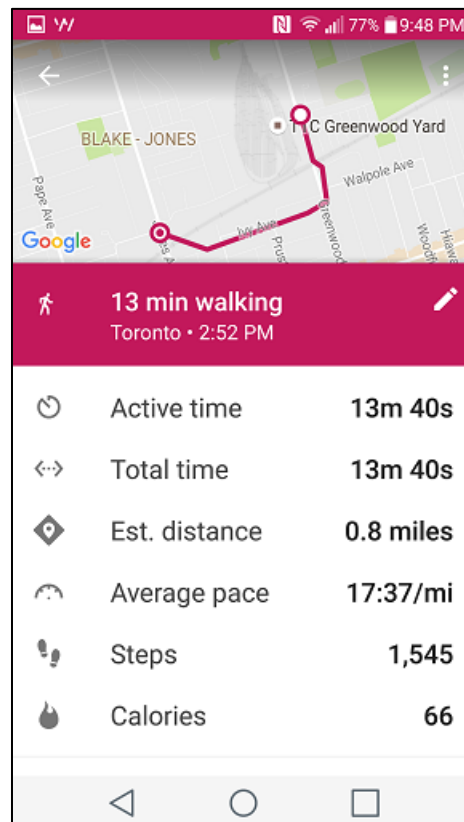
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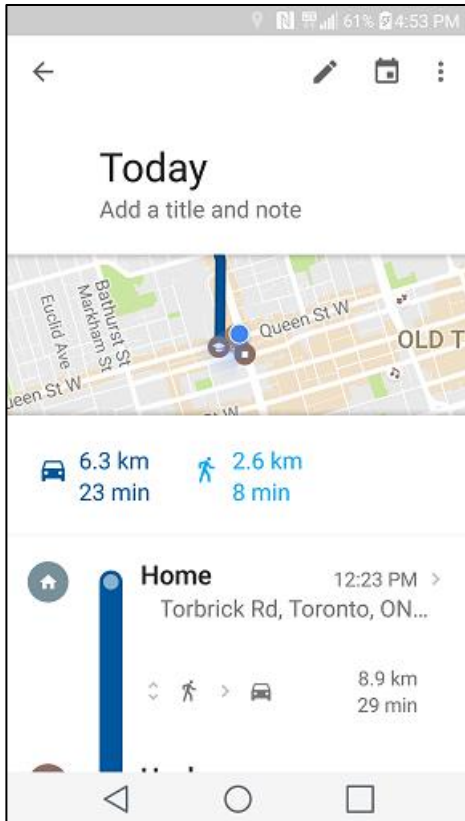
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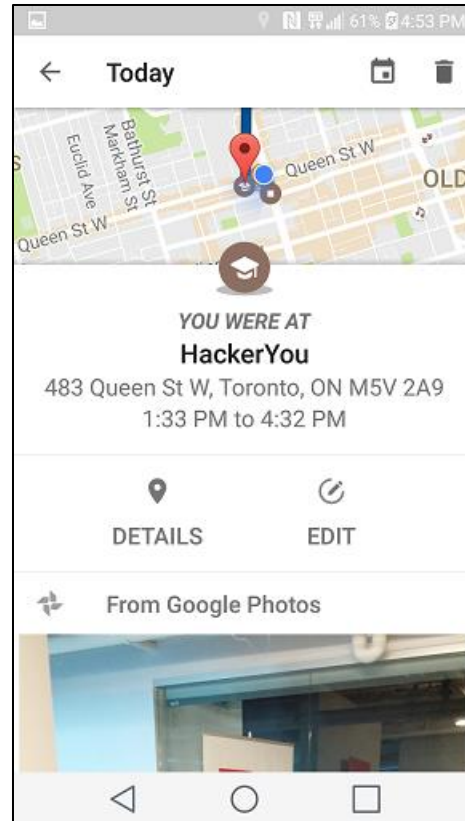
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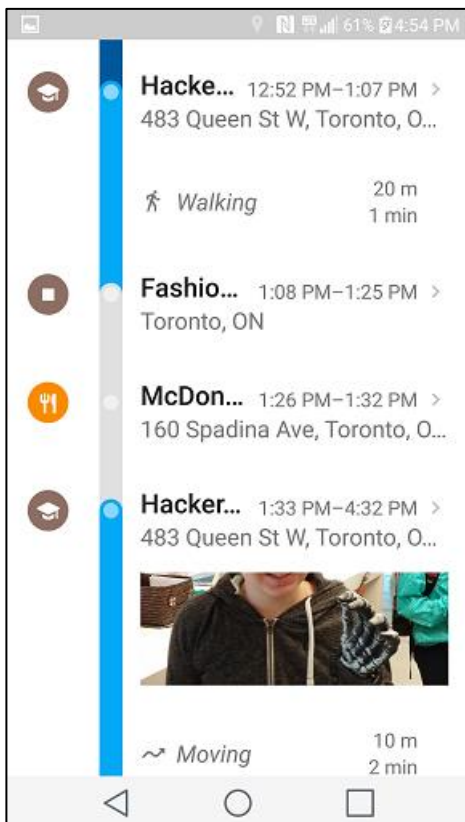
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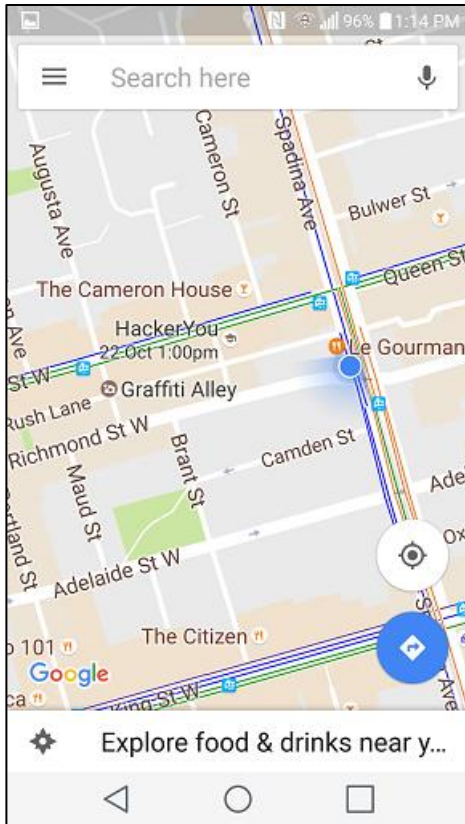
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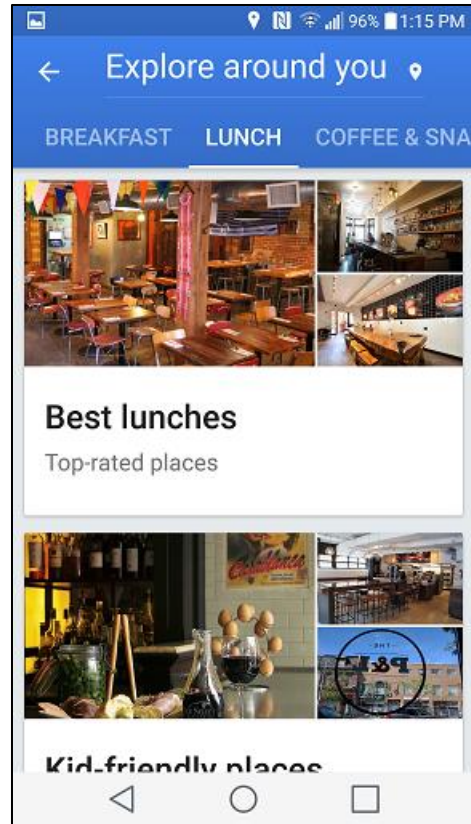
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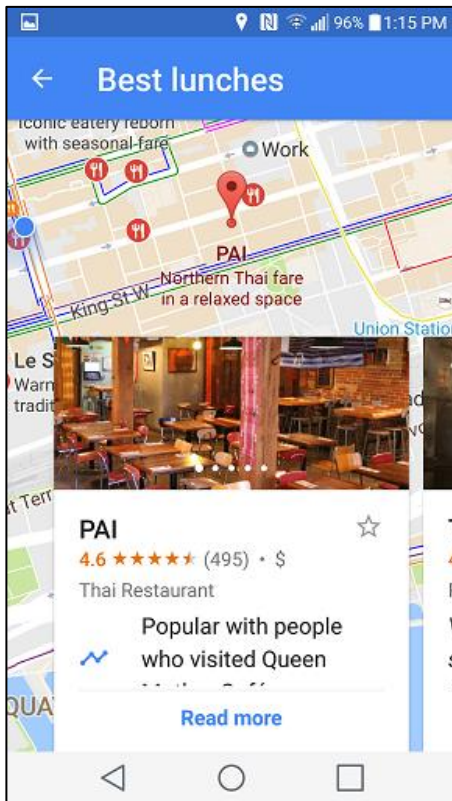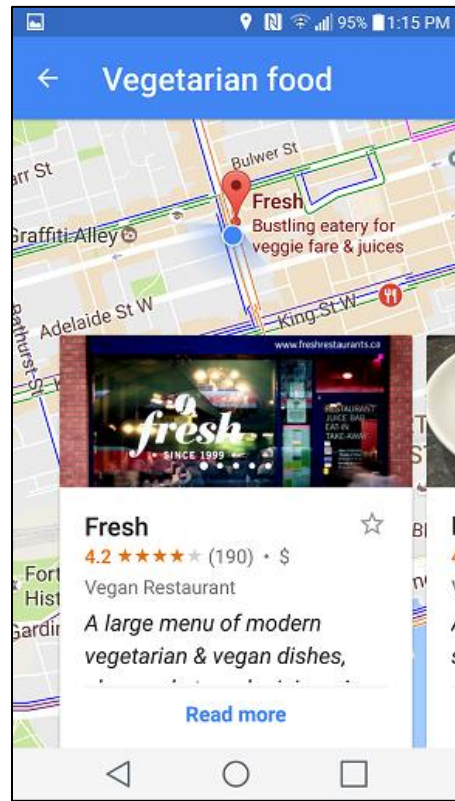
Google Maps

