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RECONFIGURING SPACE-TIME CONSTRAINTS: AN EXPLORATORY RESEARCH OF
THE ENTANGLEMENT OF URBAN SPACE AND DIGITAL MEDIA TECHNOLOGIES

by

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ABSTRACT OF THE DISSERTATION

Reconfiguring space-time constraints: An exploratory research of the entanglement of urban space and digital media technologies

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This dissertation research addresses the question, how do city residents make sense of urban spaces and places? Additionally, with the abundance of digital information about local places, what is the role of digital technology in reconfiguring these socio-spatial practices? In-depth interviews and contextual field inquiry data using mobile eye-tracking with participants recruited from a large American city was used to investigate the socio-spatial practices of contemporary city residents'. Findings from this research reveals the inseparability of embodied experience with the urban built environment, network storytelling and recommendations, and the use of digital media technologies in city residents' everyday-life spatial practices.

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Dedication

To Philadelphia and its wonderful people

Table of Contents

Abstract	ii
Acknowledgements	iii
Dedication	v
List of Tables	xi
List of Figures	xii
List of Abbreviations	xv
Introduction	1
1. Theoretical Framework	8
1.1. Introduction	8
1.2. The Old Tale: Place is Lost	10
1.2.1. The “End of Place” Narrative	11
1.2.2. The Time-Space Compression Narrative	13
1.2.3. The “No Sense of Place” Narrative	16
1.3. New frontier: Geomedia/Locative media	19
1.3.1. Geomedia for Place-based Social Interaction	20
1.3.2. Making Sense of Place	22
1.4. Theoretical Framework for this Work	24
1.4.1. The non-media-centric, non-representational approach to study media technology	25
1.4.2. Time Geography and Time-space Constraints	27

2. Research Design	32
2.1. Introduction	32
2.2. Research Site and Recruitment Strategy	32
2.2.1. Recruitment Procedure	35
2.2.2. Results of the Recruitment	38
2.3. Study 1: In-depth Interviews	40
2.3.1. Cognitive Maps	40
2.3.2. Interview Procedure	41
2.3.3. Data Analysis	43
2.4. Study 2: Field Inquiry—The “Sunday Afternoon Walk”	43
2.4.1. Capturing Situated, Embodied Socio-spatial Behaviors	43
2.4.1.1. Mobile Eye-tracking	44
2.4.1.2. Mobile Phone Screen Activity Recording	45
2.4.1.3. Think-Aloud Data	45
2.4.1.4. Interview and Participant-Review of the Research Data	45
2.4.2. Research Site and Procedure	46
2.4.2.1. Wayfinding Subtask	47
2.4.3. Remarks on Participants being Local Residents	48
2.4.4. Data Analysis	51
3. Materiality of Urban Spatial Practices	52
3.1. Introduction	52
3.1.1. Urban Communication beyond Neighborhoods	53
3.2. Findings	58
3.2.1. Cosmopolitan Canopies on Cognitive Maps	58
3.2.1.1. Overall Description of Sketch Maps	58
3.2.1.2. Salience of Map Elements	61

3.2.2.	Physically Being in Places	73
3.2.2.1.	Living in the neighborhood	73
3.2.2.2.	Going to Work and School	73
3.2.2.3.	Visiting Local Network Ties	75
3.2.2.4.	Recreational Activities	76
3.2.2.5.	Walking or cycling in the city	77
3.2.2.6.	Sensing the “Vibe” of a Place	79
3.2.2.7.	Absence in Parts of the City	80
3.2.3.	Mediated Image of the City	84
3.2.3.1.	Local Social Ties	85
3.2.3.2.	Traditional Media	87
3.2.3.3.	Personalized Digital Media	88
3.2.3.4.	Geo/Locative Media	92
3.2.4.	Mixing the “Vibe” with the Mediated Sense of Place	96
3.2.5.	Materiality in Urban Communication: Crime, Safety, and Media . .	100
3.2.5.1.	The Not-so-simple Answers to “Where is safe?”	100
3.2.5.2.	News Media Exposure	104
3.2.5.3.	Embodied Experience	106
3.2.5.4.	Local Ties	110
3.2.5.5.	Crime Alerts and Crime Maps	112
3.3.	Conclusion	113
4.	Sociability in Urban Space	115
4.1.	Introduction	115
4.1.1.	The City as the World of Strangers	116
4.1.2.	The Internet as the World of Strangers	117
4.1.3.	Yelp Reviews and Online Urban Strangers	120

4.1.4.	Connecting Urban Research with CMC Research: Pseudonymous Strangers as a Lens for Investigation	122
4.2.	Findings	125
4.2.1.	“It’s Life”: Why Information about Restaurants Matter	125
4.2.2.	Taste, Network Homophily, and Trust in Word-of-Mouth Recommendations	128
4.2.2.1.	Trust in Network Recommendations: A First Glance . . .	128
4.2.2.2.	Taste and Expertise	129
4.2.2.3.	Network Homophily	132
4.2.3.	“I take it with a grain of salt”: Evaluating user-generated Online Reviews	134
4.2.3.1.	Distrusting the Taste and Expertise of Strangers	135
4.2.3.2.	Reading the Mediated Strangers’ Minds	137
4.3.	Conclusion	141
5.	Mobility in Urban Space	144
5.1.	Introduction	144
5.2.	Overview of the Field Data	145
5.2.1.	Cellphone Use	148
5.3.	Looking from 3,000 feet above: Digital wayfinding and exposure to diverse streets	150
5.3.1.	Wayfinding and Navigation Choices	151
5.3.2.	Mobile Maps	156
5.3.2.1.	The turn-by-turn navigators	157
5.3.2.2.	The location-checkers	157
5.3.2.3.	Survey Knowledge of local Streets	160
5.4.	Looking up from the phone: Pedestrians’ visual attention deployment in the street	165

5.4.0.1.	Algorithm-assisted Coding of Visual Attentions	168
5.4.0.2.	Participants' Visual Attentions while Walking on 18 th Street	170
5.5.	Looking down: Mediated interaction with the surroundings	175
5.5.0.1.	“Digital Clairvoyance”: Locative Apps as an Interface to Out-of-sight Places.	177
5.5.0.2.	Web Searching Triggered by Context	180
5.5.0.3.	Digital Linger: Extended Engagment with the Surround- ings	182
5.5.0.4.	An In-depth Look: Chad wants Frozen Yogurt	183
5.6.	conclusion	185
6.	Conclusion	188
6.1.	Summary of the Findings	188
6.1.1.	Materiality and Embodied Experiences	189
6.1.2.	Sociability and Yelp Review	190
6.1.3.	Mobility and Serendipity and Geo/locative Media	190
6.2.	Theoretical Implications	191
6.2.1.	From “Legibility” to “Searchability” of Urban Space	191
6.2.2.	Urban Communication beyond Neighborhoods	192
6.2.3.	Co-presence, Social Interaction, and Communication as Meaning Construction	193
6.2.4.	Revisiting Time-space Reconfiguration with Media Technologies .	194
6.3.	Reflection on Methodology	199
	References	200
	Appendix A. Interview Questions	213

List of Tables

2.1. A list of participants who completed either of the two studies.	39
3.1. Map elements and number of maps containing the elements; n=44.	64
3.2. Weighted degree of nodes	67
3.3. Betweenness centrality of nodes	68
3.4. List of map elements with disproportionate betweenness centrality and degree centrality	70
4.1. Frequencies of various activities mentioned by participants	125
4.2. Crosstab of Attitude towards Yelp reviews (columns) and taste	137
4.3. Crosstab of Attitude towards Yelp reviews (columns) and Word-of-mouth (WoM) recommendations	137
5.1. Profile of participants (n=17, listed by the date of study)	146
5.2. Summary of the use of cellphones during this study	149
5.3. Summary of wayfinding strategies	153
5.4. Duration of checking navigation app during for finding the Chinese restau- rant	158
5.5. Frequencies of participants looking at various objects on 18 th Street.	171
5.6. Pearson correlations between frequencies of visual engagement with var- ious objects	173
5.7. Normalized frequencies of visual engagement with various objects	174
5.8. Typology of the participants based on their visual biases	174
5.9. The use of mobile phone for locative purposes other than wayfinding, in comparison to visits to inside of shops.	177

List of Figures

i.1.	A screenshot of the author’s “Timeline” in Google Maps, from 2012 to 2019	2
i.2.	A screenshot of Google Maps, showing a future location of Starbucks coffee shop near where I live.	4
i.3.	A friend of mine using the LinkNYC digital kiosk to access Google Maps .	5
1.1.	One of Hägerstrand’s diagram (Hägerstrand, 1975) illustrating the space-time trajectories of three entities	30
1.2.	An illustration of mediated bundling (Hägerstrand, 1970)	30
2.1.	Recruitment areas, divided by census tracts.	33
2.2.	Two pages from the field notes	36
2.3.	Sample maps	42
2.4.	Research equipment set-up	44
2.5.	Ariel view of Rittenhouse area. Google Earth Pro 7.1.8.3036, 39°56’51.68” N, 75°09’54.17” W, elevation 120ft	46
2.6.	Map showing the locations of Rittenhouse Square park, the T-Mobile store, and the Chinese restaurant	49
3.1.	Jessica’s map of the city.	59
3.2.	Paul’s map of the city	59
3.3.	Charlie’s map of the city	60
3.4.	Craig’s map	60
3.5.	Sharon’s map	61
3.6.	Ral’s map	62
3.7.	Distribution of the frequencies of appearance of the map elements	65

3.8. Visualization of the co-occurrence network of map elements	66
3.9. Visualization of the co-occurrence network of map elements	69
3.10. Visualization of the co-occurrence network of map elements over the map of Philadelphia	71
3.11. A local view of Figure 3.10, zooming in on Center City (downtown core) .	71
3.12. Zoning map of Philadelphia, reprint from phila.gov	72
3.13. A section of Lily N.’s sketch map, where she wrote “not much to do” in the area where she had lived for many years.	83
3.14. Screenshot from Todd’s phone demonstrating the app Tasteful	90
3.15. Maps of homicides and shooting victims in Philadelphia	101
4.1. A screenshot of one user’s review of a coffee shop on Yelp	124
5.1. Aggregated walking routes from the 17 research sessions.	147
5.2. Aggregated map of route segments between T-Mobile and the Chinese restaurant.	152
5.3. Two typical route choices	153
5.4. Routes as suggested by Google Maps	154
5.5. Ashley making a right turn due to roadwork blocking the sidewalk	156
5.6. Attention allocation of three mobile-navigation users.	158
5.7. Ashley’s route to the Chinese restaurant.	159
5.8. Ashley’s route to the T-Mobile store.	160
5.9. A cartoon depicting the different organizational logic of streets in Center City and Fishtown.	163
5.10. Chris encountering troubles with mobile navigation.	164
5.11. Aggregated density maps of eye gazes throughout the entire walking ses- sion with normalized coordinates.	166
5.12. Aggregated density maps of eye gazes on the 18 th Street blocks, with nor- malized coordinates.	167

5.13. Examples of fixations and gaze-lingers	169
5.14. Chris looking down to reply a text message	176
5.15. Ral searching for Wawa	178
5.16. Lindsey searching for runner's stores	179
5.17. Chad searching for the Chinese restaurant in Apple Maps.	180
5.18. Stephanie's Google search for <i>Surprise Art Show</i>	181
5.19. Dan checking out Marathon on Rittenhouse on Yelp	182
5.20. Chad and frozen yogurt	184
6.1. Couclelis (2009) 's time geography PCP diagram.	195
6.2. A variation of Couclelis (2009) 's diagram	195
6.3. My modification of the time geography diagram	197
6.4. A revised time geography diagram illustrating a very brief episode of so- cial interaction occurred on Yelp.	198
6.5. Illustration of Chad's movement in space-time using the modified time- geography diagram	198

List of Abbreviations

CIT: Communication Infrastructure Theory

CMC: Computer-mediated Communication

GPS: Global Positioning System

ICT: Information and Communication Technology

MET: Mobile Eye-Tracking (-er)

STN: Story-telling Network (as appears in CIT)

Introduction

“Before this study, I knew there was some connection between the two, digital technology and (my use of urban space), but I was like, ‘How can someone do a dissertation on this? Is there really that much info out there?’ But just from your questions, and the walking study, and this map, (I would say) digital technology is huge. I didn’t realize it until now.”