Google Maps
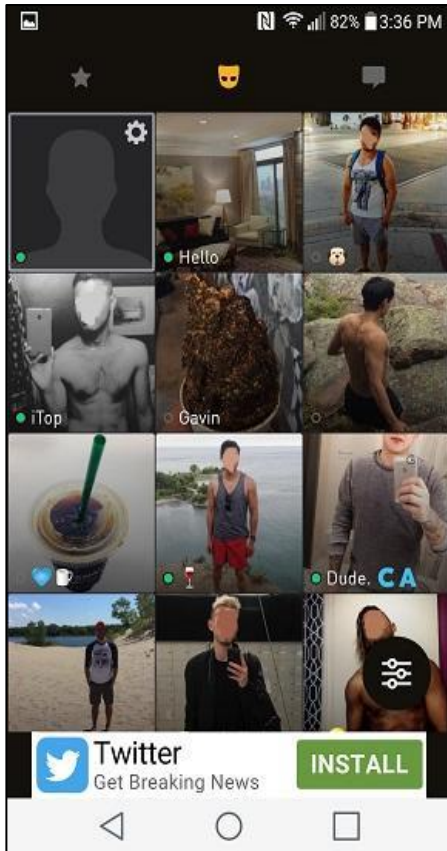
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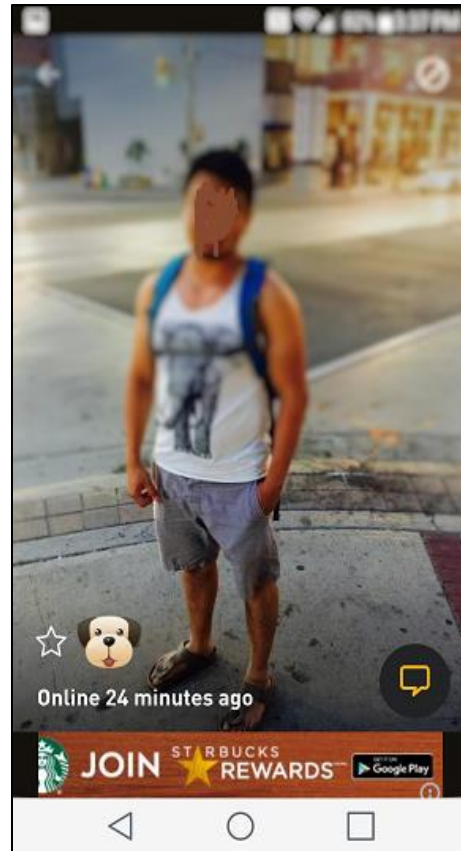
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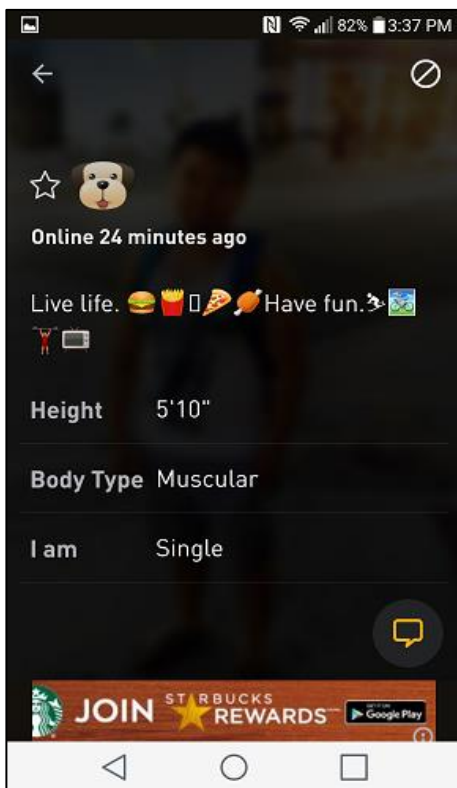
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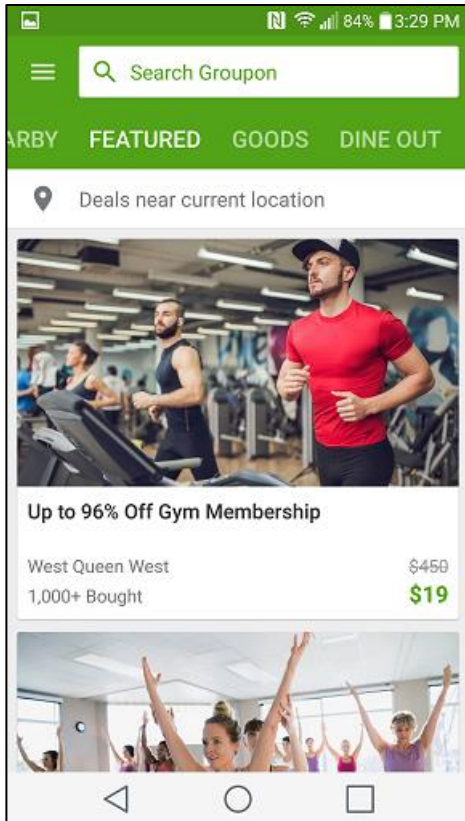
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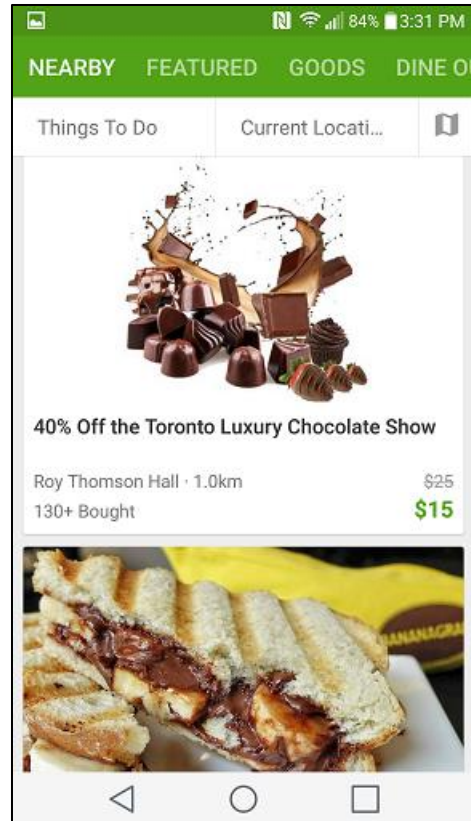
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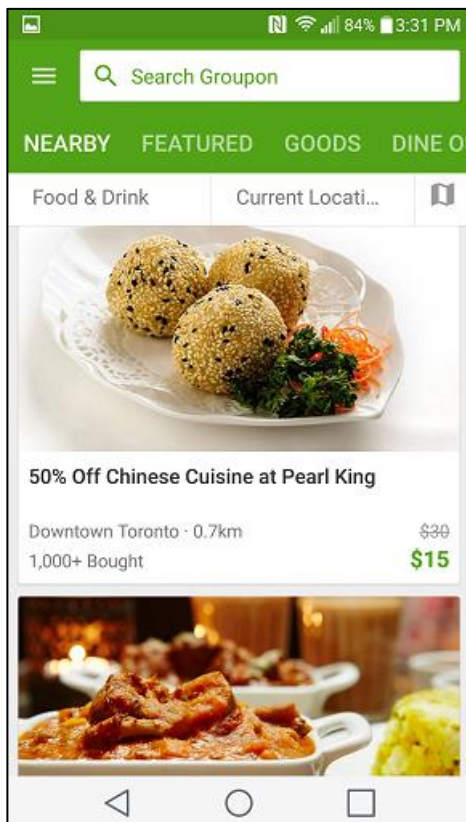
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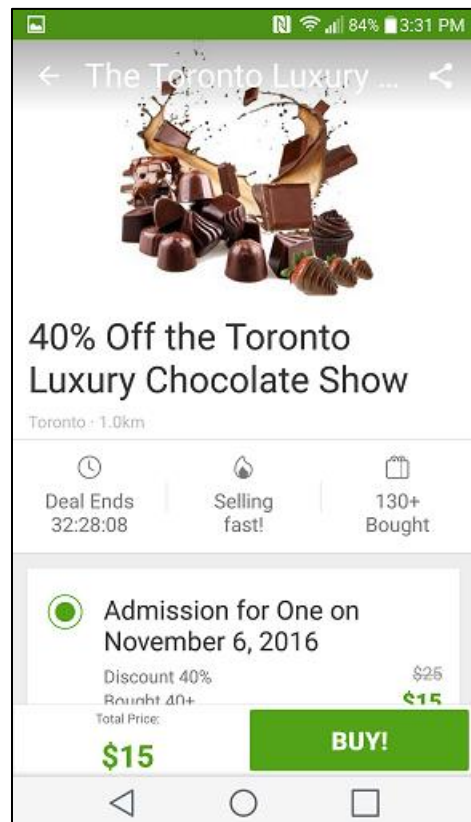
Groupon

Ingress
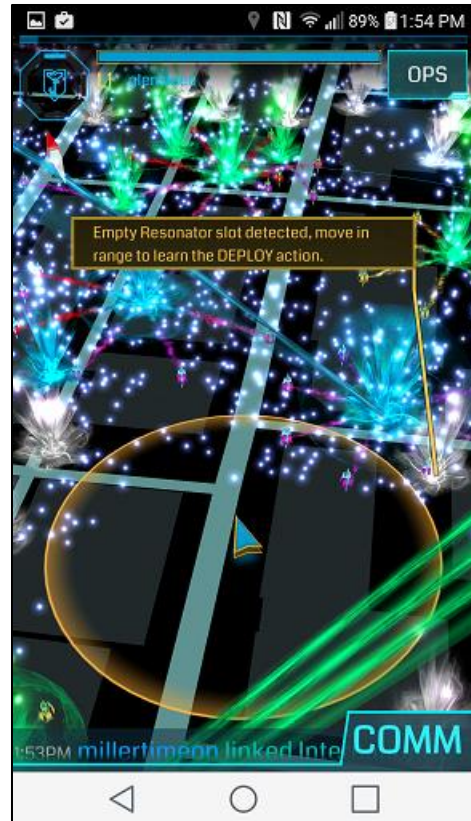
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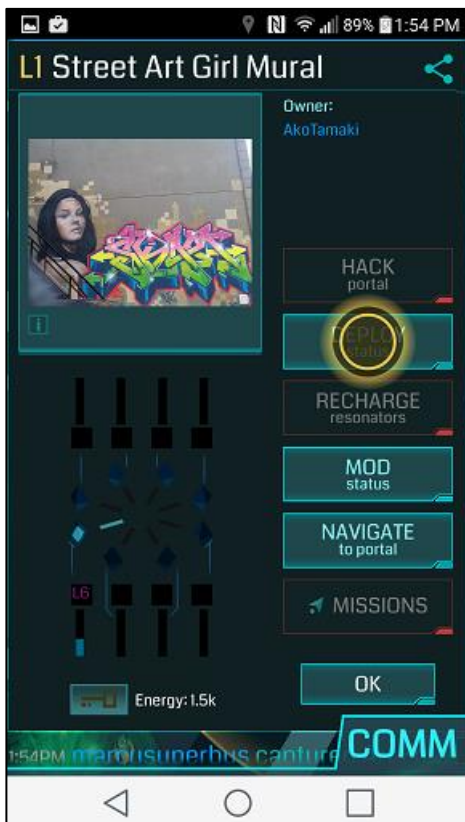
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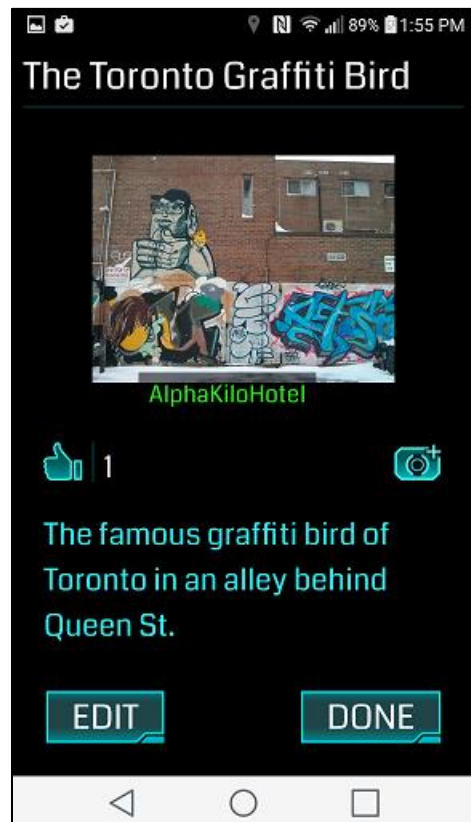
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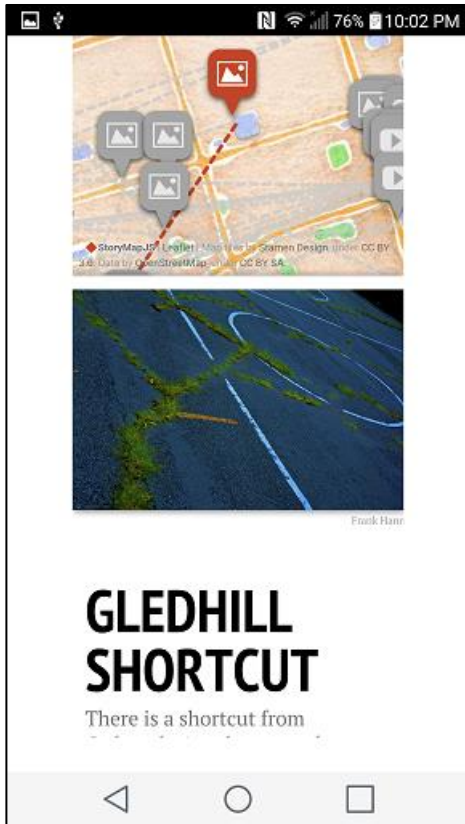
Inspired By…Map
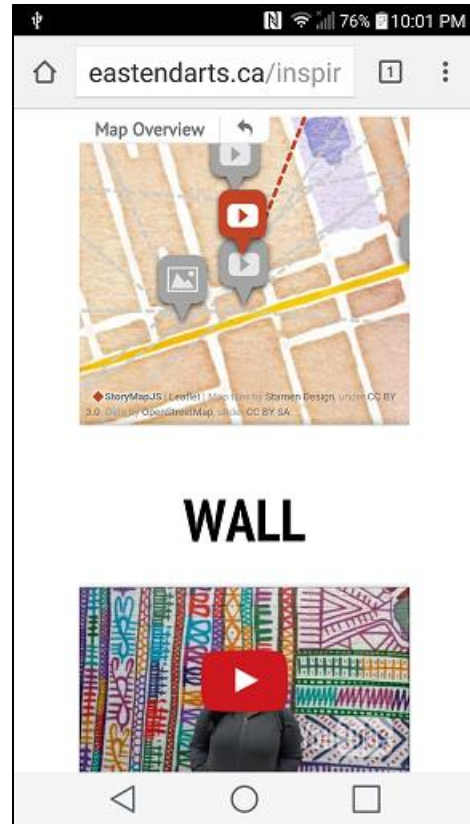
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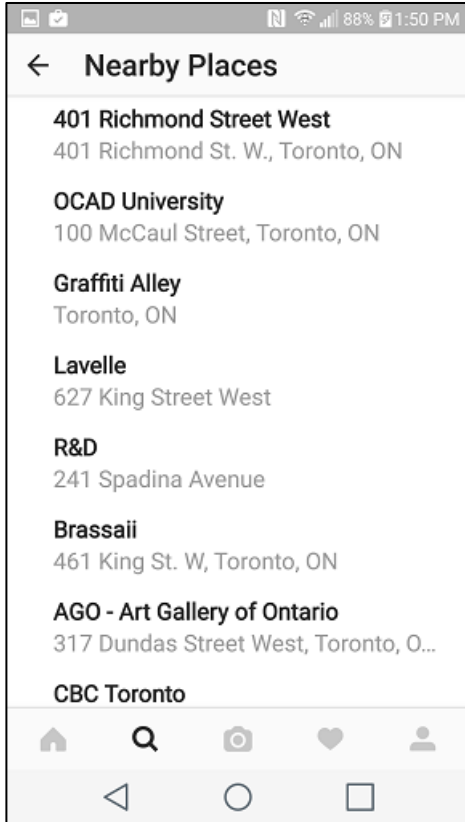
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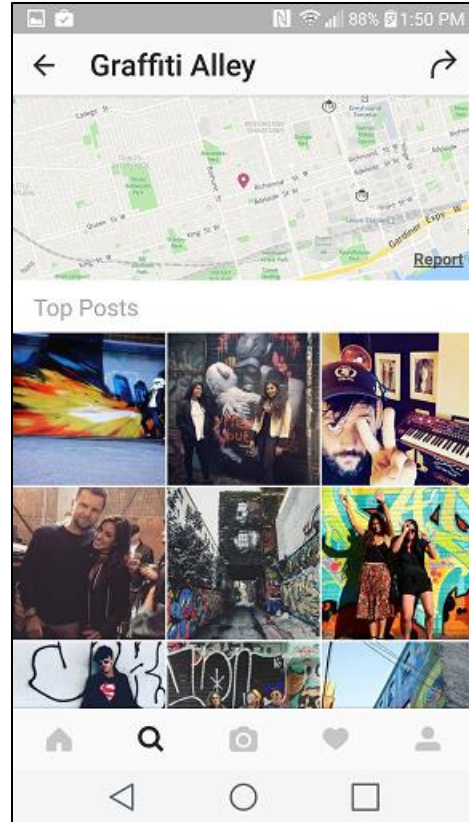
Instagram

Instagram

Instagram
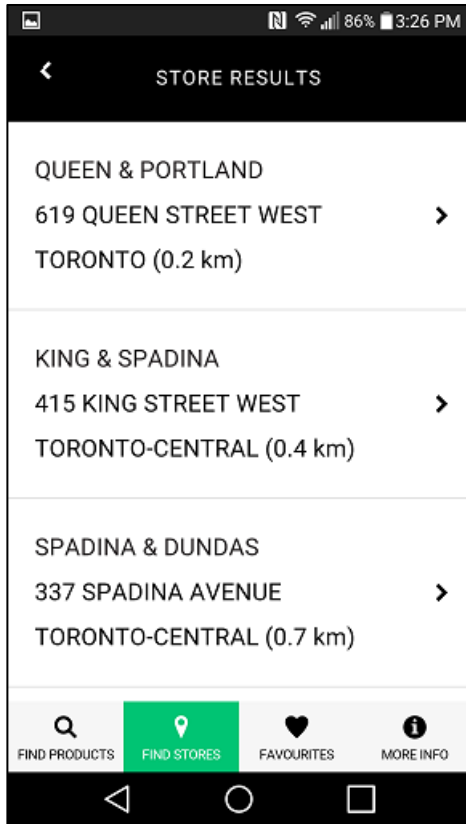
LCBO Mobile App
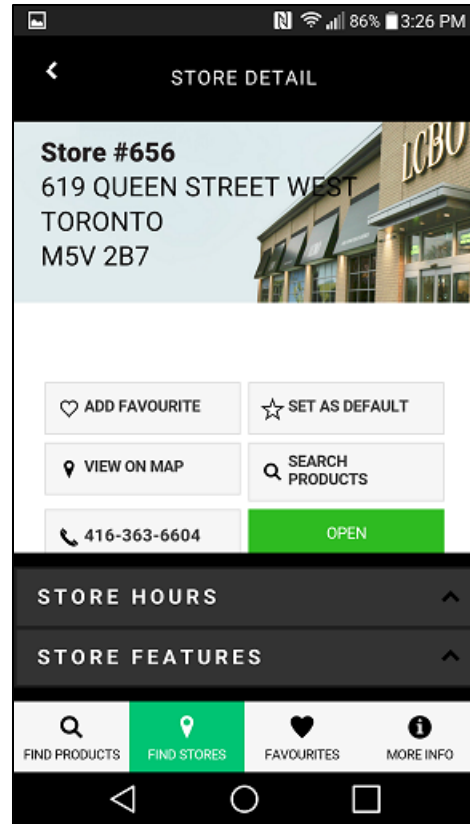
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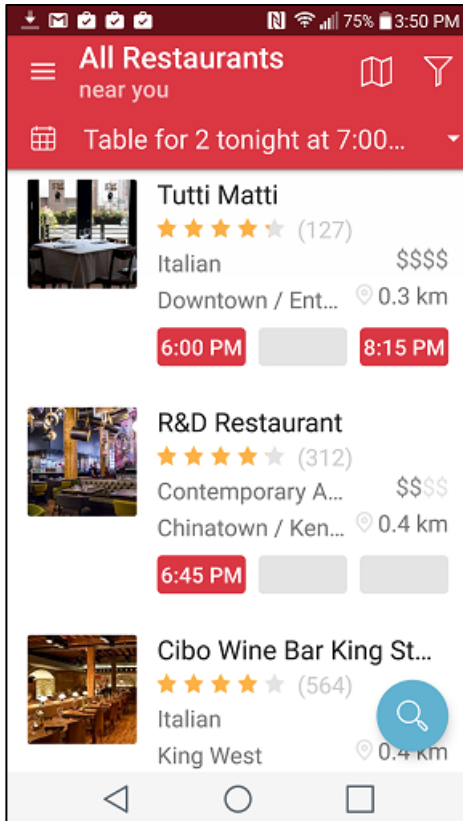
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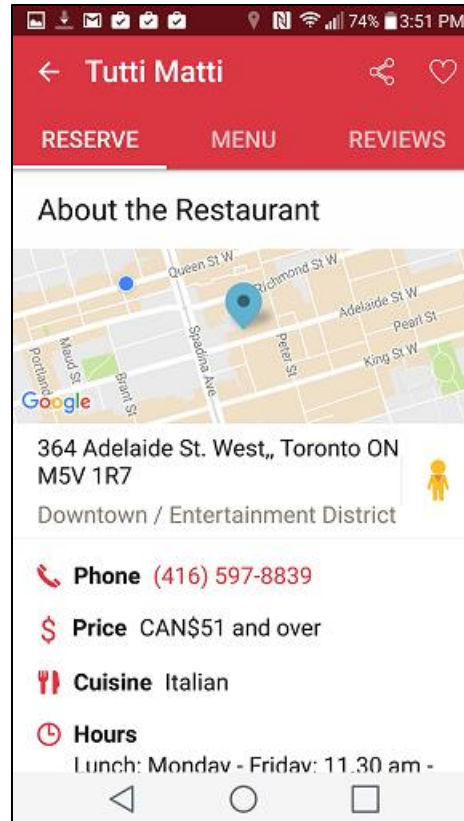
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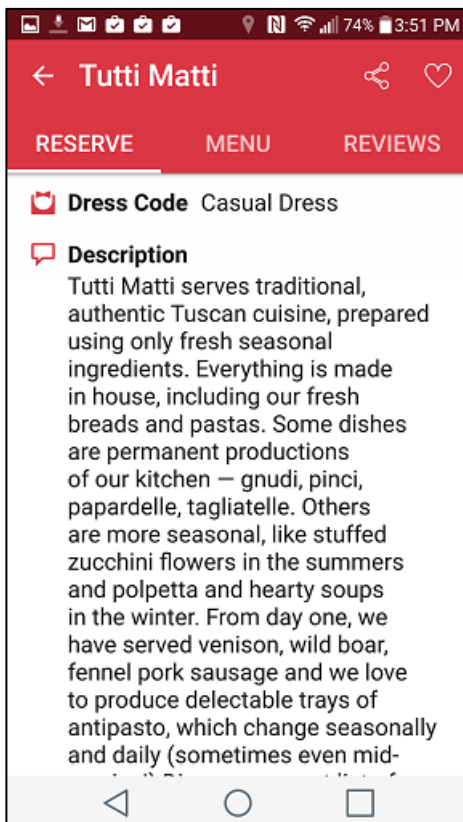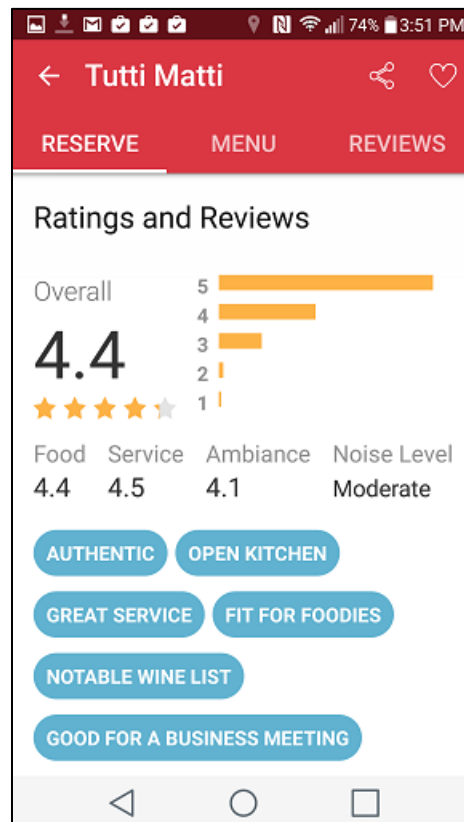
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OpenTable
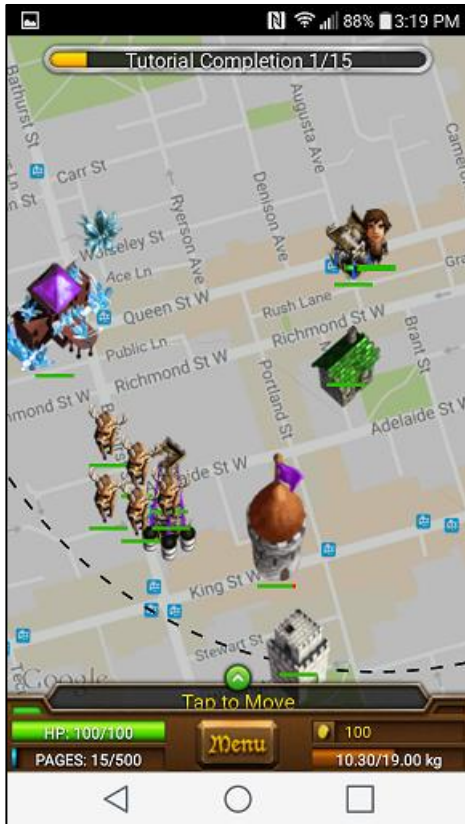
Parallel Kingdom