Ral, participant of this research

The quote in the epigraph was from one of the participants that I interviewed for this dissertation project. This quote captures the essence of the key puzzle found in this research, that is, the seeming triviality and mundaneness of everyday life use of digital media, in relation to our lived environment. To be more specific, this dissertation aims to understand the reconfigured relationships between people and place in the era of prevalent, ubiquitous use of networked communication and information technologies (ICTs).

This research project originated from my own experience of living in New Jersey during the four years before I started to draft the research proposal. Being a foreigner and a PhD student with hectic daily schedules, I was surprised to find that my footprint (Figure [i.1](#)) in New Jersey and adjacent areas was quite extensive, considering that my local network was rather limited. I realized that several factors shaped my sense of place in these regions. My workplace (Rutgers University) defined the geographical “perimeter” of my lived space. Much of my spatial knowledge and sense of place in New Jersey centered around the university and US-1 highway. Two of my close friends were key factors in extending my sense of place to Philadelphia and Mercer County area in New Jersey. One of them introduced me to all the interesting places in Philadelphia and the other shared his spacious apartment with me in Mercer County. Being Chinese, I am of course no stranger

to Edison, New Jersey, where there are an abundance of Asian grocery stores and restaurants. Then there was digital media. There are so many places that I now am familiar with that were discovered using Google Maps and Yelp. This realization made me start to think about the role of digital media in the shaping of our sense of place in the contemporary era.

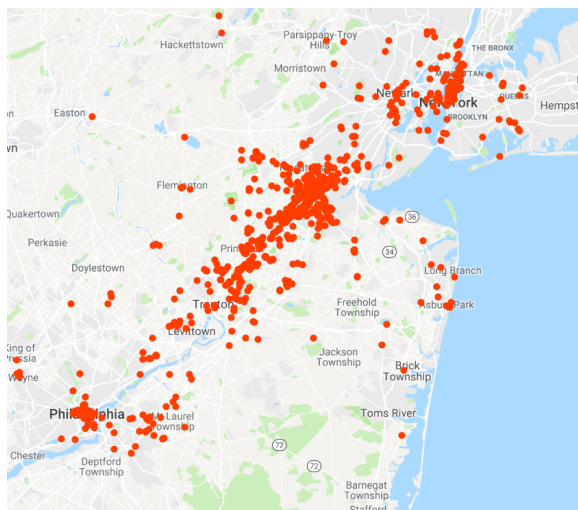


Figure i.1: A screenshot of the author’s “Timeline” in Google Maps, from 2012 to 2019

This dissertation research is about place, space, and digital communication and media technologies. Note that in this statement, I deliberately avoided using the phrase “the relationships between...”, which would imply that these concepts are independent of each other, while I believe that they are deeply entangled and inseparable. I argue that the key to understanding the role of digital communication technologies or any communication technology in contemporary society is to understand the *reconfiguration* of the space-time constraints of our social lives. It might be obvious to some that I deliberately borrowed the terminology from Torsten Hägerstrand’s *time geography*. I will expand on that idea later in Chapter 2.

In Victor Hugo’s novel, *Notre-Dame de Paris* [*The Hunchback of Notre-Dame*], the antagonist, Archdeacon Claude Frollo famously laments, “Ceci tuera cela [This will kill that].”, while comparing the printing press (“this”) to the cathedral (“that”). Here, the cathedral may represent the centralized authority of the Catholic Church, but for some, it

may also represent an old media technology that is audile-tacile (McLuhan, 1962). However, the cathedral was also a place, where people gather and engage in social interactions. It is a place with significant embedded social meanings. The printing press did not just kill an institution or media technology, it also altered the cathedral as a place. However, the story of new media technologies eliminating places did not end with the printing press. In the last two decades of the twentieth century, the world witnessed two major changes. One is *globalization*, the rapid integration and interaction between the people and organizations around the world, physically, economically, and culturally. The other is the rapid adoption of new ICTs, especially the Internet. These two trends go hand-in-hand. The consequence of which is that the world seems smaller and interconnected, but many local places have lost their significance. Many prominent scholars' argued at the time that, in the contemporary world, space is compressed (Giddens, 1990; Harvey, 1990a, 1990b, 1993), space of place has been replaced with "space of flow" (Castells, 1989, 1996), and there has been a rise of disembodied "cyberspace" and "virtual communities" (Parks & Floyd, 2006; Rheingold, 2000). It seems, to these scholars, that place has become a hollow concept of yesteryear.

The Internet is no longer just a window through which people peek at the outside world. What has become increasingly common is the use of the Internet to find local information. The purpose of this research is to explore one type of local information—information about local places. As of 2013, nearly three-quarters of all adult smartphone owners in the U.S. reported getting directions or other information that was based on their current location (Zickuhr, 2013). In 2015, 41% of American adults reported using mapping services on their phone at least once during a week's time (Smith & Page, 2015). Google Maps, not just Google Search, has emerged to be the new battleground for business competition. Fake "local" businesses are created to lure unknowing customer to use their "local" services (Copeland & Bindley, 2019). Sometimes, companies create real, but non-existent places on Google Maps (See Figure i.2) as a means of advertisement. Yelp, a



Figure i.2: A screenshot of Google Maps, showing a future location of Starbucks coffee shop near where I live.

platform for user-generated reviews of local businesses, now has a monthly active user-base of 70 million (Yelp, Inc., 2019). In 2014, a smartphone application called SketchFactor was launched. This app allowed its users to avoid visiting “sketchy” places in a city, based on crowd-sourced reviews. It received overwhelmingly negative media coverage (Biddle, 2014; L. Evans, 2014; Marantz, 2015; Strachan, 2014) that accused the app of providing a platform for racist reviews of certain urban neighborhoods. The application was discontinued soon after its public release. The story of SketchFactor shows the public’s increased awareness of the critical role of digital media in shaping the users’ perception of urban spaces and places. Further, digitized information about local places has been integrated into the built environment itself. For example, in New York City, digital kiosks (by LinkNYC; officially the kiosks are called “Links”) that provide Wi-Fi connection and Google Maps (among other location-based information services) replaced 7,500 pay phones across five boroughs. Pedestrians are able to access information about local places without the use of their own mobile devices (See Figure i.3). A body of literature has emerged in recent decades (see Chapter 1 for an in-depth literature review) to study this trend in digital communication technologies. Despite scholars’ interest in this field, much of the inquiry has been focusing on specific mobile applications or online platforms, such as Foursquare or Google Maps (see page 19 for a detailed review). I argue that the rise of geomedia and locative media offer a great opportunity to re-examine the fundamental relationship between people, place, space, time, and communication behaviors.



Figure i.3: A friend of mine using the LinkNYC digital kiosk to access Google Maps

The thought that jump-started this research was a simple (and perhaps even naïve) one: Communication technologies may seem to have liberated individuals from local, spatial constraints, but people still need to travel through time and space in their everyday life. The dialectics between physical constraints and digital liberation seems to have received very little attention in the existing literature.

As such, this dissertation examines individuals' use of digital media in relation to their spatial practices, from both “zoomed-in” and “zoomed-out” lenses. In the “zoomed-in” approach, I examined the specific ways in which city residents view urban space through digital media. This detailed, situated investigation is largely missing in the current locative media literature. With the “zoomed-out” approach, I address the problem that previous studies, especially in media studies, often place media technologies (or media institutions), instead of the city residents' spatial practices, at center stage. City residents are more likely to get much of their information about urban spaces from non-media sources. These include mouth-to-mouth recommendations, storytelling that occur in offline networks and, most important, direct contact with urban spaces. As such, this dissertation overcomes these limitations in previous studies and provides a holistic view of the relationship between the use of media technologies and urban spaces and places.

Outline of this Dissertation

Chapter one presents the theoretical framework utilized in this research, with a focus on reviewing related concepts from communication/media studies and human geography. A non-media-centric, non-representational framework for studying digital media technologies is proposed at the end of this chapter. Following this discussion, Chapter two details the research design utilized in this project, a mixed-methods approach that combines in-depth interviews, cognitive mapping, and field inquiry (which used eye-tracking and video recording methods). This chapter additionally discusses in-detail the advantages and challenges of recruiting participants through door-to-door contact.

Findings from this research were reported in chapters three through five. The third chapter focuses on the *materiality* of urban space. Specifically, this chapter examines how individual's understanding and use of urban space is shaped by media exposure, digital technology use, social networks, and perhaps more importantly, physical/spatial constraints, along with their embodied experience in the urban space. Additionally, the discrepancy between embodied experience and mediated information sources was examined through a discussion on city residents' perception of safety and crime in the city.

The fourth chapter looks at the *sociability* in urban space, through a discussion on participants' evaluation of Yelp reviews. This examination differs from many previous studies on this topic, in that it focuses on the interaction with on-screen strangers in this process. More specifically, this chapter explores how reading Yelp reviews may create temporary, brief co-presence with urban strangers on the screen, without mutual awareness.

Chapter five reports findings from the field study where mobile phone use and participants' eye-gazes during a walk in the street were analyzed. The analysis shows how the use of smartphones is seamlessly integrated into the mundane practice of walking in the street. Through this analysis, I discuss *serendipity* in urban space and how the use of locative apps affects it. Additionally, this chapter integrates findings from the previous

two chapters—namely the inseparable entanglement of embodied spatial practice and digital media technology and the co-presence with onscreen strangers—and offers an *in-situ* second look at these findings.

Finally, chapter six synthesizes the findings from the previous chapters and discusses the theoretical implications as well as implications for design. Across my analysis of the spatial practices of city residents, what emerged is the inseparability of each components within these practices. Additionally, I revisit the Lynchian notion of the “legibility” of urban space (Lynch, 1960) and argue for the inclusion of “searchability” of urban space in studies of urban space, place, and communication/media technologies.

Chapter 1

Theoretical Framework

1.1 Introduction

In this project, I aimed to answer the research question “With the proliferation of digitized data about local places and spaces, how do city residents make sense of the urban space and places?” This seems to be a fairly straightforward question, but I believe that we might not be able to find a satisfying answer, if we only focus on digitized data, or applications that are designed to facilitate urban spatial information seeking, without looking at other related socio-spatial practices. When studying new communication and information technologies, a useful set of questions to ask should include “How is it different from previous technologies?” and “How do social practices with these technologies compare with pre-digital-era social practices?” Therefore, I broadened the scope of this research and asked a bigger research question, “How do city residents make sense of the urban spaces and places? And what is the role of digital technology in reconfiguring these social practices?”

As such, this dissertation delves into a research field at the intersection of communication/media studies¹ and geography. This has been an implicit focus of research in both geography and communication/media studies for more than half a century. However, only recently have some scholars started to label it “communication geography” or “geography of communication/media studies” and address the paradigms and research traditions within this field. Most noticeably, writings by geographer Paul C. Adams, along with media scholars André Jansson and David Morley have been instrumental in the emergence

¹In this dissertation work, I will use “communication/media studies” to refer to communication studies and media studies of the broadest scope.

of the identity of this interdisciplinary research field. Communication geography is not simply a collection of interdisciplinary scholarly works. The recognition of it as a field of research could potentially solve problems that have haunted communication/media studies for decades. [Adams, Cupples, Glynn, Jansson, and Moores \(2017\)](#) argue that both communication/media studies and geography have been troubled by the division within their own disciplinary boundaries. For geography, it is the divide between physical geography and human geography. For communication/media studies, it is the complexity and compartmentalization driven by multiple research paradigms, diverse research interests, and lack of unifying theories. The authors suggest that:

Part of what has brought us together is a suspicion that disciplinary incoherence arises as often from exclusion as from inclusion, from the questions people are unwilling to ask as from the questions they actually ask. . . . It also suggests that, by excluding certain questions, both geography and communication/media studies have at times missed simple and obvious answers. In short, the disciplines are fragmented partly because of what they are missing. And part of what they are missing may be most evident out in the uncharted space between the two archipelagos. Working at the ragged interface between these fragmented disciplines has repeatedly shown us the potential of not just charting out an alternative space beyond our disciplines, but also problematizing and relativizing epistemological changes within our respective disciplines.