Parallel Kingdom
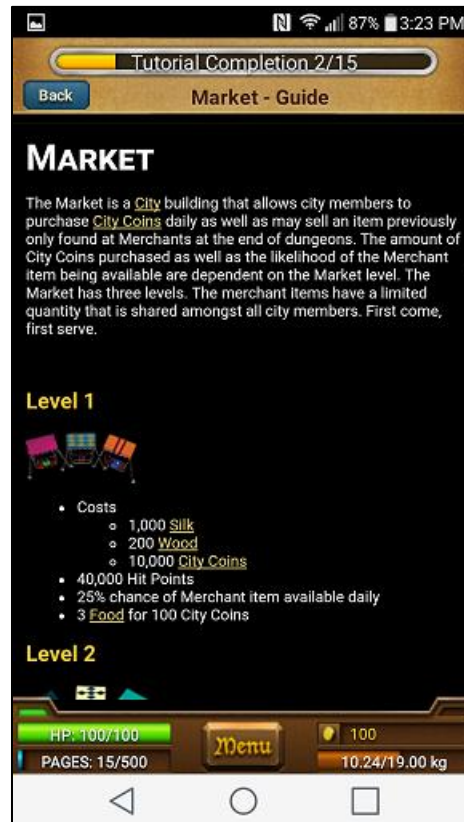
Parallel Kingdom

Parallel Kingdom
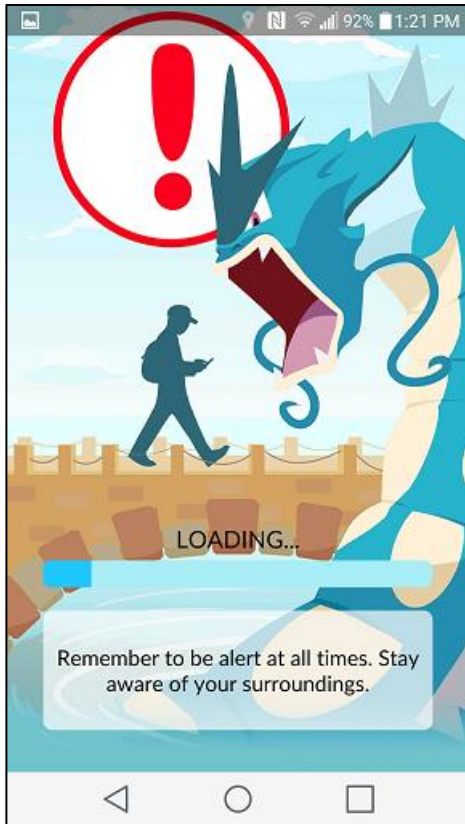
Pokémon Go

Pokémon Go
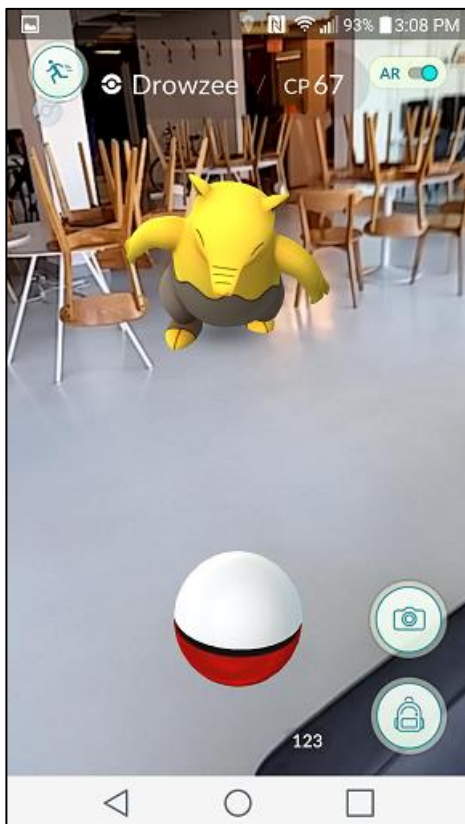
Pokémon Go

Pokémon Go
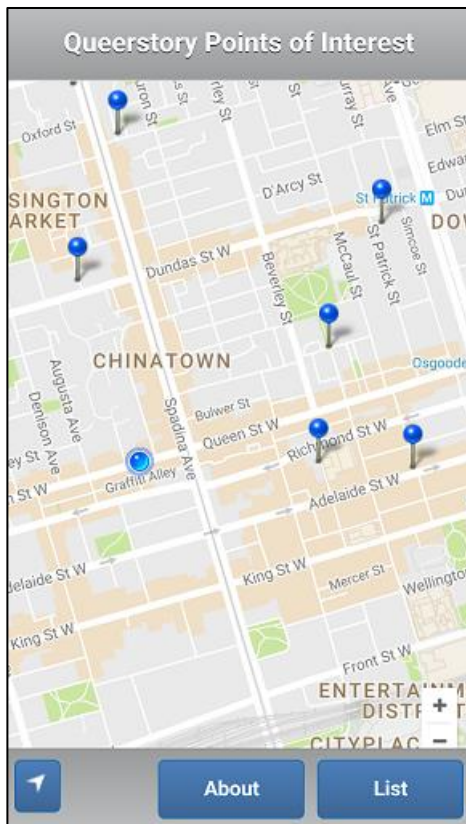
Queerstory

Queerstory
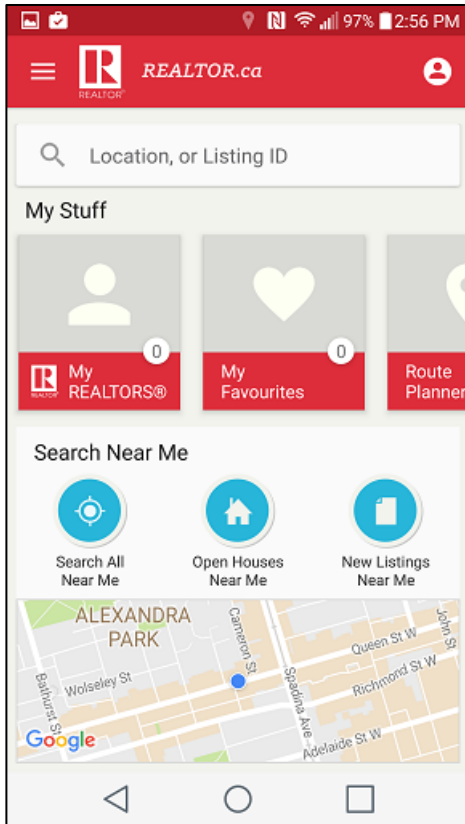
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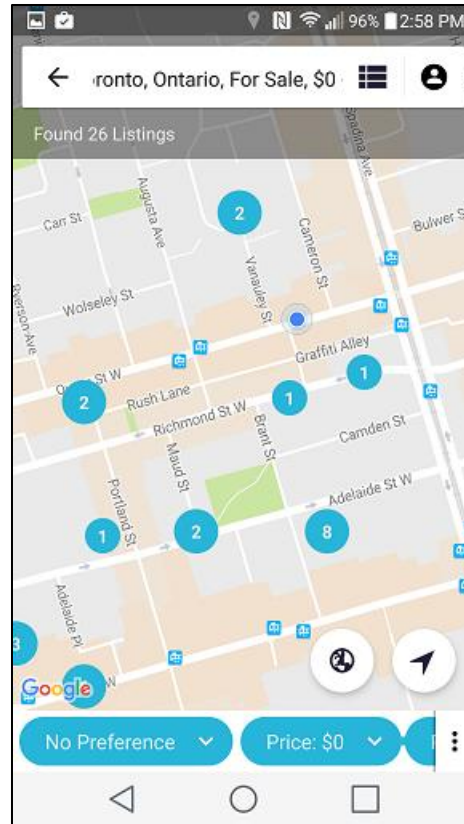
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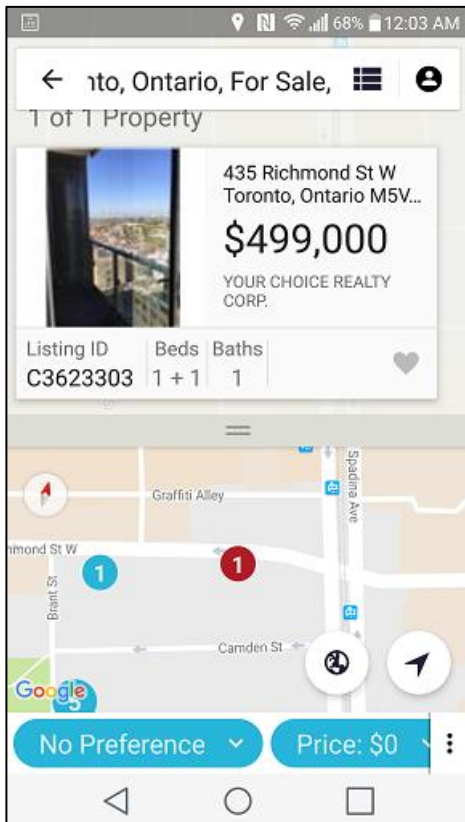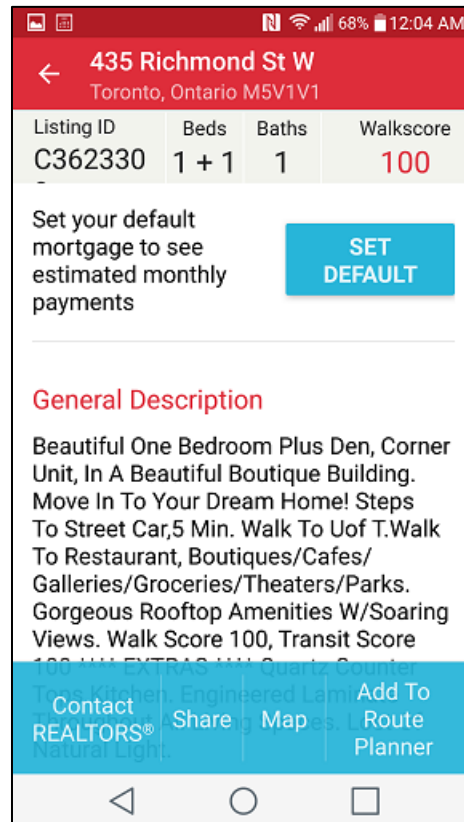
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Realtor.ca
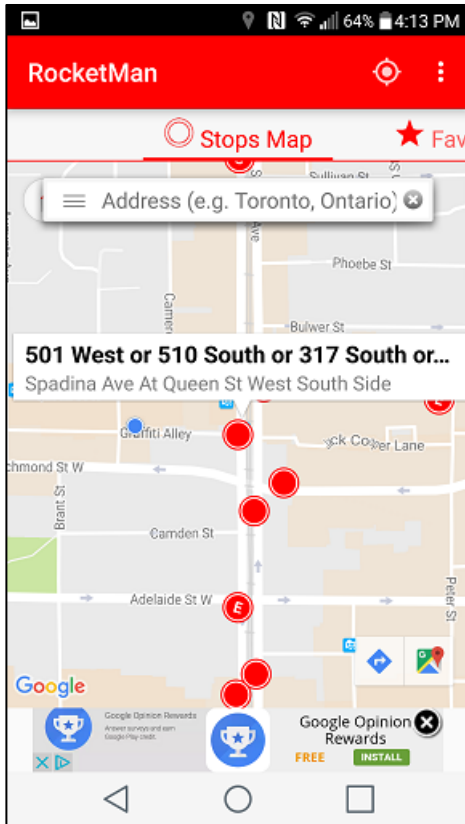
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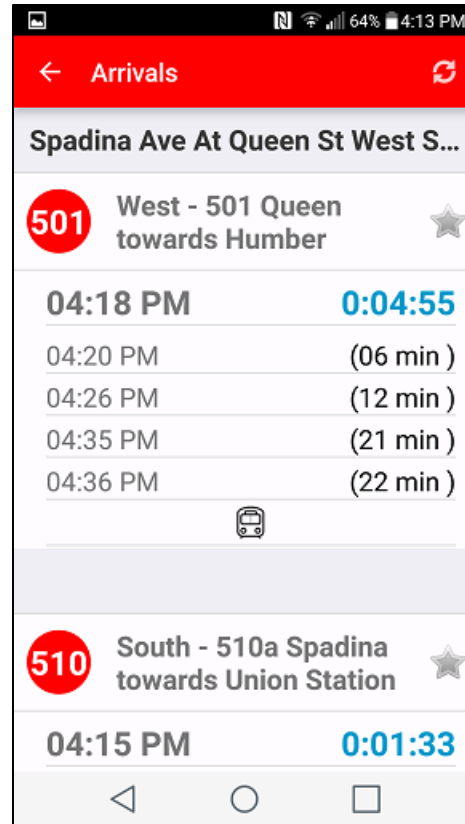
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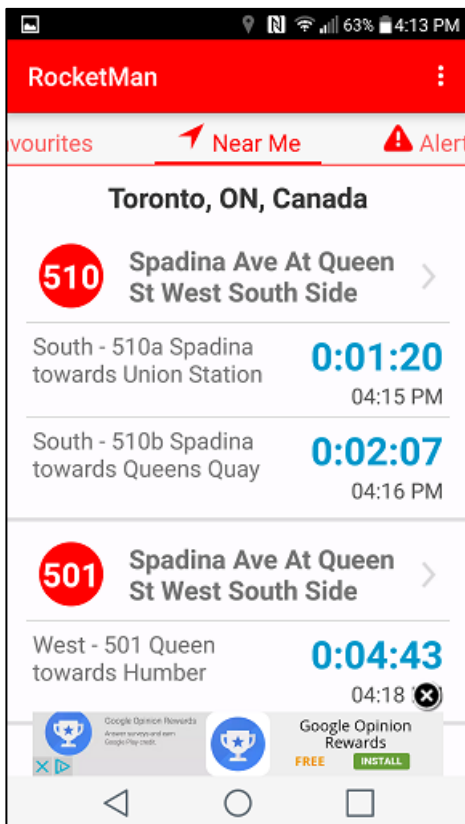
RocketMan

Runkeeper
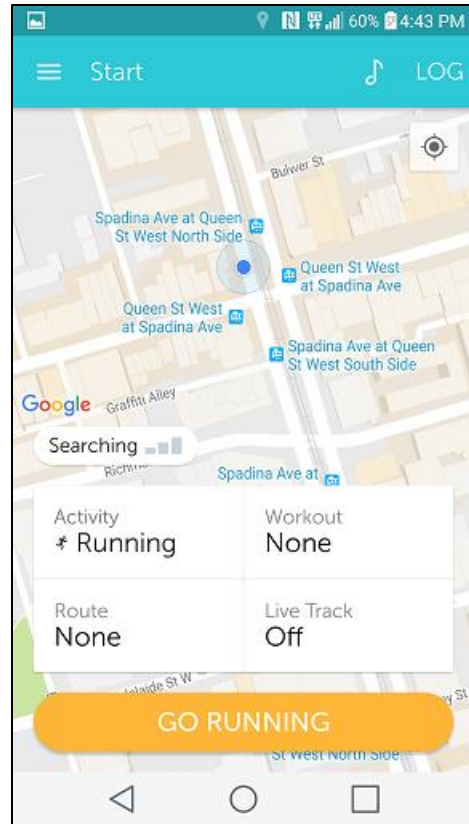
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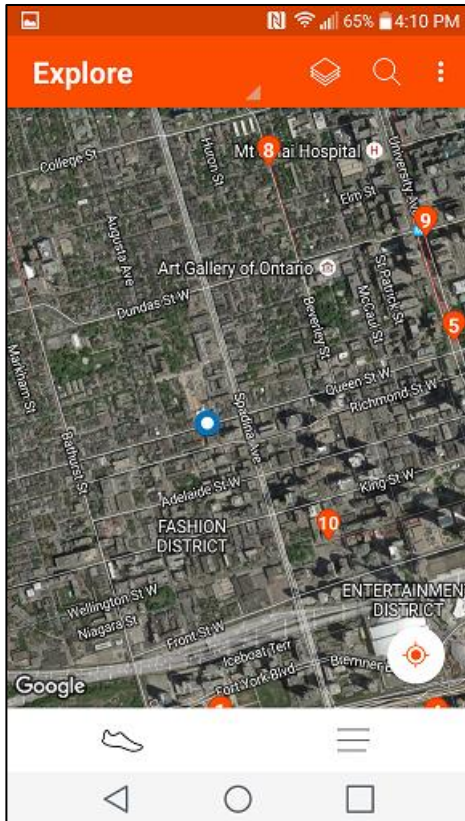
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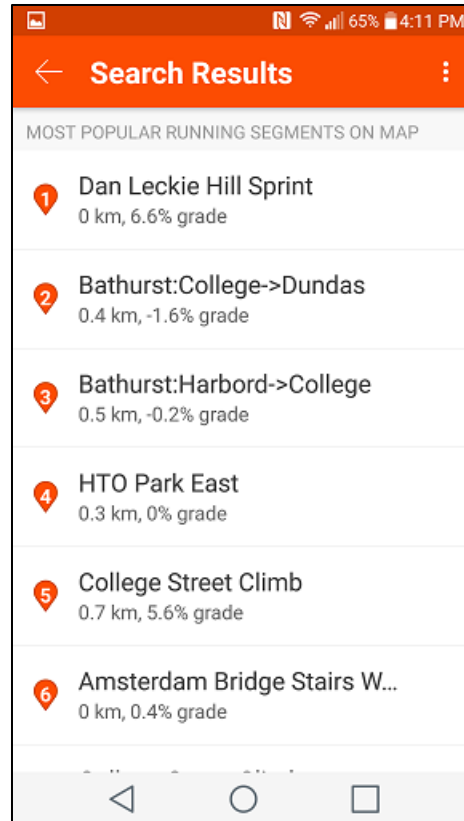
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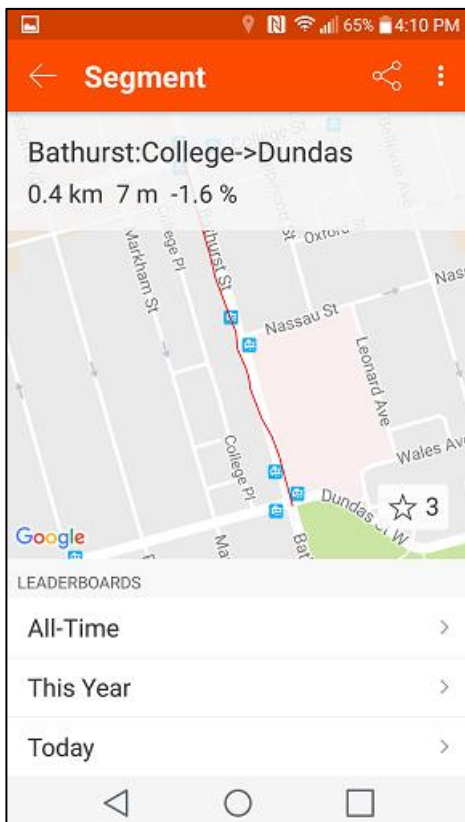
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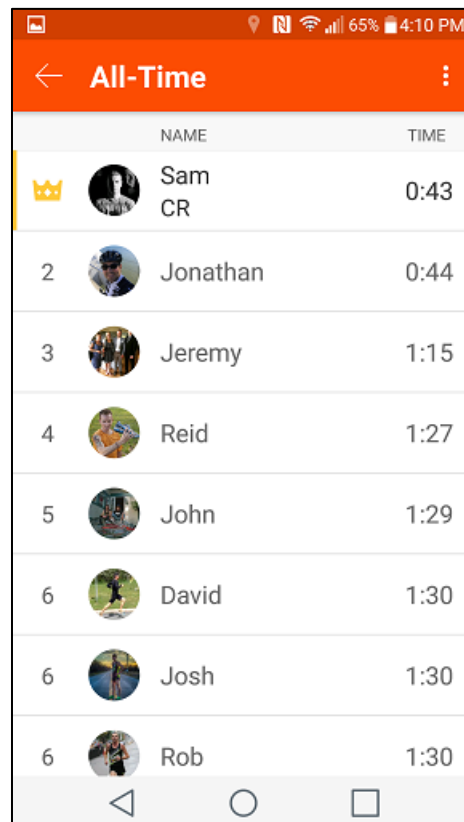
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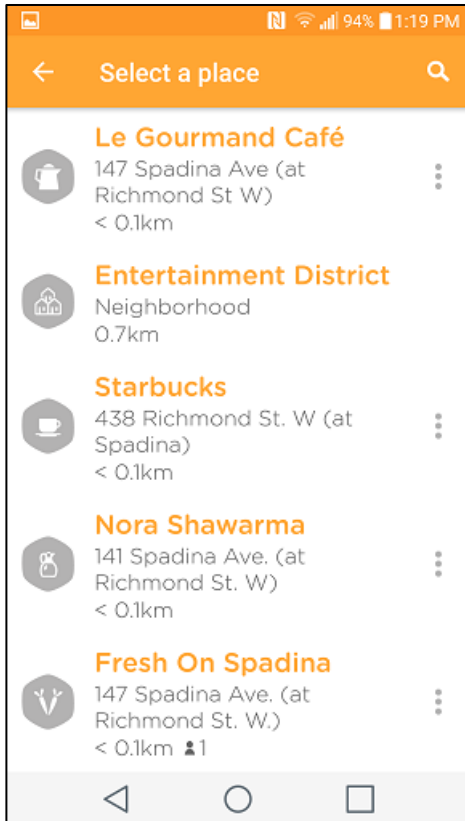
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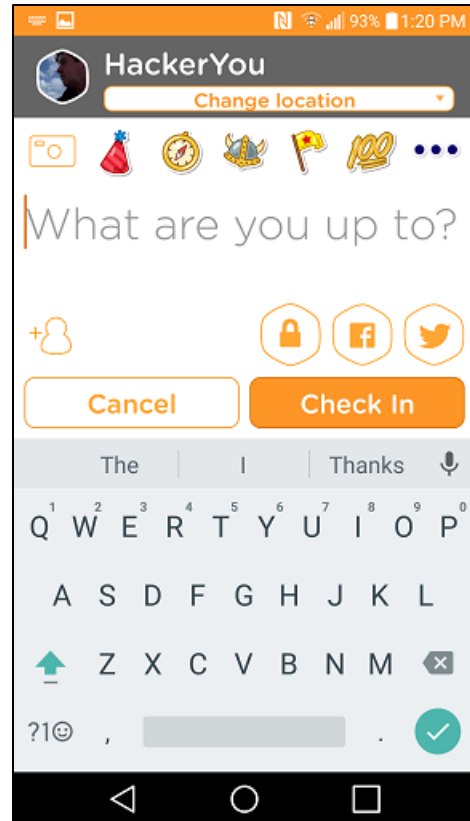
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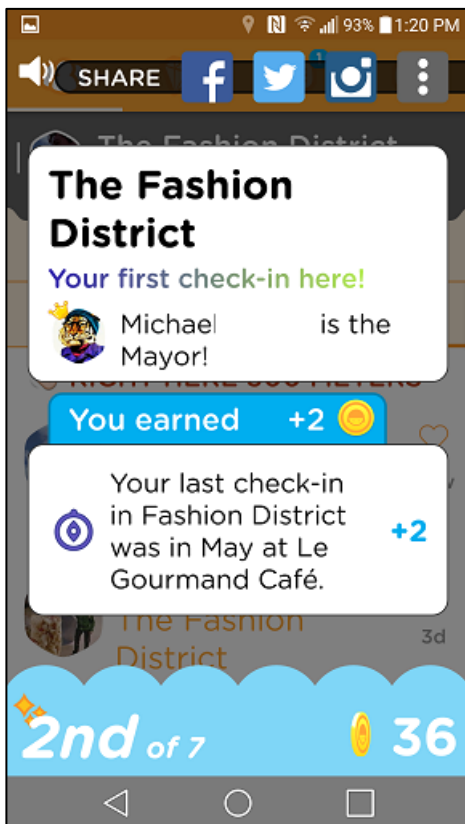
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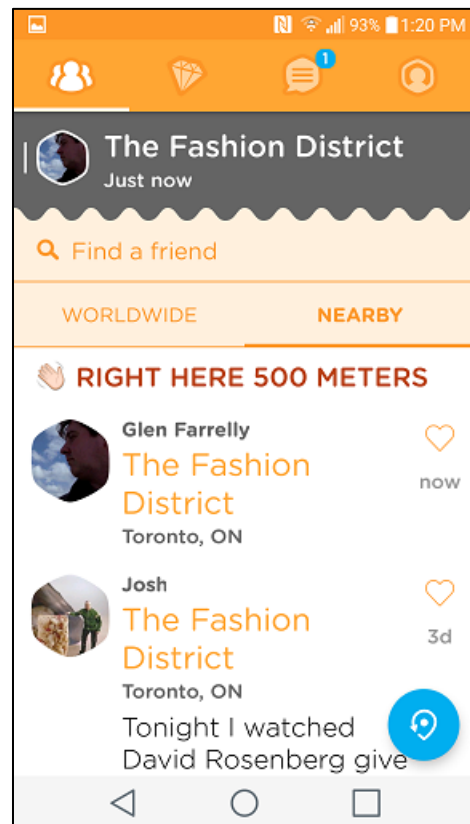
Swarm