This also implies that the shortest route between two branches of geography may pass through this interdisciplinary archipelago where questions of media and communication come to the fore. . . . Likewise the shortest route between disparate islands of media research may pass through ostensibly marginal but, in fact, quite significant questions concerning spaces and places of communication. (pp. 3–4)

This suggests that the combined geographic/communication perspective not only could offer new insights into communication and media phenomena, but also may help develop unifying theories of communication and media. Some of the existing writings in communication/media studies have implicitly integrated such a view. This is especially true in scholarly writings on media and media technologies. For example, [Nancy Baym \(2015\)](#) claimed that “The fundamental purpose of communication technologies from their ancient inception has been to allow people to exchange messages without being physically

co-present.” (p.2) The most explicit mention of geographic concepts was perhaps in Joshua Meyrowitz (1985)’s “No Sense of Place”. He argues that place plays an important role in Goffman’s classic theory on face-to-face interaction, as in the pre-electronic-media era, the social situations (and the contexts of interpersonal communication) were defined and constrained by boundaries of places and locality. Following Meyrowitz’ analysis, it could be inferred that the lack of mention of geographic concepts such as place and space in interpersonal communication research was not due to their insignificant role in the communication processes but due to neglect.

Viewed from the perspective of communication geography, the investigation of communication and media phenomena and the examination of socio-spatial practices are intertwined. As such, in this chapter, I will briefly review the concepts of space and place in relation to both human geography and communication/media studies. Following that, I will discuss the theoretical framework that guides this work that stemmed from geography and communication/media studies.

1.2 The Old Tale: Place is Lost

Not so long ago, the conventional wisdom was that the prevalent use of electronic/digital communication and media technologies had, in one way or another, contributed to the decreased importance of places. The preceding statement carries two meanings. On the macro-level, scholars have lamented how local places that were once heterogeneous and full of unique characters had become homogeneous and lost their souls. On the micro- or meso-level, some scholars noticed that social interactions became less place-dependent. Both views support the idea that places, as human societies knew them, had “lost their place” in the modern societies.

1.2.1 The “End of Place” Narrative

To understand the “place lost” narrative in the research literature, it is imperative to first review *place* as a geographic concept. Place is a common word in the English language. According to Oxford Dictionary, the most common use of the word is to refer to a location or a position. Traditional geography took for granted this definition and often used the term “place” to refer to “location” (Cresswell, 2011). As the discipline of geography evolved, “place” began to gain new meanings. Agnew (1987) offered a well-received definition of place that has three aspects. The first is “location”. The second is “locale”, which refers to the material context of social life—buildings, roads, shops, etc. Lastly and perhaps the most importantly, for human geographers, *sense of place*, the way in which places are made meaningful through personal experience is the key to understanding place. In other words, the abstract space becomes a place when it has a geographic location, a material form (physicality), and is invested with meaning and value (Gieryn, 2000). Since the 1970s, place has become the most important concept in human geography. Following the phenomenological tradition (particularly from Heidegger and Merleau-Ponty), human geographers shifted their attention to studying the everyday life experience of place. To human geographers, place is a way of understanding the world (Cresswell, 2004). The sense of place is a faculty of being human, a way of experiencing the external world (Relph, 1976; Tuan, 1975, 1977). Most noticeably, Yi-fu Tuan (1975; 1977) views places as being rich in meaning, which is known “not only through the eyes and mind but also through the more passive and direct modes of experience, which resist objectification. To know a place fully means both to understand it in an abstract way and to know it as one person knows another.” (Tuan, 1975, p.152) Relph (1976) also argues that:

The basic meaning of place, its essence, does not therefore come from locations, nor from the trivial functions that places serve, nor from the community that occupies it, nor from superficial and mundane experiences. . . . The essence of place lies in the largely unselfconscious intentionality that defines places as profound centres of human existence.

Stemming from the affective perspective of place, scholars once lamented the loss of place as a consequence of the rise of globalization, the increased integration of economic activities across geographic regions, transportation, communication technologies, and contemporary consumerism. For Tuan (1977), the essence of place is in its rootedness. As such, mobility and the sense of place are incompatible. He argues that:

Abstract knowledge *about* a place can be acquired in short order if one is diligent. The visual quality of an environment is quickly tallied if one has the artist's eye. But the "feel" of a place takes longer to acquire. It is made up of experiences, mostly fleeting and undramatic, repeated day after day and over the span of years. It is a unique blend of sights, sounds, and smells, a unique harmony of natural and artificial rhythms such as times of sunrise and sunset, of work and play. The feel of a place is registered in one's muscles and bones. (pp.183–184)

Many scholars argued at the time that local places had lost their distinctive identities and had become homogeneous and inauthentic. Relph (1976) calls this phenomenon "placelessness". To Relph, the bane of place in the postmodern era is inauthenticity:

An inauthentic attitude to place is essentially no sense of place, for it involves no awareness of the deep and symbolic significances of places and no appreciation of their identities. It is merely an attitude which is socially convenient and acceptable. . . . In inauthentic experience places are seen only in terms of more or less useful features, or through some abstract *a priori* model and rigid habits of thought and behavior; above all such experiences are casual, superficial, and partial. (p.82)

To Relph, mass communication (both in the sense of transportation and mediated message exchange) is one of the factors—along with increased mobility and mass culture—that contributed to this placelessness. Similarly, anthropologist Marc Augé (1995) argued that "supermodernity" resulting in the replacement of traditional places with what he calls "non-places"—unrooted places that are not associated with unique history or memories—such as highways, airports, or supermarkets.

The early phenomenological/experiential approach to study place heavily emphasized the affective aspect in sense of place (place attachment and place identity). Later, social

scientists in other disciplines, especially environmental psychology, began to adopt this perspective and developed a rich body of literature on place attachment and place identity (Lewicka, 2011; Low & Altman, 1992; Proshansky, Fabian, & Kaminoff, 1983; Trentelman, 2009). Researchers calling for a positivist approach to studying place attachment (Kelly et al., 2015a; Lalli, 1992; Shamai, 1991) have created various quantitative instruments to measure the levels of attachment individuals have to local places. This approach, of course, diverges from the phenomenological view on place in human geography. Often, place attachment overlaps with community attachment in many environmental and sociological studies. The physical aspect of places is often treated as an empty container in empirical studies (Gieryn, 2000; Lewicka, 2011). Empirical findings in this body of literature suggest that people are still strongly attached to places, such as homes, neighborhoods, or cities (Greif, 2009; Hidalgo & Hernández, 2001; Lewicka, 2010), in spite of increased spatial mobility or long distance commutes (Gustafson, 2009; van der Klis & Karsten, 2009).

1.2.2 The Time-Space Compression Narrative

The early phenomenological human geographers' concerns with the loss of place were due to the homogeneity, uniformity, and inauthenticity of places in the postmodern world. However, this was not the only way place was diminished in the postmodern society. Other scholars were concerned with the reconfigured relationships between space, place, and time. This perspective mainly emerged from critical human geography and sociology. The publication of Henri Lefebvre's seminal work, *La Production de l'espace* in 1974 (and its introduction to the English-speaking world as *The Production of Space* in 1991) marked the so-called *spatial turn* in social sciences. This research program yielded a rich body of works by critical human geographers and sociologists (e.g., Castells, 1996; Giddens, 1986; Harvey, 1990a, 1993; Soja, 1989; Thrift, 1996). Unlike the phenomenological geographers' emphasis on affective experience, critical geographers see the influence of power and capital on place and place-making. Further, some theorists began to argue for a spatial-relational view of places. They argue that places should not be examined as isolated from

external influences such as other places or culture, power, or capital. David [Harvey \(1993\)](#) argues that:

The simple answer is that we live in a world of universal tension between sensuous and interpersonal contact in place (with intense awareness of the qualities of that place within which temporal experiences unfold) and another dimension of awareness in which we more or less recognize the obligation and material connection that exists between us and the millions of other people who had. . . . Put more formally, what goes on in a place cannot be understood outside of the space relations that support that place any more than the space relations can be understood independently of what goes on in particular places. ([Harvey, 1993](#), p.15)

In response to Harvey, [Massey \(1991\)](#) suggests a “progressive” or “global” sense of place. She argued that places do not have single identities and distinct boundaries. Nor should place be identified as “communities”. Instead, her notion of a global sense of place views places from a dynamic, relational perspective.

In this interpretation, what gives a place its specificity is not some long internalised history but the fact that it is constructed out of a particular constellation of social relations, meeting and weaving together at a particular locus. . . . Instead then, of thinking of places as areas with boundaries around, they can be imagined as articulated moments in networks of social relations and understandings, but where a large proportion of those relations, experiences and understandings are constructed on a far larger scale than what we happen to define for that moment as the place itself, whether that be a street, or a region or even a continent. And this in turn allows a sense of place which is extroverted, which includes a consciousness of its links with the wider world, which integrates in a positive way the global and the local. ([Massey, 1991](#), p.28)

There are two things to notice from Massey’s view of place. One is the detachment of the concept of place from the concept of community. This idea resonates with sociologist Barry Wellman ([1979](#))’s argument that sociologists in the past often associated communities with locality, which, to him, was an outdated view. Instead, Wellman proposes a “community liberated” view, in which communities are seen as social networks not necessarily organized and maintained locally. Wellman argues that:

(a) the separation of residence, workplace, and kinship groups involves urbanites in multiple social networks with weak solidary attachments; (b) high rates of residential mobility weaken existing ties and retard the creation of strong new ones; (c) cheap, effective transportation and communication reduce the social costs of spatial distances, enabling the easy maintenance of dispersed primary ties; (d) the scale, density, and diversity of the city and the nation-state, in combination with widespread facilities for interaction, increase possibilities for access to loosely bounded, multiple social networks; and (e) the spatial dispersion of primary ties and the heterogeneity of the city make it less likely that those with whom an urbanite is linked will themselves be densely knit into solidary communities. (Wellman, 1979, p.1206)

It was not clear whether Massey was aware of Wellman's community network perspective at the time, but she clearly refuted the notion that the concept of place should be tied to the concept of community, as "communities can exist without being in the same place—from *networks* of friends with like interests, to religions, ethnic, or political communities (emphasis added). "

The second thing to notice from Massey's writings is the emphasis on a relational space. Unlike the phenomenological geographers who view place from an individualistic, experiential perspective and consequently toss space aside as an empty container, scholars influenced by the "spatial turn" focus on, needless to say, space. Harvey (1990b) famously coined the term "time-space compression" to describe the "processes that so revolutionize the objective qualities of space and time that we are forced to alter . . . speed up in the pace of life, while so overcoming spatial barriers that the world sometimes seems to collapse inwards upon us." (Harvey, 1990b, p.240). This time-space compression is associated with the rapid development of communication (in the sense of both transportation of goods and transmission of messages) systems, railroads, highways, ICTs, etc. For Harvey and Massey, the consequence of this compression is the interconnectedness of places. Elsewhere, Castells (1996), though acknowledging that people still live in places, argues that the dominant spatial logic has become what he calls "the space of flows", as opposed to "the space of places". From a sociological perspective, Castells views space as "the material support of time-sharing social practices" (1996). He argues that the society is organized around *flows* (flows of capital, information, etc.). Therefore, the space

of flows is “the material organization of time-sharing social practices that work through flows” (Castells, 1996, p.442). The space of flows mainly concerns the high-speed information exchange made possible with electronic communication technologies. And although places still matter in the space of flows, their positions in the space is not determined by their geographic locations but by their positions in the networks of flows.

1.2.3 The “No Sense of Place” Narrative

The last narrative associated with the diminishing place in contemporary societies is more closely related to communication/media studies. The key concern in this body of literature is the liberation of social contextual boundaries from spatial restrictions. In other words, this literature deals with social interactions that transcends traditional spatial boundaries.

The central theme of Marshall McLuhan’s seminal work *Understanding Media* (McLuhan, 1964/1994) is that media is an extension of human consciousness and senses. Especially, electronic media “extend our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned. ” (p.3) In his view, the key to understanding electronic media is that communication is no longer constrained by space or time. McLuhan sees communication (in the sense of both physical transportation and message transmission) as a unifying force in a society. The increased speed of communication lead to homogeneous and uniform space. Following his view, Joshua Meyrowitz argues, in *No Sense of Place* (Meyrowitz, 1985), that traditional social situations which define and confine social interactions were based on place or location. That is to say, for example, the Goffmanian notion of “back region” and “front region” were closely associated with physical places/locations. Meyrowitz finds this definition problematic. Instead, he argues that the social situation should be defined as information-systems—the patterns of information access. With electronic media, especially televisions, social situations are increasingly defined by media, not places. To be more specific, the boundaries of information access defines social situations, not the boundaries of physical places. As such, social settings were redefined, social roles and relationships were detached from places/locations, and

the boundary between private and public lives are blurred. This view of media and place was surprisingly ahead of its time. I need to point out that Meyrowitz's use of "place" is completely different from that used by geographers and social researchers influenced by the spatial turn. His "place" is almost equivalent to "location." As such, I have been using "place/location" while summarizing his theory.

Much of the issues in Meyrowitz's writing are common topics in social media research, despite the book being published in 1985². Seventeen years later, danah boyd adopted the key concepts in his writings and developed her own concept of "collapsed context" (see [boyd, 2010](#), for boyd's own recount). Later, in a co-authored paper with Alice Marwick ([Marwick & boyd, 2010](#)), the concept was officially introduced as "context-collapse". Borrowing Meyrowitz's core concepts, [Marwick and boyd \(2010\)](#) argue that:

Social media combines elements of broadcast media and face-to-face communication. Like broadcast television, social media collapse diverse social contexts into one, making it difficult for people to engage in the complex negotiations needed to vary identity presentation, manage impressions, and save face. But unlike broadcast television, social media users are not professional image-makers, and rather than giving a speech on television, they are often corresponding with friends and family. By necessity, Twitter users maintain impressions by balancing personal/public information, avoiding certain topics, and maintaining authenticity

Meyrowitz's "no sense of place" shares some similarity with [Castells \(1996\)](#)'s view in that they both consider the information flow to be dominant logic over geographic place or location. The difference is, of course Meyrowitz is mainly concerned with the context/situation of social interactions, instead of regional geography. Regardless, both see the fluidity of places/situations, while these concepts were traditionally defined in spatial terms.

Around the same time, Anthony Giddens ([1986; 1990](#)) also theorized the relationship between social context and time, space, and place. Giddens' approach differs from

²Whenever I teach a communication technology course, I would always introduce [Meyrowitz \(1985\)](#) to the students. And my students were always shocked to learn that this book was not published in the social media era.

Meyrowitz's, as Giddens had frequent scholarly exchanges with human geographers at the time (see his contribution in [Gregory & Urry, 1985](#)) and was aware of the human-geographic paradigms on place and space. Hägerstrand's *time-geography* ([Hägerstrand, 1970, 1975](#)) played an important role in his *structuration theory*. For Giddens, social interactions always occur in a space and at a time (*co-presence*). Time-space constraints, as Hägerstrand calls it, defines the social context of social interaction, while social structure transcends time-space boundaries ([Giddens, 1986](#)). However, a consequence of modernity³ is the distancing or separation, of time, space, and place. He argues that places have become "phantasmagoric", in that "locales are penetrated by and shaped in terms of social influences quite distant from them." ([Giddens, 1990](#), p.19)

Sociologist Barry Wellman shared a similar view of the rise of de-placed individualism as a consequence of communication (in both sense of physical transportation and information exchange) technologies. Viewing communities as social networks, Wellman argues against two popular views of communities. One is the stubborn, false equivalence between communities and neighborhoods; The other is the false dualism of online versus offline social relationships ([Hampton & Wellman, 1999](#); [Wellman, 1979, 1999, 2001](#); [Wellman et al., 2006](#)). To Wellman, the structure of communities should not be defined by shared locality, even before electronic media and automobiles ([Wellman, 1999](#)). Lamenting the loss of "good-old communities" is not only unwarranted but also dangerous, as traditional place-based communities were often highly homogeneous and conformative ([Hampton & Wellman, 2018](#)). Two trends emerged with digital, increasingly mobile communication technologies: one is "glocalization"⁴, which refers to the affordance of digital communication technologies supporting individuals' social connections, both locally and globally ([Hampton & Wellman, 2002](#); [Wellman, 2003](#)). The other is what Wellman

³Giddens argues that we have never entered the so-called "postmodern" society. Therefore, "modernity" in his writings occurred in what others may call the "postmodern" era.

⁴This use of the term "glocalization" should not be confused with that in the study of globalization, which refers to the interpenetration of local cultures as a consequence of globalization ([Robertson, 1995](#), see, for example,)

calls *networked individualism* (Wellman, 2001; Wellman et al., 2006), which refers to the new logic of community structure afforded by personalized, networked communication technologies. The ubiquitous connectivity of the Internet affords the shift from “linking people-in-places to linking people at any place” (Wellman et al., 2006); Wellman argues that this personalized community network affords social support, identity, and the sense of belonging (Wellman et al., 2006). Although it was not explicitly argued in Wellman’s writing, it could be inferred that the sense of place may not be very important in the networked society.

1.3 New frontier: Geomedia/Locative media

If the old narrative is that place has diminished, the new narrative is that place has been rediscovered in digital media. The body of literature that touches upon this phenomenon is often called “geomedia” or “locative media”.

Locative media became a focus of research only in recent years. Accordingly, the literature on locative media is still in its early developmental phase. In fact, there is no universal agreement on what term should be used to refer to this set of technologies in related literature (de Lange, 2010; de Waal, 2011; Galloway, 2008). “Locative media” or “locative technology” are two commonly used terms among communication and media studies scholars. However, the terms “locative technology” or “locative media” are just as vague as “social media,” another popular term in communication/media studies used to refer to a variety of technologies that share similar affordances. As Wilken and Goggin (2017) point out, the term “locative media” is “more complex, fabulous, prosaic, frustrating and disappointing than they might seem” (p.2). Despite the complexity, some definitions of locative media were given. Wilken and Goggin (2017) define it as “media of communication that are functionally bound to a location” (p. 4). Bilandzic and Foth (2012) argue that the term has become a “synonym for media that blurred the barrier between the physical and the virtual world, in particular mobile media that augment people’s experiences

in real places through relevant geo-tagged information from the Internet” (p. 66).

In addition, perhaps a more intuitive way to understand locative media is through understanding their affordances. [de Lange \(2010\)](#) identified five major categories of locative media by affordances, namely, (1) navigation and wayfinding, (2) sensing and visualization, (3) spatial annotation, (4) social networking, and (5) pervasive gaming. As such, the locative media literature has evolved into a highly inclusive one. Similarly, [Nitins and Collis \(2013\)](#) categorize locative media into (1) annotative locative media, (2) navigational locative media, and (3) location-based services. The inclusiveness of geo/locative media literature offers much freedom for researchers who are interested in this general topic. Urban place and space often play different roles in different research studies. This literature can be divided into two categories, according to how they treat space and place in relation to locative media.

1.3.1 Geomedia for Place-based Social Interaction

In these studies, urban space and place are the foci of social interaction. Much of the locative media literature focuses attention on location-based, check-in services or location-based, social networks (LBSN) such as Foursquare . It occupies a major part of the literature and has set the tone for many locative media studies. Researchers focus on the online social interaction based-on places projected on LBSNs. In some studies, researchers explore the affordance of LBSNs to coordinate activities in offline contexts. [Humphreys \(2007\)](#) find that Dodgeball can be used for activity coordination among the users, but this coordination is often supplemented by other channels of communication. [Licoppe \(2014\)](#) find that Foursquare was also used for activity coordination. In addition, he found that this type of activity coordination was often effective among weak tie relationships. However, [Frith \(2014\)](#) found that spatial obstacles (such as distance) often limited the affordance of activity coordination on Foursquare. He argues that those check-in updates are not necessarily an invitation for face-to-face interactions (e.g., meeting in a bar), but rather an invitation to further on-screen mediated interaction.

Many researchers point out that check-in data on LBSNs are not merely a representation of real-world activities. They focus instead on the communicative and performative aspects of the use of those applications. [Cramer, Rost, and Holmquist \(2011\)](#) found that both utilitarian use (coordination) and social or identity driven use (sharing lifestyle, events, and information that enhances self-presentation) are both important motivations for Foursquare use. Further, [Rost, Barkhuus, Cramer, and Brown \(2013\)](#) find that sometimes Foursquare users would check in locales that do not exist in the physical world, such as a snowstorm; users would invent humorous locations (such as ‘Justin Bieber’s Heart’); users would also check in places that they most likely did not visit (such as Buckingham Palace). Thus, they argue that these check-ins represent the communicative use of Foursquare, rather than the utilitarian use (e.g., activity coordination). In addition, [L. Evans \(2015\)](#) argues that how places are revealed through the use of mobile devices depends on the emotional state of the user at the time they engage with their mobile devices. In that, the user can reveal places as meaningful environment, or regions devoid of meaning, according to how they feel at the time.

Researchers also discover that LBSN users can develop a sense of place as a by-product of social interaction on locative media. [Humphreys and Liao \(2013\)](#) find that Foursquare use facilitates foster a sense of familiarity and belonging to urban public places, through the process of creating and sharing information online. In addition, they found that Foursquare can also facilitate offline social interaction with other co-present Foursquare users. They argue that through these processes, Foursquare might facilitate the parochialization of urban public places (making it semi-private through interaction with familiar contacts). [Schwartz \(2015\)](#) argues that locative media like Foursquare facilitate online place attachment, through place-making (creating new places), ownership (“mayorship” on Foursquare), and events on Foursquare. Similar findings were also provided in [Farrelly \(2014\)](#) ethnographical work on Foursquare.

1.3.2 Making Sense of Place

Another branch of the locative media literature deals with the use of locative media as means for making sense of urban space and places. This research is based on the understanding that urban dwellers may use locative media to find, locate, and use urban places and spaces. [Licoppe \(2017\)](#) conducted an intriguing thought experiment about locative media and urban space. He imagines what the late Georges Perec, author of *An Attempt at Exhausting a Place in Paris*, would see from the same café at Place Saint-Sulpice, had he looked through a smartphone screen (specifically, the Foursquare app). Licoppe argues that, compared with the real Perec from the 1970s, the imagined twenty-first-century Perec would be able to see places beyond his scope of vision. The places he could see are no longer objective, and he can no longer distance himself from the objects he observes. Instead, not only are these places pre-organized into various categories, but also the information attached to these places is designed to be meaningful to only a handful of familiar readers. The Place Saint-Sulpice, in this case, is a layered place and both a public and parochial location. Finally, Licoppe argues that the imagined Perec can no longer take an onlooker's stance but, instead, has to interact with invisible others or *pseudonymous strangers*.