Tagwhat

Tagwhat
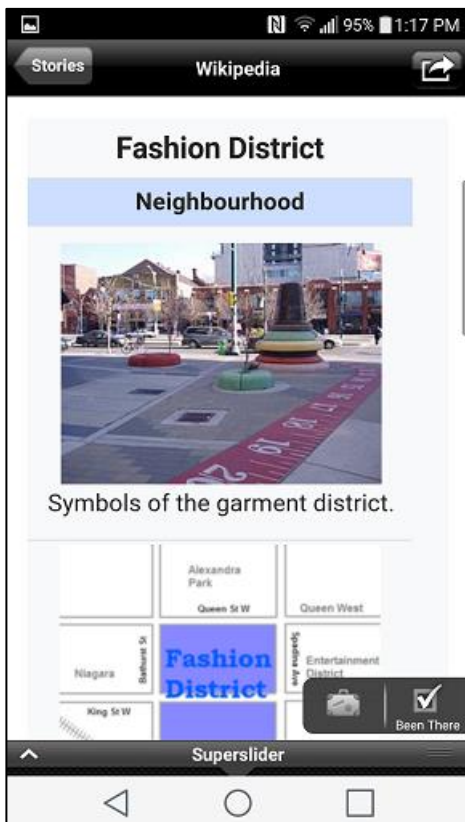
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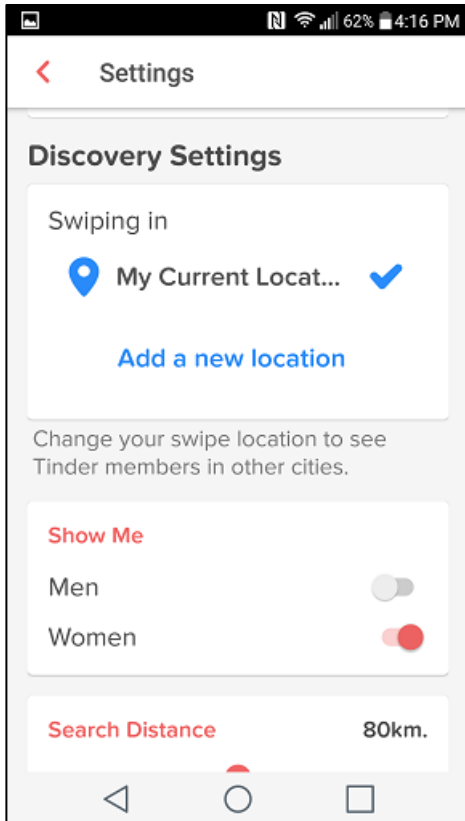
Tinder
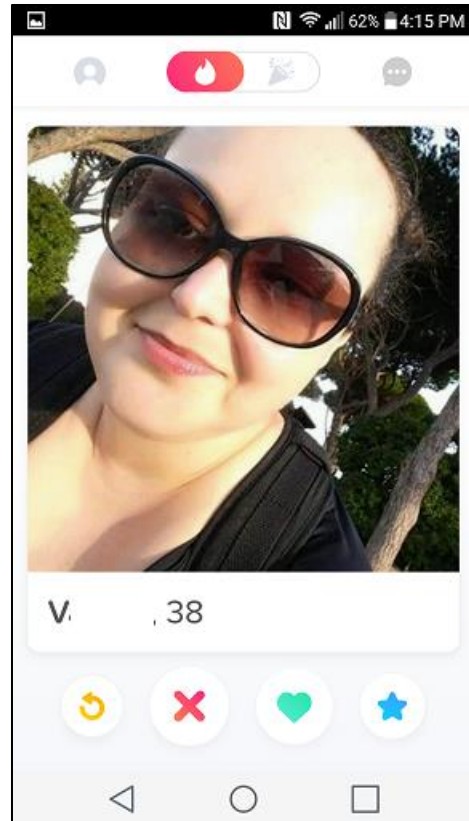
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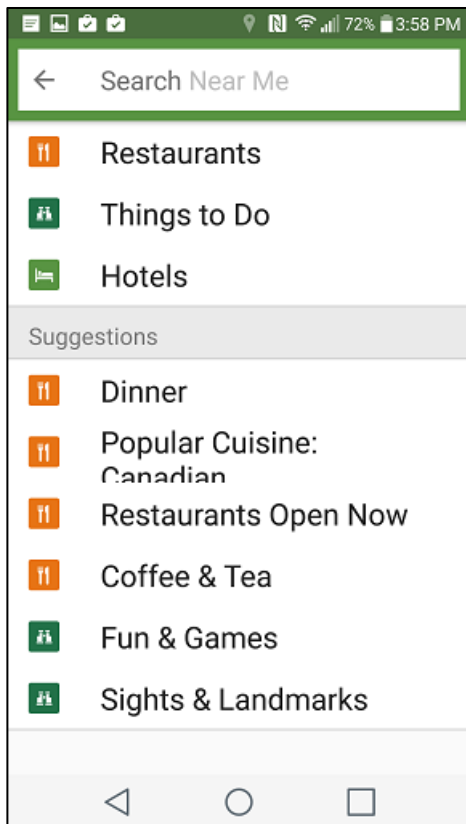
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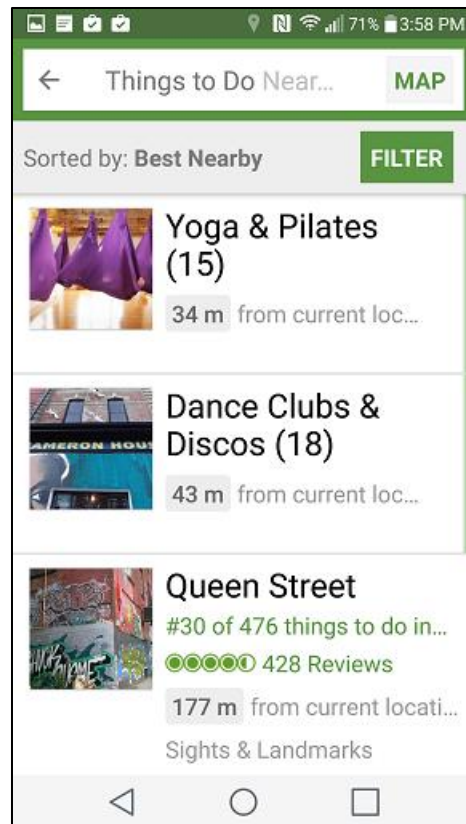
TripAdvisor
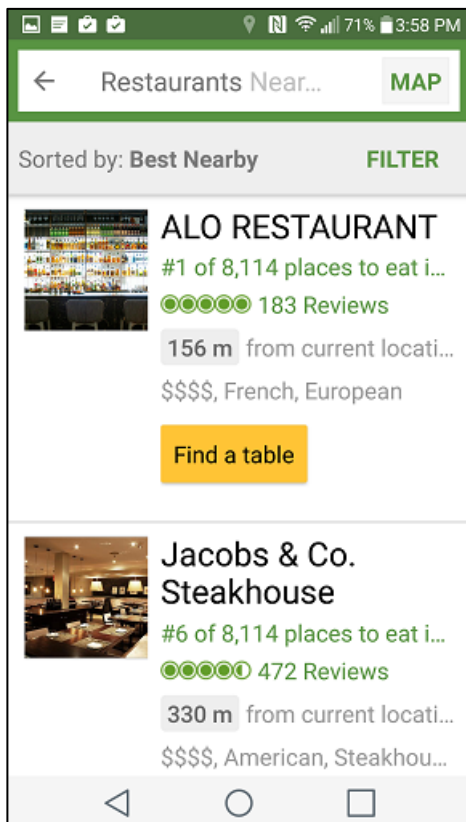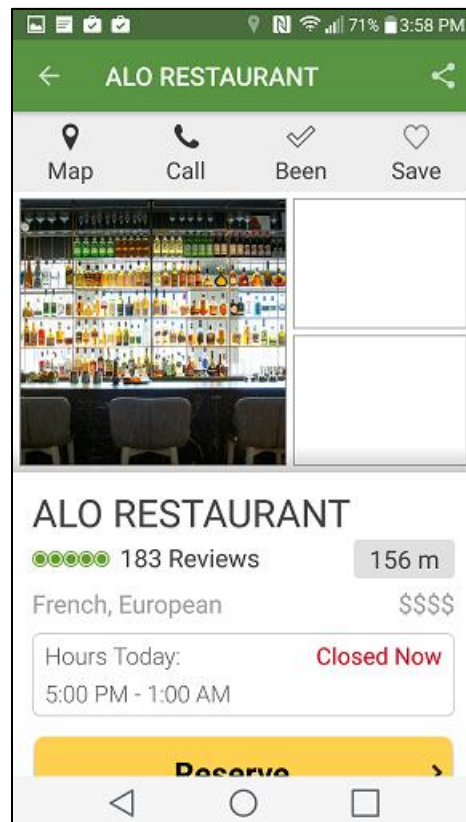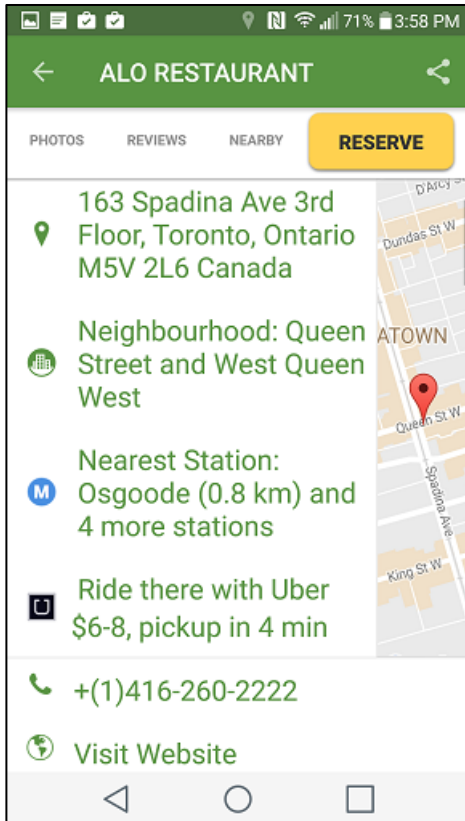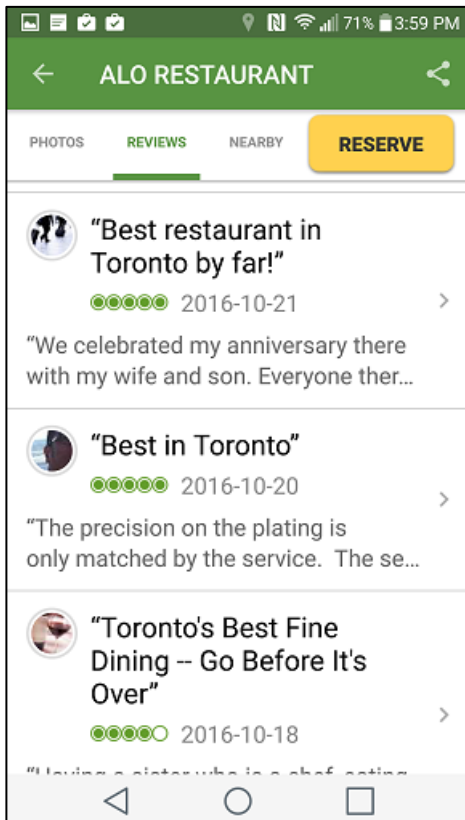
TripAdvisor