Empirical studies offered evidence to support the claim that locative technologies can alter a user's perception of places and spaces. [Farrelly \(2012\)](#) found that the use of location-based services on mobile devices is associated with improved knowledge of place. [Özkul \(2015\)](#), through a qualitative study carried out in London, found that urban dwellers started to rely on smartphones instead of passers-by when they get lost in the complex urban environment. Further, they also found that Google Maps have become the primary source of spatial knowledge for many users; without their smartphones, many participants claim to be unable to navigate through London. Further, spatial knowledge and spatial memories, may seem to be internal to individuals, but are often stored externally in mobile media ([Özkul & Humphreys, 2015](#)).

Bentley and his colleagues conducted a series of studies in which they investigated

the relationship between the use of mobile check-in services and people's perceptions of the city. They found that Chicagoans' perceived image of the city do not differ much across socioeconomic status. Instead, they found that frequent use of mobile check-in services is significantly correlated with number of neighborhoods shown in a participant's hand-drawn maps. Check-in app users were more likely to travel across the city. Frequent users of online maps were less likely to identify more neighborhoods as dangerous (Bentley, Cramer, Hamilton, & Basapur, 2012). They also noticed that the locations where Foursquare was commonly used were different from places commonly identified on people's hand-drawn maps. Therefore, they conducted a follow-up study (Bentley, Cramer, & Müller, 2014) in which they compared data from across several location-based services and several research projects. They found significant variation in spatial foci between people's perceived urban space, location-based storytelling, and location-based check-in apps. In other words, they found that the information available from location-based apps does not match what people naturally observe from the urban scenes. Their findings suggest that perception of urban space and places may vary on- and off-screen.

H. Kim and Lingel (2015) conducted a series of in-depth qualitative investigations to examine the information practice of new immigrants in New York in relation to their familiarization with the city. They found that new immigrants utilize a series of information sources, including offline networks, web searches, and locative technologies to become familiar with the city. More important, they found that the use of locative technologies often creates paradoxical tensions for the users. These technologies can both facilitate and impede engagement with unfamiliar environments. Specifically, locative technology may assist users to navigate through urban spaces, but it can also narrow the engagement with the user's immediate surroundings. This is consistent with findings from other studies that conclude that those locative technologies may be used to selectively avoid unwanted places and social interactions (Crawford, 2008; Humphreys, 2010), or distract users from their immediate urban environment (Mainwaring, Anderson, & Chang, 2005).

My overall critique of the locative media literature is that it overestimates the role of

these locative media in everyday life situations. How often do people use locative media? According to available statistics, the answer is “not very often” (e.g., [Smith & Page, 2015](#); [Zickuhr, 2013](#)). In addition, what constitutes “locative media”, “geomedia”, or “urban media”? Does searching for apartment on Craigslist count as using locative/geo-media? It seems that a theoretical approach focusing on any specific type of media applications or technologies may not be adequate for studying this complex phenomenon. As such, I argue that we need to adopt a holistic approach (similar to what Jessa Lingel did for her work on new immigrants’ information behaviors in the city [Lingel \(2013, 2015\)](#)). Such a holistic framework ought to focus on the socio-spatial practices, instead of media themselves, in order to gain more complete insights into the role of these emerging media in relation to people’s relationships with the built environment. Additionally, I argue that close-up examinations of the actual use of these media technologies or applications is much needed but often ignored in this literature. Much of the mundane, everyday-life use of these locative media may be pre-cognitive, pre-linguistic, and non-representational in nature. As such, the theoretical framework that I adopt in this dissertation needs to offer a way to look at both the big picture and situated use of these locative media.

1.4 Theoretical Framework for this Work

The theoretical framework that guides this research is based on two approaches from communication geography and human geography. The first is a non-media-centric, non-representational framework for studying media technology, as advocated by Shaun Moores and David Morley. The other is time geography from Torsten Hägerstrand.

1.4.1 The non-media-centric, non-representational approach to study media technology

This framework of studying media and place is proposed by Shaun Moores (2017). This framework combines two theoretical approaches to study place and media, non-media-centric media studies and non-representational theory. This framework aids in examining everyday life social and spatial practices through the investigation of both the material and virtual aspects of communication/media.

Moores (2017) claims that a problem for media studies is that “Media studies have tended to focus too much on media” (p.134). The term “non-media-centric media studies” was coin by David Morley (2009), who expressed his frustration with the “old” and “new” media divide that is assumed in contemporary work in communication/media studies. Additionally, he argues that “media and communication studies need to take their interdisciplinary roots more seriously.” (p. 115), as he sees the opportunities for a new theoretical perspective emerging from contemporary development in geography and sociology. Essentially, the non-media-centric research agenda rejects the notion that communication/media studies should concentrate on the examination of messages and virtual information. As such, non-media-centric approach aims at studying media and media use as situated in relation to other technologies and social practices. To be non-media-centric is to re-examine the role of materiality in the study of communication/media. Mortley (2009) suggests a return to the “classical” notion of communication, which sees communication as the movement of information, people, and commodities. Additionally, the non-media-centric approach rejects representationalism in media studies. Moores (in Krajina, Moores, & Morley, 2014) sees two problems with representationalism:

First, it tends to assume that people are *necessarily* living out their relationships to an external world through systems of symbols, and, second, it tends to assume that these relationship depend *primarily* on cognitive processes, on mental representations, which guide practical action and give shape to experience. Instead, I’d want to suggest that it’s possible for our being in the world to be meaningful ‘in the absence of symbolic representation’ as Ingold

(2011: 77) puts it.

As such, Moores turned to geographer Nigel Thrift (1996; 1999; 2008)'s non-representational theories for a solution. Thrift's non-representational framework derives from his opposition to, well, representationalism. He argues that the scholarly obsession with representation is characterized as:

A hardly problematised sphere of representation is allowed to take precedence over lived experience and materiality, usually as a series of images or texts which a theorist contemplatively deconstructs, thus implicitly degrading practices." (Thrift, 1996, p.4)

Specifically, Thrift sees (at least) six problems associated with this scholarly tradition: (1) theorists create a towering logocentric presence, such as "capitalism" or "patriarchy", which became a pre-condition of the research; (2) the logic of historical inevitability; (3) the micro-macro distinction; (4) failure to recognize the significance of the flow of everyday life; (5) the assumption of the inevitable movement towards a dystopian world; and (6) the theoretical purification of social orders (Thrift, 1996). Combating these tendencies, Thrift's non-representational framework focuses on studying embodied *practices*. Drawing upon theories of Heidegger, Wittgenstein, Merleau-Ponty, Bourdieu, and de Certeau, Thrift sees meaning not embedded in textuality but in everyday life practices. Additionally, the non-representational framework focuses on materiality and "things". He calls his approach to materiality *material schematism*, "in which the world is made up of all kinds of things brought in to relation with one another by many and various spaces through a continuous and largely involuntary process of encounter." (Thrift, 2008, p.8). This framework, additionally, focuses heavily on everyday-life practices and human pre-cognitive, pre-linguistic sense. When applied to urban studies, this approach would lead to a focus on everyday life practices:

So what exists in cities? How can we hold on to their potential and variety? At the most basic level, we can talk of *life*, a being-together of existences. In taking this stance, we are trying to point in three directions. The first of

these is to simply state that the city is an ecology made up of many species. . . . second, it is to signal that much of what goes on in cities is centered around the practice of biopolitics. . . . third, it is to signal that the senses are a crucial element of urban life. Cities cast spells over the senses, spells which are increasingly engineered by the state and business. And mention of the senses in turn points to that whole realm of human life which is outside consciousness. (Amin & Thrift, 2002)

1.4.2 Time Geography and Time-space Constraints

As previously mentioned, social context and communities may have been decoupled from local places, just as Meyrowitz, Giddens, or Wellman have claimed, but it does not necessarily mean that individuals are necessarily liberated from the constraints of time, space, and place. Human beings are not born in the “Matrix” (as in the *Matrix* movie series). For a sizeable part of a person’s life, spatial mobility is low; and his or her personal network is still very local. Computer-mediated communication could be reinforcing these place-originated social relationships as well. For example, a large body of literature on mobile communication shows that mobile communication may be associated with strengthened strong-tie relationships, at the expense of interactions with extensive social ties (see an extensive review by Campbell, 2015). Elsewhere, Hampton (2016) argues that prevalent use of social media extends place-determined social relationships. He argues that the organizational logic of contemporary communities bears two characters: *pervasive awareness* and *persistent contact*. First, pervasive awareness refers to the ambient awareness of events in a person’s network, through the accumulative exposure to bits and pieces of information. Persistent contact, on the other hand, refers to the effortless connections to previously-established social ties. A person can move from one place to another, but the social relationships established in previous place-based contexts get carried over.

The implication of Hampton’s *persistent-pervasive community* framework is how we interpret the characteristic of digital media to “transcend” time, space, and place constraints and boundaries. On one hand, digital media is associated with the detachment of social interactions from places and time; on the other hand, all human behavior occurs

within space-time boundaries. Individuals *could* potentially expand the scope of their social interactions, but the time-space constraints inevitability limit the possibilities. Time-space constraints are the central concept in Swedish geographer Torsten Hägerstrand's framework of *time geography*. Time geography is characterized by its unapologetic physicalistic and "reductionistic" approach (Hägerstrand, 1989) and pre-linguistic description of human movement through time-space (Thrift, 1996). The basic premise of time geography is that the fundamental constraints of the physical world—that humans or other physical entities must be at one place at a time—should not be ignored or taken for granted. As Hägerstrand puts it:

Looking ahead in time we note that no breaks in time and no jumps in space are permitted. In addition, there is a maximum speed by which movement in space from any starting-point can take place for technical as well as organisational reasons (Hägerstrand, 1975, p.9–10).

Hägerstrand identified three types of time-space constraints: (1) *capability constraints*, which are due to an individual's biological construction as well as the tools he or she can use. For example, driving a car gives an individual greater freedom and more loosened space-time constraints than walking; (2) *coupling constraints*, caused by joining other individuals and physical entities. For example, many people need to go to their workplaces at 9 a.m. and remain there until 5 p.m.; (3) *authority constraints*, or *domains*, which limit the access to certain time-space arrangements. This type of constraint is maintained by social agreement and power. For example, an individual's home is protected by law from unauthorized entries (Hägerstrand, 1970). These constraints are fundamental in human movement due to:

1. the indivisibility of the human being (and of many other entities, living and non-living);
2. the limited length of each human life (and of many other entities, living and non-living);

3. the limited ability of the human being (and many other indivisible entities) to take part in more than one task a time;
4. the fact that every task has a duration;
5. the fact that movement between points in space consumes time;
6. the limited outer size of terrestrial space; and
7. the fact that every situation is inevitably rooted in past situations. ([Hägerstrand, 1975](#))

Hägerstrand realizes that some of these time-space constraints are not constant. They might be loosened up with the use of advanced communication technologies. One of time geography's unique approaches to time-space analysis is the diagram used in Hägerstrand's writings (See [Figure 1.1](#) for an example). He uses lines with arrowheads to represent entities' path through time and space. These lines converge and bundle together during a certain period of time. However, such bundling does not need to be physical. In his original writings, Hägerstrand had already theorized the time-space bundling of two individuals through a telephone call ([Figure 1.2](#)).

As Internet and mobile communication technologies became prevalent, scholars began to re-examine the time-space constraints in the modern era. Geographer Mei-po Kwan's works on urban travelling and the reconfiguration of time-space constraints ([Kwan, 2007](#); [Schwanen & Kwan, 2008](#)) re-imagined the spatial interactions in the Internet era. Realizing that many time-space constraints that were identified by Hägerstrand have been greatly relaxed in the era of ubiquitous use of digital media technologies ([Schwanen & Kwan, 2008](#)), she argues that contemporary urban travelling should be examined with the "hypertext model", in that the analysis of people's physical movement needs to be combined with the analysis of people's social interactions with remote others. That is, spatial movement is conceptualized as not a sequential, linear process, but a nonlinear

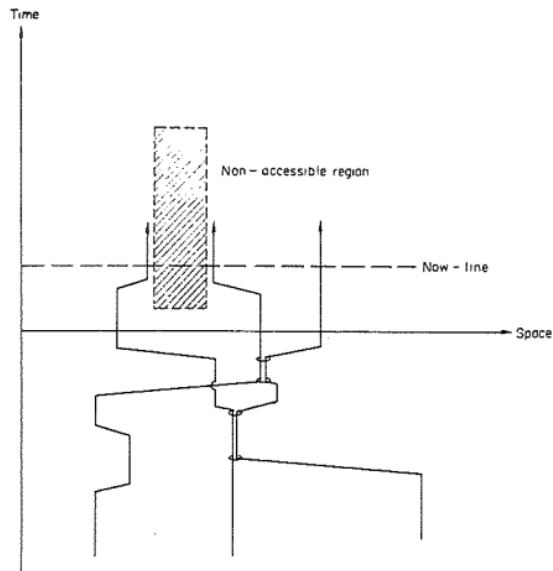


Figure 1.1: One of Hägerstrand's diagram ([Hägerstrand, 1975](#)) illustrating the space-time trajectories of three entities

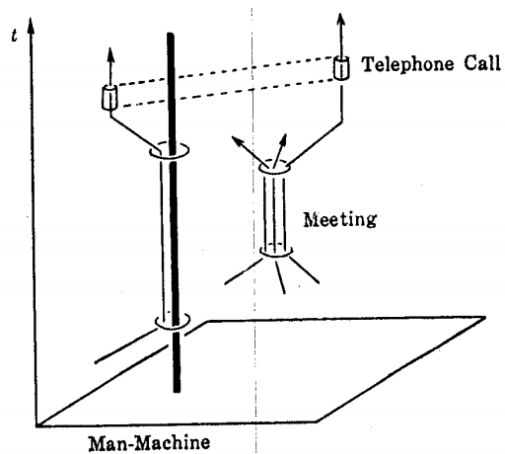


Figure 1.2: An illustration of mediated bundling ([Hägerstrand, 1970](#))

process like clicking through hypertext links on webpages. If this argument sounds familiar, that is because Kwan adopted Wellman's networked individualism (Kwan, 2007) and network analysis approach to urban studies. Viewed from the networks perspective, spatial movement in the urban space is no longer an unbreakable constraint for urban social interaction. For example, in a study of Wi-Fi use in urban public spaces, Hampton, Livio, and Goulet (2010) found that wireless Internet users in public parks may not be considered as being socially co-present with others in the same physical place. However, the purpose of Wi-Fi use in public places may have an effect on how detached the users are from their physical surroundings (Hampton & Gupta, 2008). However, I argue that this re-interpretation of relaxed-time-space-constraints and network-over-place misses the fundamental argument of time geography—the constraints. As Hägerstrand himself argued, “we are not aware of ourselves as things among things”, that physical context is often disregarded in scholarly inquiries (Hägerstrand, 1989, p.5). Scholarly investigation of digital technology should not neglect local constraints. For example, Lane (2016)'s ethnographical work in Harlem, New York City revealed teen's interconnected network of social interactions both online and offline. The isolated investigation of either online or offline interaction would be incomplete. Outside of the academic inquiry, Lane argues, such partial investigation could lead to serious consequences and injustice.

The inevitable time-space constraints, therefore, not only limit physical activities, but also limit online activities, as increasingly the current digital media technologies move locality, place, and space to center stage.

Chapter 2

Research Design

2.1 Introduction

This project takes a mixed-method approach to identifying and analyzing spatial practices of residents in a large North American city, Philadelphia. To truly implement the non-media-centric, non-representational framework in examining media technology and city space, two separate studies were conducted. The first study was a series of face-to-face interviews with local residents in the city. The goal of the interviews is to gain a holistic understanding of the socio-spatial practices of local city residents'. The other study was a series of field inquiries, where participants freely explored city blocks near a public park. In this study, the participants' eye gazes were recorded using eye-trackers. And their cellphones' screen activities were captured, as well. This study takes a in-depth look at situated socio-spatial behaviors, along with their technological behaviors.

2.2 Research Site and Recruitment Strategy

Recruitment and data collection for this research took place in Philadelphia, Pennsylvania, between September 2016 and September 2017. Philadelphia is a large city located on the east coast of the United States. It is the sixth most populous city in the country. The city has a diverse population. According to a recent estimate by the Census Bureau, 41.6% of the city's population is identified as White, 42.6% Black or African American, 7.1% Asian. Additionally, 14.1% of the population is identified as Hispanic or Latino. Philadelphia has a geographically well-defined city core (Center City) with vibrant economic and social

activities. Three major universities, large medical facilities, and businesses help maintain a certain level of population mobility. A subway line connects the north and south end of the city with the center, which help bring people from different neighborhoods together.

Participants in this research were recruited from selected neighborhoods in the city. This research did not target any specific communities or users of specific applications. Nor did the research population share similar demographic characteristics other than living in Philadelphia. To yield a diverse sample for this research, I mainly relied on door-to-door contact to recruit participants. Door-to-door-contact recruitment is suitable for research that does not have a pre-defined “community” to target (Davies, 2011). Recruitment was supplemented with snowball sampling (in certain neighborhoods) and by posting flyers in public libraries. Figure 2.1 shows the areas where most participants were recruited (through door-to-door contact)

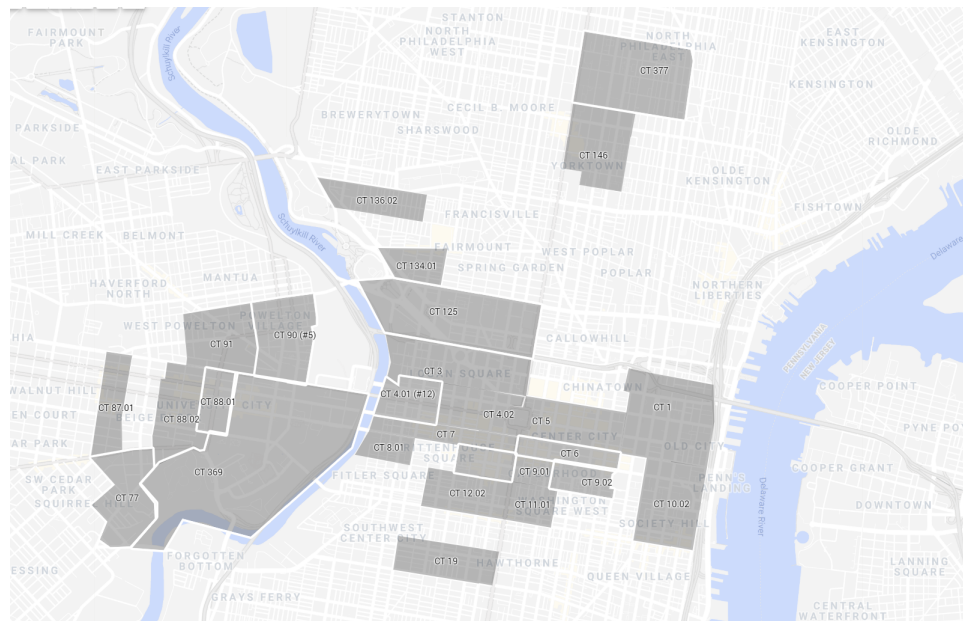


Figure 2.1: Recruitment areas, divided by census tracts.

Door-to-door-contact recruitment can be challenging and time-consuming. To achieve an optimal outcome, some researchers have left a flyer or pamphlet in the mailbox or on the door, days prior to knocking on the door of a residential building (e.g., Crow, Allan,

& Summers, 2002; Hillier, Cannuscio, Griffin, Thomas, & Glanz, 2012). However, upon reviewing corresponding laws and regulations (specifically, 18 U.S.C. § 1725 and § 10-723 of the Philadelphia Code), I determined that it would be illegal for me to leave any handbill in the mailboxes or on the front doors. As such, I knocked on residents' doors without prior notification. Recruitment was only conducted during the daytime on weekends, from 1 p.m. to no later than 6 p.m. This was to increase the chances of encountering residents when they are less likely to be at work. Additionally, being considerate of the residents' schedule (such as sleeping-in on Saturday mornings and lunch/dinner time) is also very important in door-to-door recruitment (Hillier et al., 2012).

Due to the complexity of the urban environment, and perhaps more importantly, the exploratory nature of this research, a probability sampling method would not only be costly but also unnecessary. Instead, I used a more ethnographic approach, as describe in Davies (2011). Davies argues that door-to-door contact not only helps achieve the goal of recruiting participants, but the process itself enhances the researcher's understanding of the research field and adds a level of ethnographic imagination to the research. She argues that:

Recruiting a sample through knocking on doors provides the researcher with an opportunity to pay attention to the environment inhabited by their potential participants, tuning in to the sights, sounds, smells and feel, not just in the home during the interview itself but also in the street, on the bus, in the local shop, etc. during the entire process of finding and recruiting a sample and carrying out subsequent interviews. (p.293)

and

Pounding the pavements around where one's interviewees live is a multi-sensory, embodied experience that can alert the researcher to nuanced differences between adjacent streets and provide the opportunity for a more ethnographic understanding of the spaces and places occupied by participants, creating new meanings of place for the door knocking researcher. (p.298)

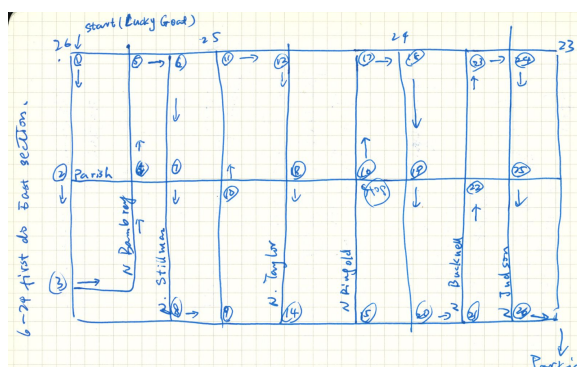
As such, door-to-door contact suits this research very well, in that the recruitment process helped me accumulate the understanding of the city space while I interviewed local

residents about their understanding of the city space. As [Dickinson and Aiello \(2016\)](#) argue, paying attention to the materiality and embodied practices in urban communication studies means the researchers themselves need to reflect upon their own material possibilities in experiencing the urban built environment. As the title of their paper suggests, “Being through there Matters”.

2.2.1 Recruitment Procedure

Before I began to recruit participants in a given area (defined by the boundaries of census tracts), I walked around on every street and alley within it. After getting a sense of the environment, with consideration to the type of residence (high-rise apartment building, single-family row-house, multi-family row-house, etc.), demographics (may vary block by block, especially in gentrified areas) and, vacancy (especially in gentrifying areas), I then sketched a map of the area, plotting a path for me to follow (see [Figure 2.2a](#)). Based on these maps, I walked around the neighborhood and knocked on doors. For each area that I chose, I visited twice. On the first visit, I knocked on the doors of each residential building, one by one, following the pre-determined path. I recorded which residences responded and which did not. During the second visit, I focused on knocking on doors of non-responsive households during the first visit. As I was not sampling for statistical representativeness, I was careful to alternate between areas of different demographic characteristics. For example, if in one week, I toured a Center City neighborhood, then in the following week, I would choose a West Philadelphia neighborhood to visit. Not all selected census tracts were equally sampled. Some areas, such as census tract 10.02 yielded no participants after two consecutive visits. The emphasis was on respondent diversity, not equal chance of selection.