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Twitter

Twitter
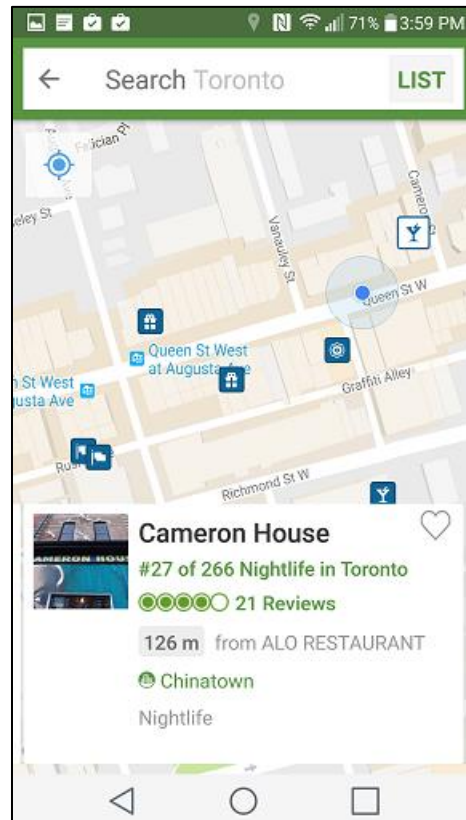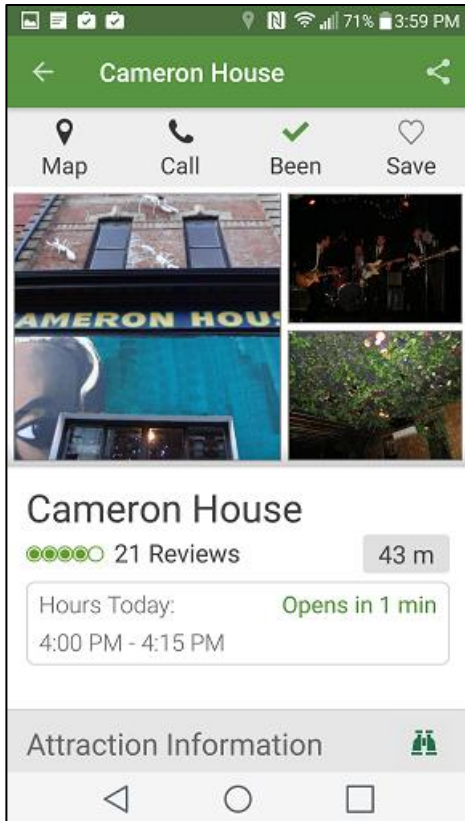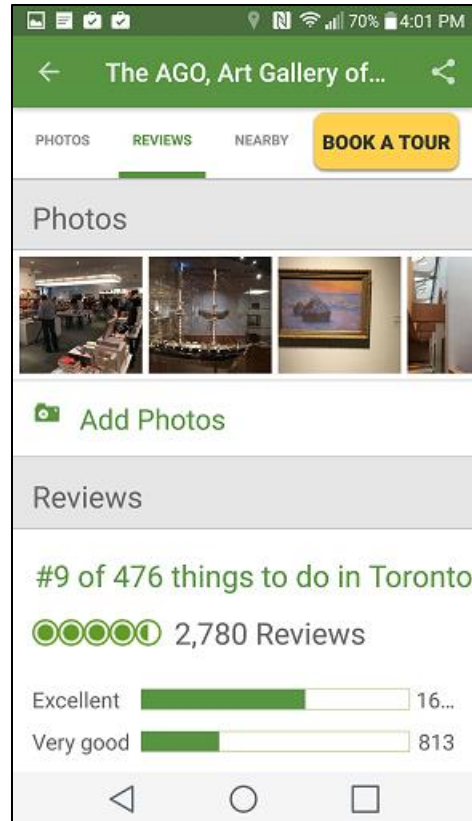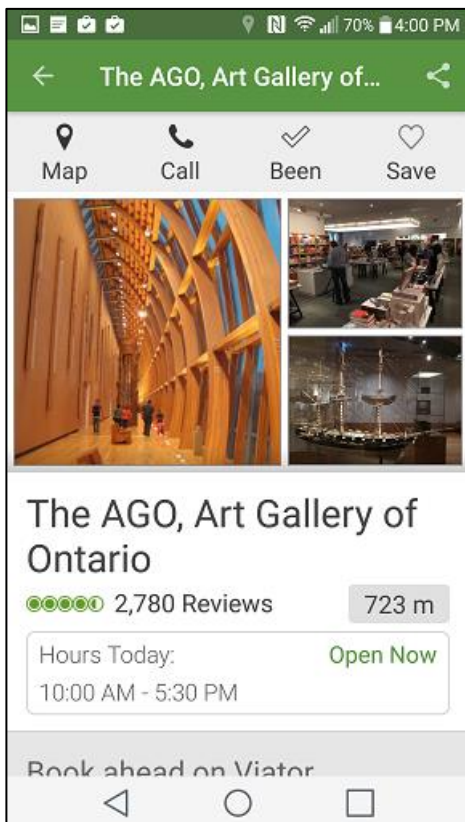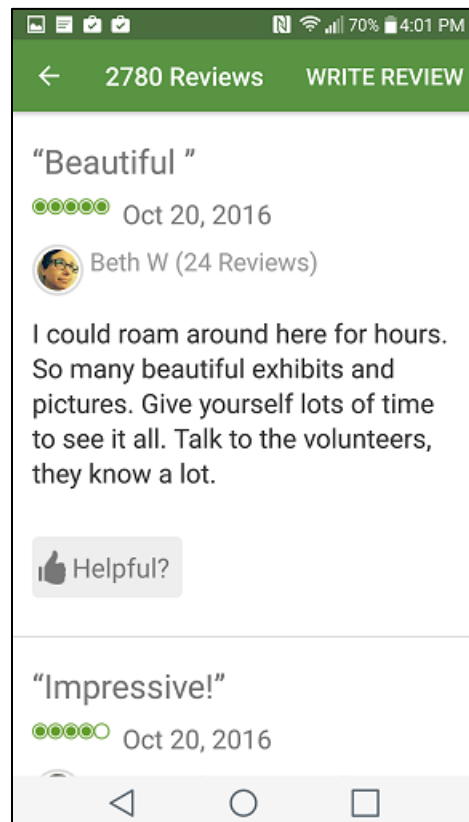
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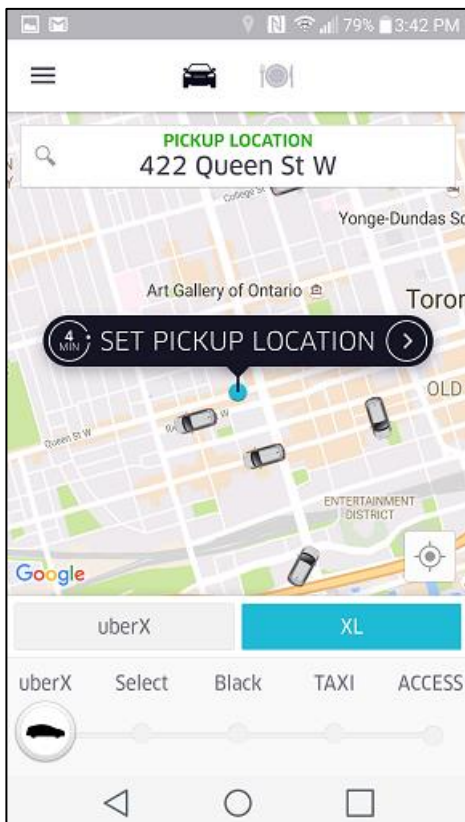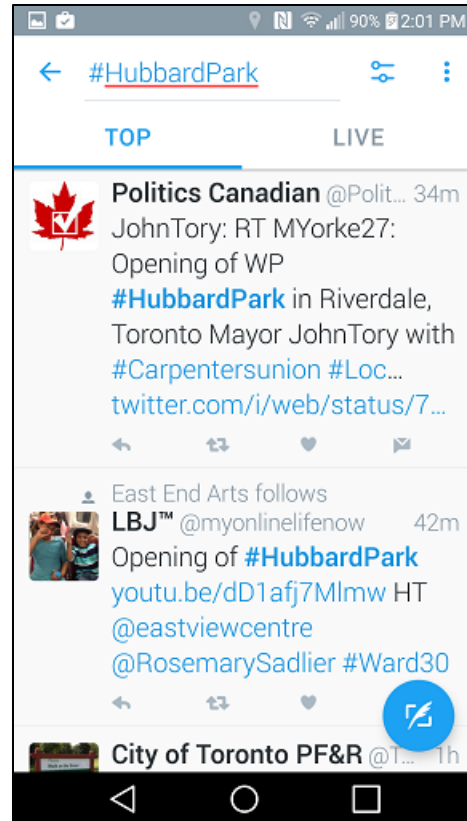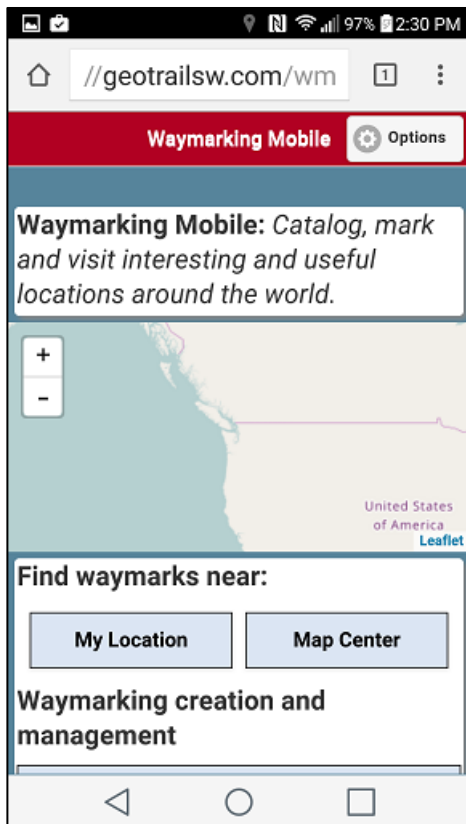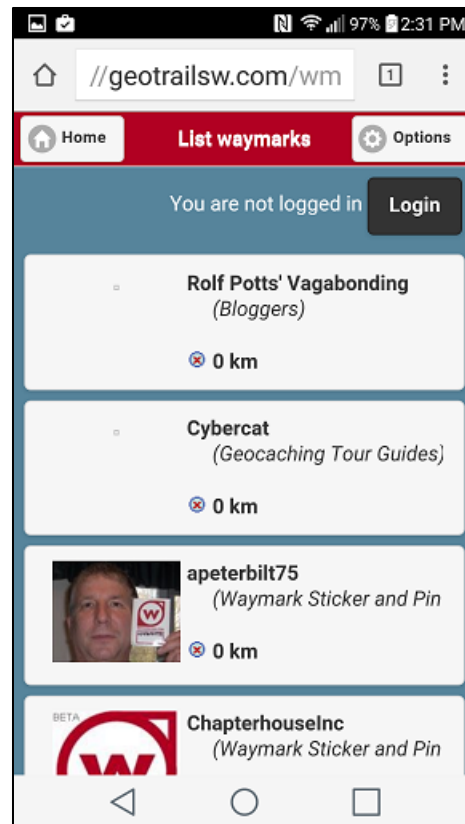
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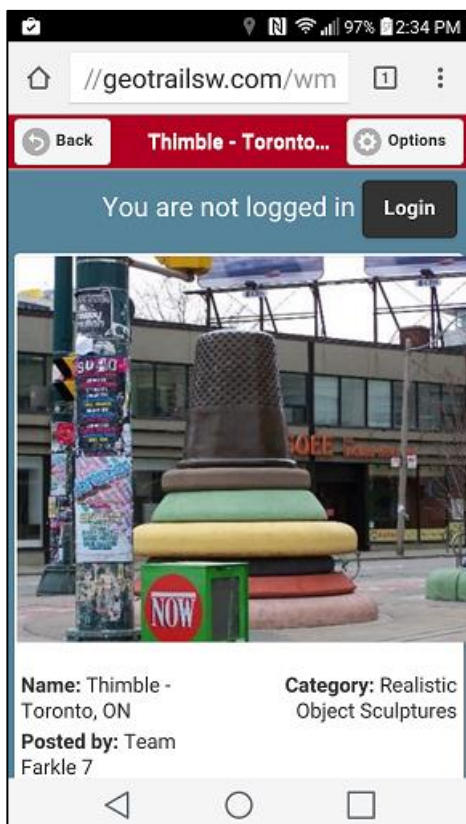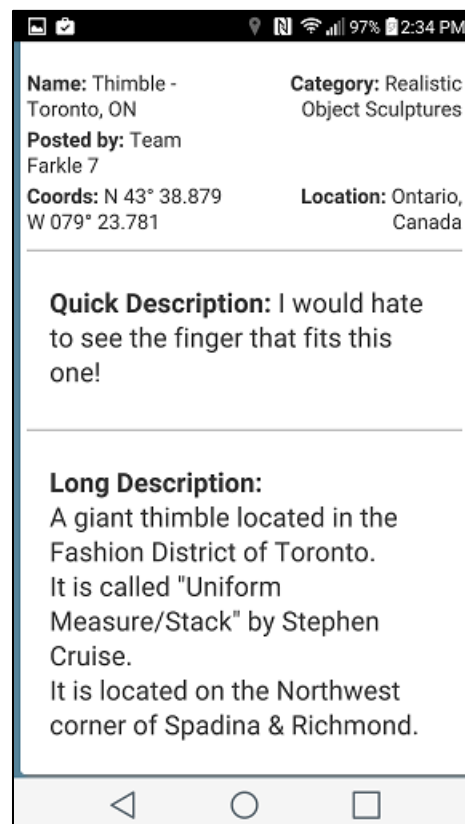
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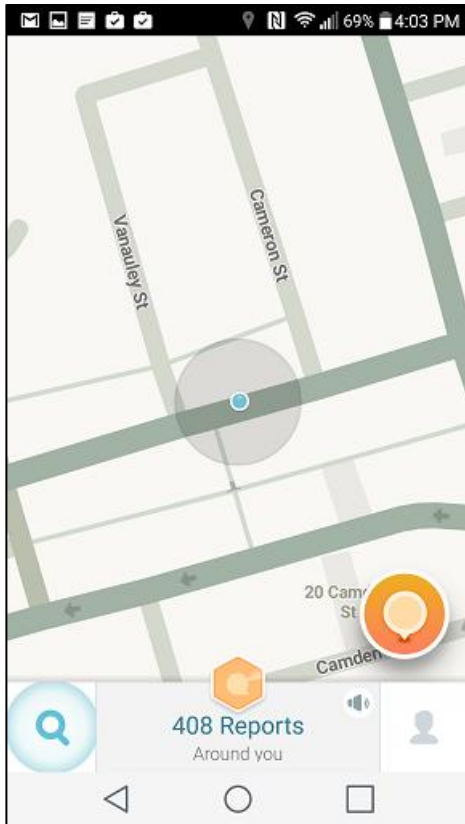
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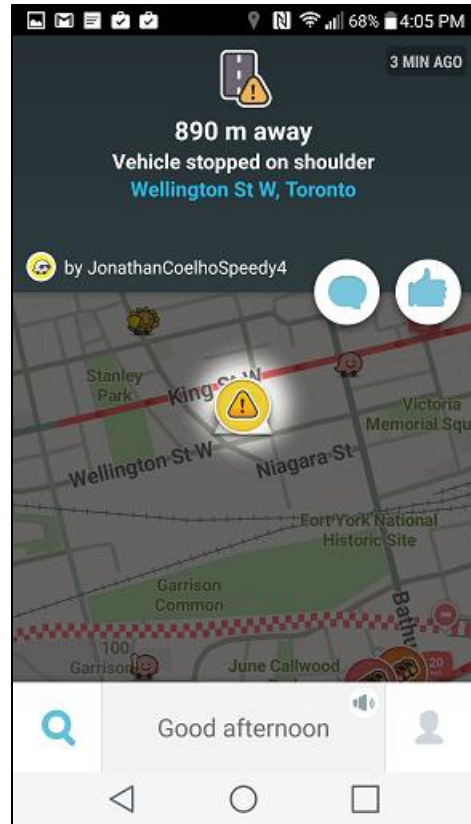
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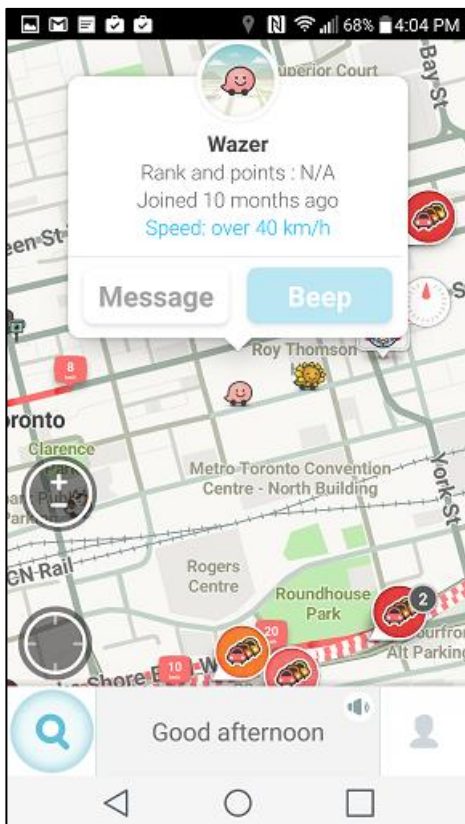
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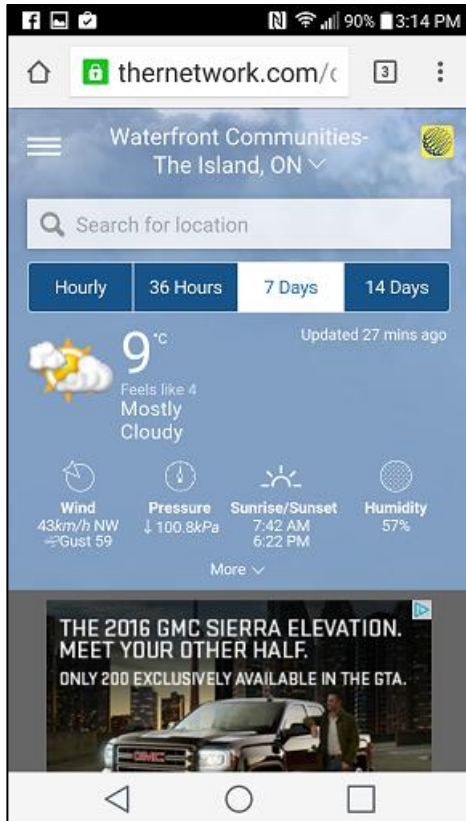
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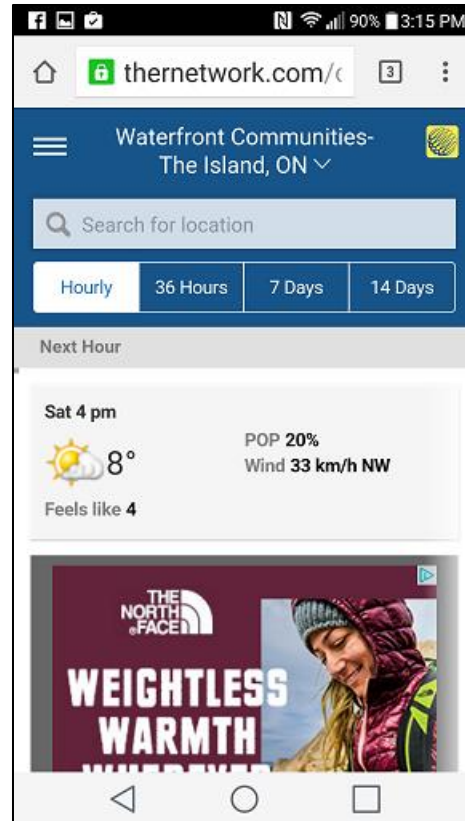
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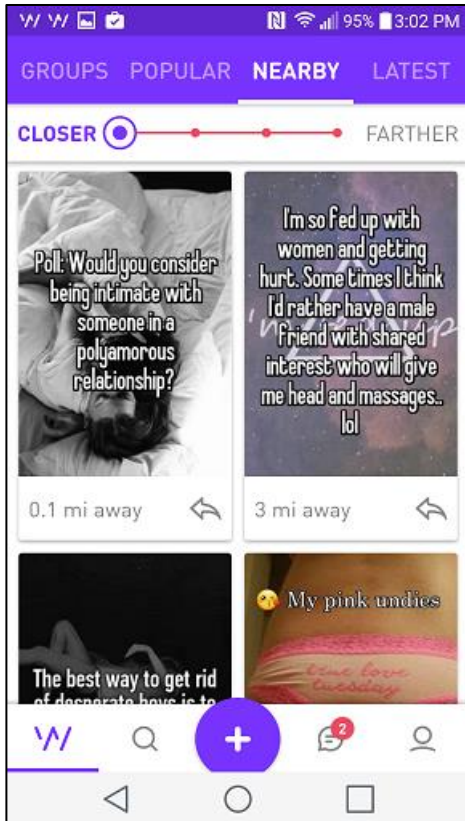
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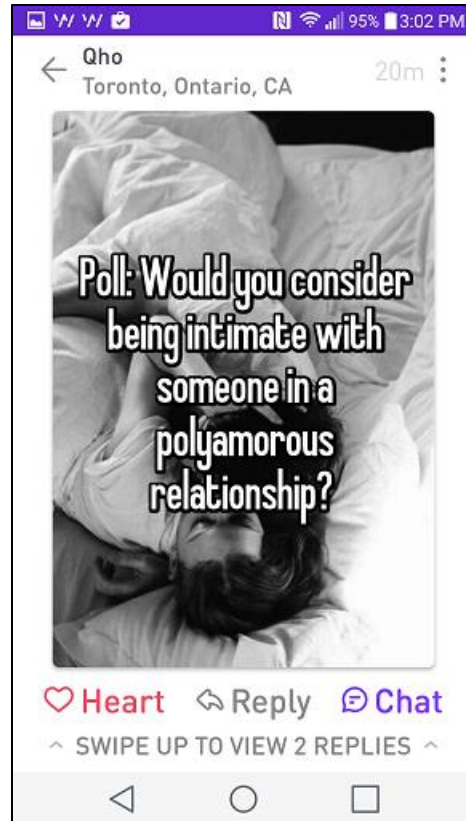
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Whisper

Whisper
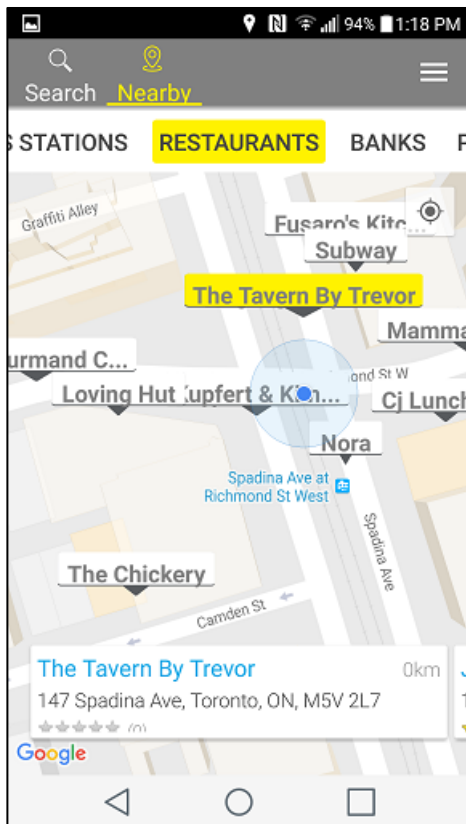
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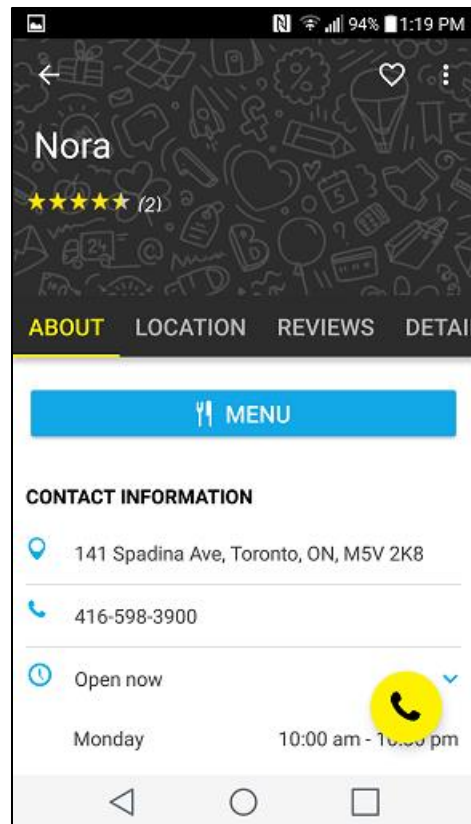
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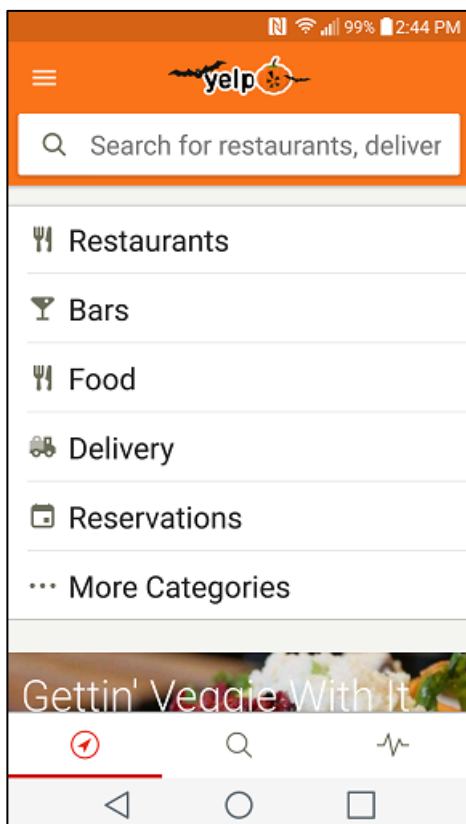
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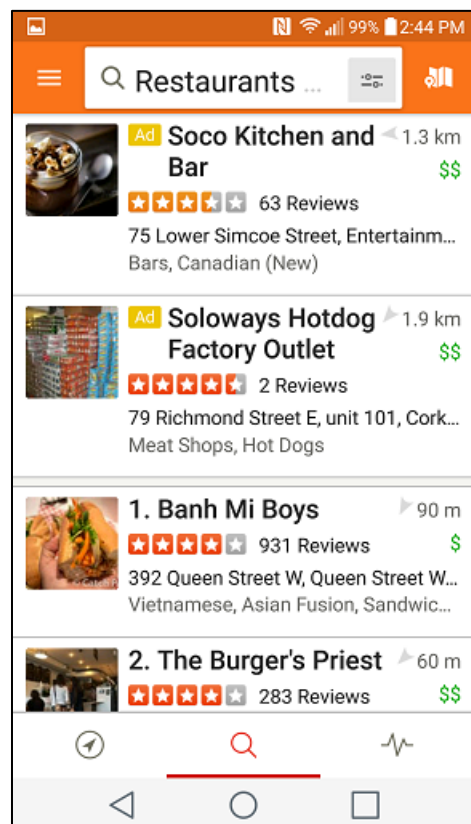
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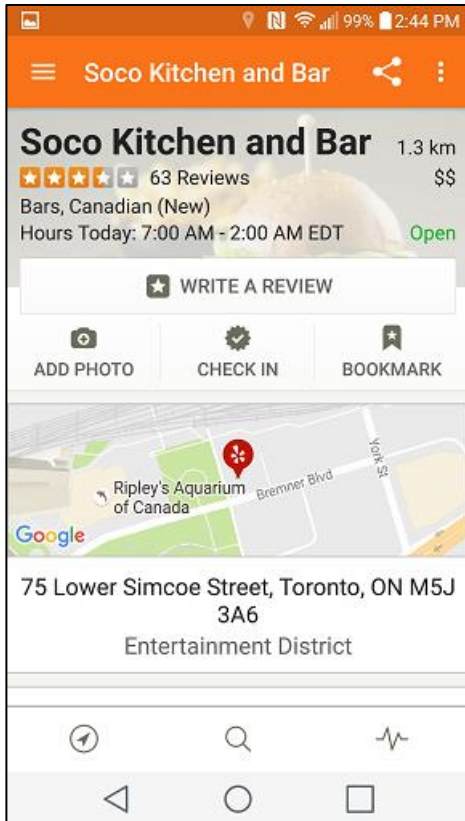
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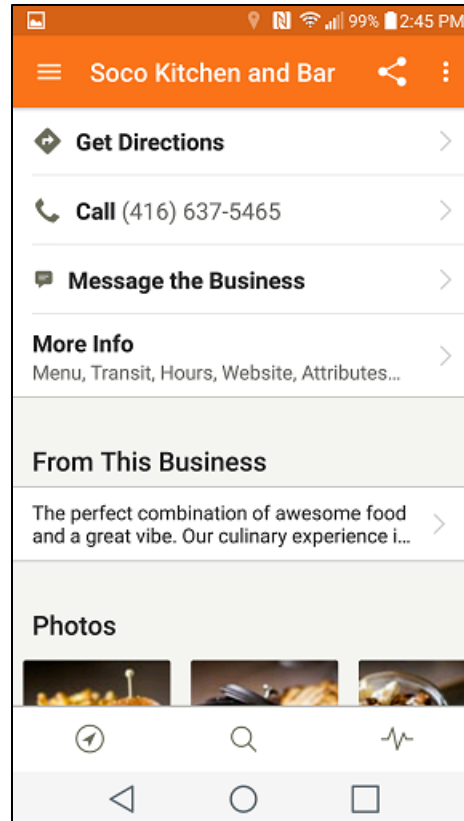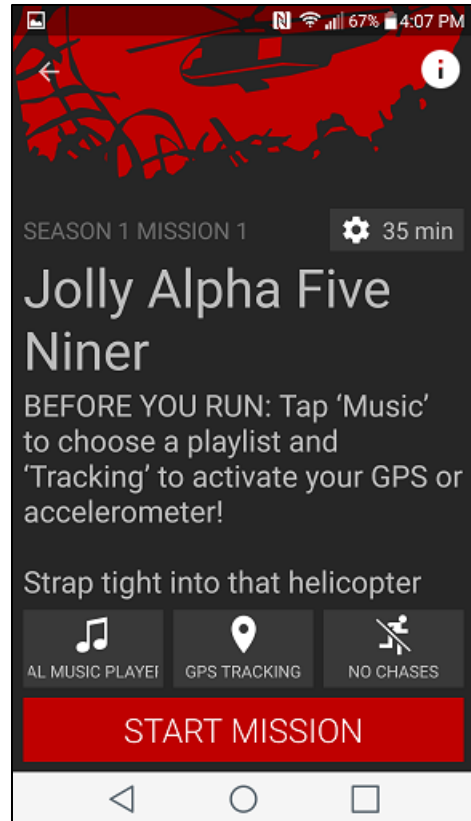