While recruiting participants using this method, there might be a bias caused by the types of residence. My goal was to recruit residents from different types of residences in



(a) An example of the sketch map I used during door-to-door recruitment

16/10 地圖 1 區
 ① → ② Montrose 16th block
 1604(?) 1606 (X) 1608 (Gave Hyatt)
 1612 (log) 1614 ()
 1616 1618 (X)
 1620 () 1622 ()
 10XX block
 1002(X) 1004(X) 1006(X) 1008(X)
 1010(X) 1012(X) 1014()
 10XX block ① → ②
 1028X 1026X 1024X 1022X 1020X

(b) Quick notes to mark responsive and non-responsive households (names of the residents redacted).

Figure 2.2: Two pages from the field notes

different neighborhoods. For example, on the same street, residents who could afford purchasing a single-family house are of different socio-economic status (and residential stability) than, say, renters living in a multi-family housing next door. Single-family houses are the easiest to recruit from. Three-storied apartments (which are often converted from single-family residences) presented a bit of challenge. I often only rang the doorbell of the ground-floor unit in this situation. Residents on the ground floor were more likely to answer the door in person. Intercom doorbells often resulted in a quick rejection (I was only able to talk to and successfully recruit one participant by introducing myself on the intercom). Apartment complexes were the most difficult to recruit from, especially when lobby staff was present. In these situations, I usually waited outside of the apartment building and conveniently solicited participation from the first five people to come out of or go into the building. If lobby staff/management was present, I always asked for their permission first.

A typical recruitment process was as follows: Upon a resident answering the door, I showed them my Rutgers University photo ID, followed by this statement:

Hello! My name is Weixu Lu. I am a graduate student at Rutgers University. I am conducting a research for my doctoral dissertation. The purpose of this research is to understand how people in Philadelphia get to know the city as a place, such as how they get information about local places. I am also interested in how people use digital technology to make sense of urban space. Can you please just give me *three minutes* to quickly explain my research in detail?

This above information was delivered very briefly. This was according to the “foot in the door” technique (Freedman, Wallington, & Bless, 1967), in that a request that gave the resident very little pressure (“please give me three minutes to explain my research”) was less likely to be declined than a direct, extensive solicitation. As a result, residents who answered the door usually allowed me to continue explaining my research to them. I typically included the following information: (1) that there are two studies they could participate in (see below section for details); (2) that they could choose to participate in either or both studies; (3) that the research sessions can be scheduled on any day or time of their choice; (4) that they would receive a cash card upon the completion of the studies; (5) the estimated duration of these research sessions; (6) that neither study involves inquiries of sensitive matters; and (7) that all their identifiable information will be removed from the data. At this point, I also mentioned that these two research studies are “very interesting”, due to the methods that I was utilizing in my research. If I perceived that the resident was contemplating, I would add that this research will be very helpful for us to understand human behaviors in the city and the findings could potentially have an impact on future place-making and city planning. Then, I asked the resident whether they would be interested in participating or if they had any questions for me. If the resident neither immediately agreed nor declined to participate, I would ask them to give me their contact information to contact them at a later point. A printed handout containing a brief explanation of the studies and my contact information was given to them during the conversation.

Additionally, in the last stage of the recruitment process, I realized that wealthy participants in large houses may be open to participating in an interview¹, but they were less likely to show interest in participating in the outdoor study (see “Field Inquiry” section below). I then extracted a segment of the eye-tracking video data (containing no identifiable information) and showed it to them on a tablet computer. This method generated additional interest for some participants, as mobile eye-tracking was relatively novel for most people. And I was able to recruit several wealthy participants for that part of the research as well.

2.2.2 Results of the Recruitment

As shown in Table 2.1, a total of 51 participants were recruited. And they completed at least one of the two studies. 46 participants completed the in-depth interview. 21 participants completed the field inquiry (See below sections for details of both studies.

Overall, the door-to-door method mainly benefitted this research in two ways. Firstly, I was able to recruit a diverse set of participants that vary in age, gender, race/ethnicity, and socio-economic status. Secondly, walking through various neighborhoods and knocking on residents’ doors added a layer of ethnographical understanding of the city, as described in Davies (2011). Walking around the city created a sense of place for me. This sense of place was not only created by my bodily experience, but also through talking to residents at their doorstep. Many of them did not participate in the research but talked to me extensively about local places and happenings².

The door-to-door contact method also presented many problems. For example, race might have played a role in the low response rate in certain neighborhoods. Hillier et al. (2012) found that the Asian students on the research team were being treated differently

¹In many cases, these residents often would agree to participate the interview on the spot, or schedule an appointment on a date that would be several weeks later.

²Per IRB regulations, these conversations were never used as data in this research, but they helped me revising my interview questions throughout the research process.

Table 2.1: A list of participants who completed either of the two studies.

Pseudonym	Sex	Race	Occupation	Age	inPhil	Res Stat	Res Area	Study 1	Study 2
Aaron G.	M	W	Nonprofit advisor	24	6	Rent	South	Yes	No
Adam A.	M	W	Banker	33	20	Own	Center City	Yes	No
Adam W.	M	W	Student	24	2	Rent	Center City	Yes	No
Amy M.	F	W	Urban planner	40	2	Own	Center City	Yes	No
Angelo S.	M	W	Student	30	2	Rent	Center City	Yes	No
Annie R.	F	Blk	Home Health Aid	32	10	Rent	Center City	Yes	Yes
Ashley*	F	W	Teacher	34	5	Own	Lower North	No	Yes
Ben A.	M	W	Student	24	0.5	Own	West	Yes	Incomplete
Brian P.	M	W	Teacher	39	7	Rent	Center City	Yes	Yes
Chad V.	M	W	Physician	27	1	Rent	Center City	Yes	Yes
Charlie C*	M	Blk	Sports coach	52	5	Rent	West	Yes	Yes
Chris B.	M	Blk	Labor	23	1	Rent	South	Yes	Yes
Craig W. *	M	Blk	Social worker	42	42	Rent	Center City	Yes	No
Dan C.	M	Asn	Student	19	1	Rent	West	Yes	No
Dan L.	M	Asn	Computer Engineer	36	5	Own	Center City	No	Yes
Donna A	F	W	admin	41	2	Rent	Center City	Incomplete	No
Eric S.	M	W	Retired	73	1	Own	Lower North	Yes	No
Gary B.	M	W	Retired	76	50	Own	Center City	Yes	No
Gary C. *	M	Blk	Prgm Coordinator	51	40	Rent	North	Yes	No
Gina H.	M	W	Retired	67	38	Own	Center City	Yes	No
Habib I.	M	Asn	Doctor	30	1	Rent	South	Yes	No
Harry B.	M	Blk	Restaurant Staff	67	45	Rent	West	Yes	No
Janet H.	F	Blk	Excecutive	62	62	Own	Center City	Yes	No
Jessica D.	F	W	Communications	38	14	Own	Center City	Yes	No
Joe R.	M	W	Banker	29	2	Own	Center City	Yes	No
Kelly D.*	F	Asn	Bio Researcher	44	10	Own	Center City	No	Yes
Kevin S	M	W	Retired	52	10	Rent	Lower North	Yes	No
Lauren W.	F	W	Secretary	59	30	Rent	West	Yes	No
Leah B. *	F	W	Student	19	1	Rent	West	Yes	Yes
Lily N.	F	Asn	Student	23	23	Rent	North	Yes	Yes
Lindsey B.	F	Blk	Librarian	46	22	Own	West	Yes	Yes
Lisa S.	F	W	Human service	34	10	Own	Lower North	Yes	Yes
Lois B.	F	W	Home maker	58	30	Own	Center City	Yes	No
Lois Z.	F	W	Biz Analyst	52	23	Own	Center City	Yes	No
Maggie B.	F	W	SE copywriter	67	1	Own	Lower North	Yes	No
Mark G.	M	W	SE Consultant	58	0.9	Rent	South	Yes	No
Mark R.	M	Blk	Janitor	37	3	Rent	North	Yes	Yes
Matt L.*	M	W	Translator	40	10	Own	North	No	Yes
Matt M.*	M	Blk	Labor	36	36	Rent	North	No	Yes
Mike S.	F	W	Retired	78	78	Own	Center City	Yes	No
Natalie Y.	F	Blk	Dancer	41	0.2	Rent	North	Yes	Yes
Nick M.	M	Blk	SE Contractor	21	11	w/ par	South	Yes	Yes
Paul F.	M	Blk	SE Contractor	31	30	Own	South	Yes	Yes
Paul H.	M	W	Artist	68	2	Own	Lower North	Yes	No
Ral R.	M	Asn	Student	19	1	Rent	North	Yes	Yes
Rick L.	M	Blk	Small business	40	40	Own	North	Yes	No
Sam O.	M	W	Retired	70	70	Own	Center City	Yes	No
Sharon C.	F	W	NP manager	70	7	Own	Center City	Yes	No
Stephanie K.	F	Asn	Artist	26	4	Rent	Center City	Yes	Yes
Todd T.	M	Blk	Teacher	50	50	Own	South	Yes	Yes
Yvone B.	F	W	Exhibition Planner	44	20	Own	Center City	Yes	No

Notes:

n=46

n=21

1. InPhil = Yeas lived in Philadelphia.

2. Study 1 = Participation in the in-depth interview.

3. Study 2 = Participation in the field inquiry.

4. In "race": W= White/Caucasian; Blk = Black/African American; Asn = Asian.

5. * indicates recruited through respondent-driven method or flyers posted in public libraries.

by local residents, especially African American residents. Although I cannot prove or disprove this in my own experience, I did notice a slight distancing from African American residents in some neighborhoods. Additionally, being a male recruiter might also have had an adverse effect on the residents.

2.3 Study 1: In-depth Interviews

A series of semi-structured, in-depth interviews were conducted with 46 participants (See Table 2.1). The interviews aimed to understand the participants' overall spatial practices in the city. During the interviews, participants were asked of their spatial knowledge about the city and by which means they acquired it. The interview was conducted at a place and time of the participant's choosing. It typically lasted for about 90 to 120 minutes. During the interviews, the participants also drew sketch maps of Philadelphia as a way of communicating their understanding of the city space to me.

2.3.1 Cognitive Maps

For this research, getting a sense of the participant's own understandings and experiences with the city as a place was crucial. Verbal information exchange alone would not have been able to achieve this goal. Many of a person's concepts of cities are nonverbal; therefore, we need nonverbal techniques to study this mental image of urban spaces (Milgram & Jodelet, 1976). As such, these interviews were supplemented with interviewee-generated cognitive maps. Cognitive maps are maps of a region generated from research participants' own perspectives. This method was created by urban planner Kevin Lynch (1960). Later, Stanley Milgram introduced this method to environmental psychology (Milgram, Greenwald, Kessler, McKenna, & Waters, 1972; Milgram & Jodelet, 1976). The cognitive mapping method can take different forms, but hand-sketched maps are the most well-known variation. Participants in this type of research are instructed to draw a map of a place (a city, a college campus, a neighborhood, etc.), according to the researcher's

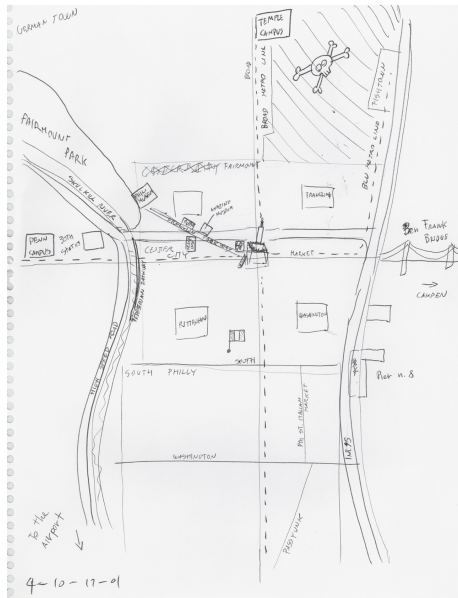
instructions. This method is now widely adopted in urban design, environmental psychology, urban communication, and geomedia studies (recent applications: Bentley et al., 2012; Gieseeking, 2013; Lingel, 2013; Matei, Ball-rokeach, & Qiu, 2001; Özkul, 2015). Mental/cognitive mapping methods are used to elicit the mental images of a given place or region from participants. This method is particularly effective in eliciting otherwise unarticulated experiences and understanding of spaces and places. Cognitive maps provided a visualization of urban spaces and places as the participant experiences them. More importantly, it provided a concrete starting point to jump start the interview. Upon examining these sketch maps that were drawn by participants, I was able to ask them questions such as “How do you know that there are five squares in Center City?”, “You put down a lot of restaurants and bars on the map, why is that?”, or “Why did you draw a skull in this area?”