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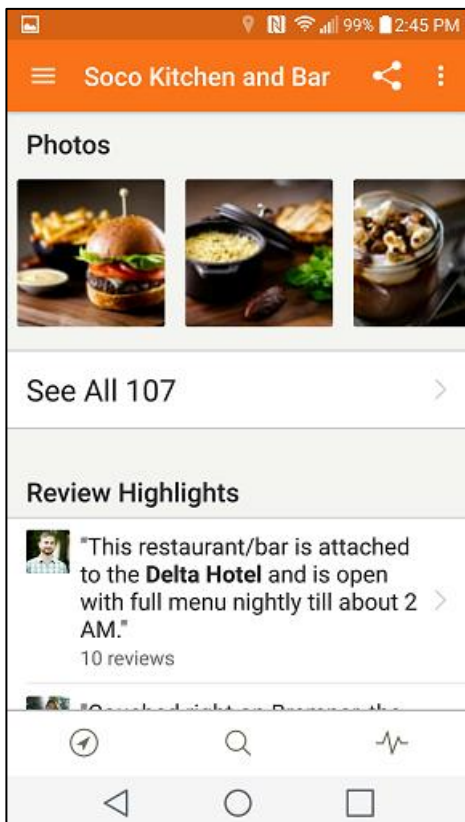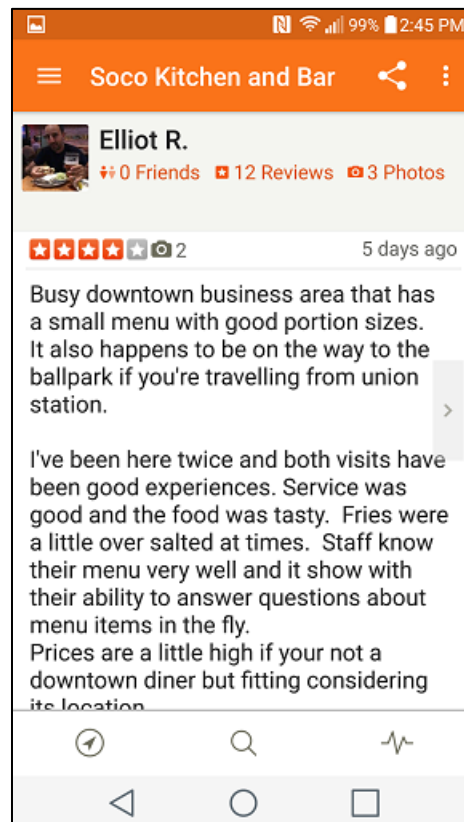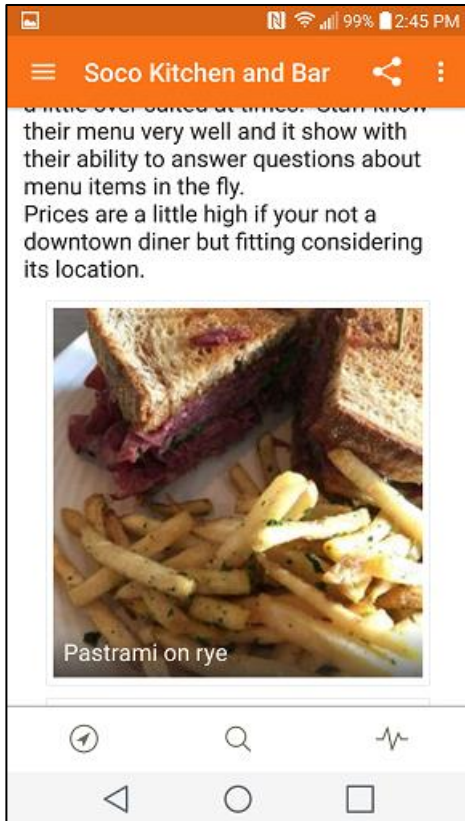
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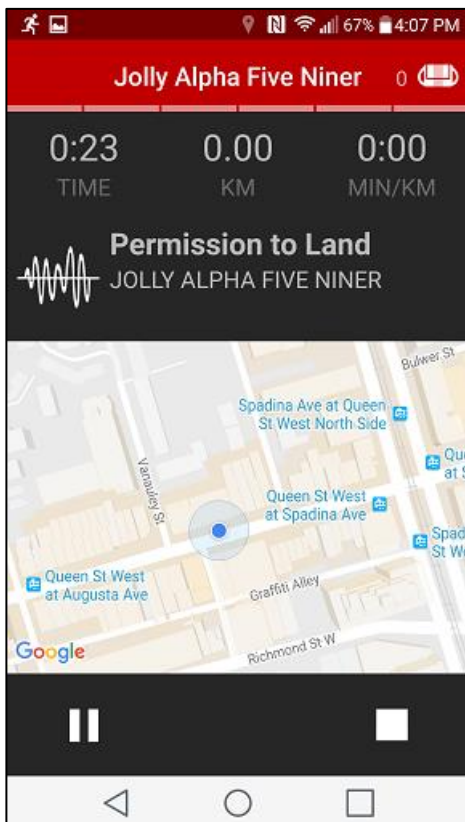
Yelp

Yelp (scrolling down of prior screen)
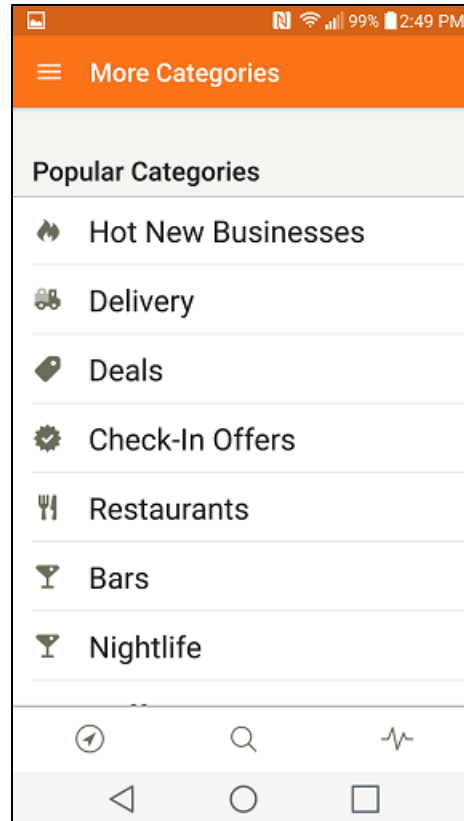
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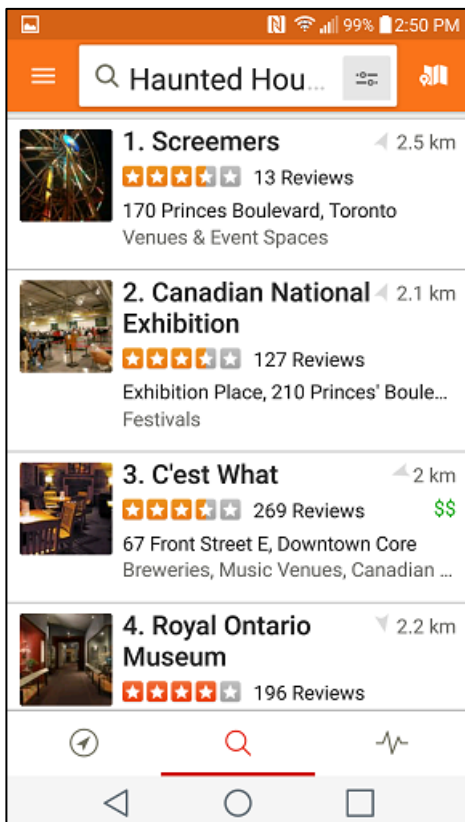
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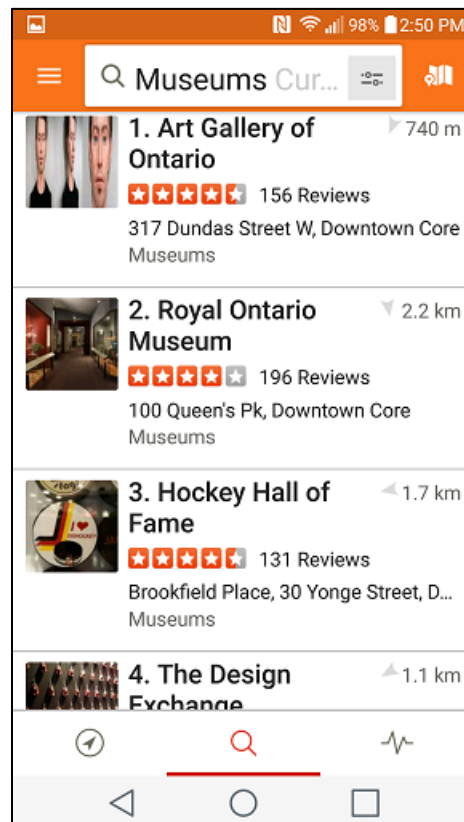
Yelp

Zombies, Run!

Zombies, Run!

Zombies, Run!