2.3.2 Interview Procedure

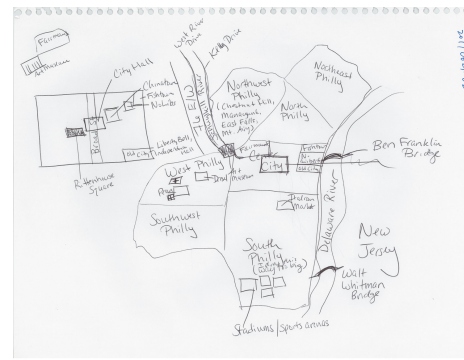
Upon reading and signing the consent form, the interview began with a very brief questionnaire eliciting basic demographic information and the frequencies of various technology use, including general Internet use, mobile phone use, and locative media use. See Appendix A for the questionnaire used in this study. This questionnaire was very brief and much of the information obtained in the questionnaire was used to probe for additional information during the interview. Then, I gave the participant the following prompt for him or her to draw the cognitive map:

I would like you to make a quick map of Philadelphia. Make it just as if you were making a rapid description of the city to a person who was just beginning his or her life in this city, covering all the main features. I don't expect an accurate drawing - just a rough sketch. This map could include all kinds of elements that naturally comes to your mind at the moment, such as buildings, squares, neighborhoods, streets, shops, activities, memories, or whatever elements spontaneously occur to you at this time. Please remember not to draw a map for tourists, but rather a map that represents your understanding of the city as a place. You are not limited to drawing just one map.

The above prompt was adopted from Lynch (1960)'s original cognitive map study, with some modification. Participants were provided stationary to draw the map. Many participants expressed that they were not good at drawing. When this happened, I assured them that neither aesthetics nor accuracy were necessary for this map-drawing exercise. Most participants were able to generate maps to stimulate a meaningful conversation about local places. The sketch map was used as a visual reference throughout the rest of the interview and was frequently referred to. After this map drawing session, the participant was then asked a series of questions regarding their understanding of local places, perception of neighborhood safety, sources of spatial knowledge, and their use of mobile locative media in relation to their life in the city. The structured interview agenda is attached in Appendix A. Upon successful completion of the study, each participant received a gift card valued at \$10.00 as an appreciation of their time.



(a) Sample sketch map created by Angelo



(b) Sample sketch map created by Jessica

Figure 2.3: Sample maps

2.3.3 Data Analysis

The interviews were recorded and later transcribed verbatim. All transcripts were imported into NVivo 12 and systematically coded. Findings from the interview data will be reported in the following two chapters. Additionally, Chapter 3 includes a detailed report on findings and patterns that emerged from the sketch-maps.

2.4 Study 2: Field Inquiry—The “Sunday Afternoon Walk”

In another study, I observed the situated use of mobile locative media. A subset of the participants participated in an outdoor field-inquiry, in a public area in downtown Philadelphia. I referred this study as a “Sunday Afternoon Walk”, in that participants walked around an urban public space without a strictly defined purpose. The goal of this exploratory study was to investigate, in close proximity, how participants make sense of their immediate surroundings as a pedestrian in the public space, as well as the role of mobile locative media in this process.

2.4.1 Capturing Situated, Embodied Socio-spatial Behaviors

To capture and analyze the situated, embodied socio-spatial behaviors in the urban public space, a mixed-methods approach was used. A series of behavioral and cognitive data was collected using multiple methods. Specifically, this study utilized eye-tracking, screen-capturing, think-aloud, and interviews. Among these methods, mobile eye-tracking (MET) and cellphone screen recording were considered to be the primary apparatus for collecting data. With the recent development of wearable technologies such as wearable cameras and mobile eye-trackers, researchers have shown increasing interest in the use of wearable cameras to capture contextual, situated behaviors of their participants in open environments. Researchers have been using wearable cameras or eye-trackers for time use studies ([Kelly et al., 2015b](#)), research in mobility ([Figeac & Chaulet, 2018](#); [Laurier,](#)

Brown, & McGregor, 2016; Licoppe & Figeac, 2015; Wilhoit & Kisselburgh, 2015), in public spaces (Guntarik, Garcia, Howard, & Dyer, 2018), wayfinding (Kiefer, Giannopoulos, Kremer, Schlieder, & Raubal, 2014), and even in remote wild areas (K. M. Evans, Jacobs, Tarduno, & Pelz, 2012). Licoppe and Figeac (2015) argue that video recorded data is essential for making sense of situated technological practices. Indeed, traditional research techniques such as surveys or interviews often fail to account for the details of technology use that are subconscious or forgotten by the participants. These details may contain valuable information to interpret people's technology use.

2.4.1.1 Mobile Eye-tracking

Participants wore a set of Pupil Labs mobile eye-trackers (MET) during this study. The MET captured and recorded a first-person video and the participant's eye-gaze movement. The MET was connected via USB to a Macbook Air laptop computer, which was carried in a backpack worn by the participants.



(a) A volunteer (not a participant in this research) wearing Pupil Labs MET.



(b) A participant walking in an indoor shopping mall (Liberty Place), wearing the MET and the backpack containing the research laptop.

Figure 2.4: Research equipment set-up

2.4.1.2 Mobile Phone Screen Activity Recording

Participants used their own mobile phones in this study. With their consent, their cell-phones were connected to the research laptop through a USB cable. Participants' smart-phone screens were recorded during the study. Apple's QuickTime was used to mirror and capture iPhone screen activities. Android phone screen activities were captured using Android Debug Bridge (adb) commands.

It should be noted that the participants were explicitly instructed to use their mobile devices as naturally as possible, and that it would be completely fine, if they did not wish to use their mobile devices at all.

2.4.1.3 Think-Aloud Data

To gather more robust data, a "think-aloud" method ([Ericsson & Simon, 1980, 1993](#)) was used to elicit the participants' thought process while exploring their surroundings. This method requires the participant to express their inner thoughts verbally while performing a certain task. During the walk, the participants, from time to time, talked into a lapel microphone about their thinking process.

2.4.1.4 Interview and Participant-Review of the Research Data

When the walk was completed, semi-structured interviews were conducted with each participant about his or her walk. In addition, participants sat down with the researcher to review their MET recordings and provide verbal commentary on their behaviors during the walk. Most participants did not review the whole session recording, due to either fatigue after the long and laborious study or motion-sickness caused by staring at the shaky video. This is similar to the nausea caused by first-person video games ([Merhi, Faugloire, Flanagan, & Stoffregen, 2007](#)).

2.4.2 Research Site and Procedure

This study took place at Rittenhouse Square, a well-known public space in downtown Philadelphia. Rittenhouse Square is a seven-acre, square-shaped, open-space park located in the southwest quarter of Center City Philadelphia. This area is known for its abundant vibrant activities, both commercial and noncommercial. This area is typically filled with people from diverse demographic backgrounds ([Anderson, 2011](#)).

The Rittenhouse area is uniquely located between both the city's busiest commercial area to the north and a large, quite residential area to the south. Figure 2.5 shows a 3D aerial representation of the area, looking from southwest to northeast. The park (the green square covered with trees) has twelve entrances that provide direct access to seven streets connected to the park. There are various ways to walk from one side or corner of the park to another. To the north and east of the park, are the more commercial areas of Center City. Most of Philadelphia's high-rise buildings are concentrated in these areas. Alternatively, the areas west and south to the park are quiet, much less busy residential areas, consisting largely of three-storied row houses.



Figure 2.5: Ariel view of Rittenhouse area. Google Earth Pro 7.1.8.3036, 39°56'51.68" N, 75°09'54.17" W, elevation 120ft

The study sessions took place during the daytime and when the weather was suitable for walking on the street, i.e., when it was neither raining nor snowing. Upon signing the consent form, the participants put on the MET and completed the calibration process. Natural marker calibration method was used in this research, which is more suitable for

an outdoor MET study (K. M. Evans et al., 2012). After a successful calibration of the eye-tracking device, participants were then asked to connect their cellphones to the research laptop (which was already connected to the MET) through a USB cable. They later would carry a backpack containing the laptop and start an exploratory walk.

Participants were instructed to walk freely around the area, with the following scenario given to them:

Imagine that you are moving into a neighborhood nearby. On a Sunday afternoon, you have some time to kill and decide to check out the surroundings. You are free to explore anywhere you want. It is not necessary that you keep moving. You can go inside any shops, restaurants, buildings, or parks, if you wish to do so. You are also free to talk to people, buy food and drink, sit down and take a short break, or do any other activities that you would naturally do in this type of situation. Please take as much time as you want to complete this study. At the end of the study, you do not need to return to this starting point.

When the participants were doing the walk, I shadowed them in close proximity. This was to ensure successful data collection. During the walk, I was able to recalibrate the device after participants accidentally removed it from its original position (e.g., by wiping sweat, adjusting their hat, or detaching the cable due to it being caught by objects on the street.) on the spot. Additionally, shadowing the participants allowed me to observe the participants' actions from an additional perspective.

2.4.2.1 Wayfinding Subtask

To make the scenario more realistic (mimicking real-life errands) and to provide some initial orientation, participants were required to visit two places during the study: a T-Mobile store at 1737 Chestnut Street (northeast of Rittenhouse Square) and Szechuan Hunan Chinese Restaurant at 274 South 20th Street (southwest of Rittenhouse Square). Name and address of the two places were sent to the participants' mobile phones via text messages. These two "errands" were initially designed to create the opportunity for the participants

to explore two different types of urban area, a busy commercial hub and a quiet residential neighborhood. This instruction subsequently created a wayfinding subtask within the study. Figure 2.6 shows a map of the area, depicting the spatial relationships between key places.

It should be noted that participants were explicitly told that 1) They could choose whichever place to visit first; 2) They do not need to take the fastest or the shortest route; 3) They could freely explore the area, making detours as they would normally do in such a scenario; and 4) It would be completely fine if they decide to do nothing other than getting the two “errands” done as quickly as possible.

The shortest walking session was about 28 minutes and the longest was about 115 minutes. The whole research session usually lasted for about two hours with the addition of time spent on consent, instructions, equipment calibration, and the interview. Participants were reminded to complete the walk within 90 minutes, due to the capacity of the battery (120 minutes is the absolute upper limit for the battery, due to the high CPU usage of the software).

Upon successful completion of the study, participants each received a \$50.00 gift card as an appreciation for their time.

2.4.3 Remarks on Participants being Local Residents

In many previous empirical studies of wayfinding, digital navigation, and locative technologies in the city, a common restriction is that participants have no or very limited familiarity with the research site (e.g., Bertel, Dressel, Kohlberg, & von Jan, 2017; Ishikawa, Fujiwara, Imai, & Okabe, 2008; Kiefer et al., 2014; Münzer, Zimmer, Schwalm, Baus, & Aslan, 2006; Wenig et al., 2017; Willis, Hölscher, Wilbertz, & Li, 2009). To achieve this goal, student or tourist samples are often used. Some research studies even use computer simulation instead of placing participants in a physical environment (Bakdash, Linkenauger, & Proffitt, 2008). It is reasonable for these studies to apply such a restriction, because knowledge of the research site can be a major confounding factor when the intention of

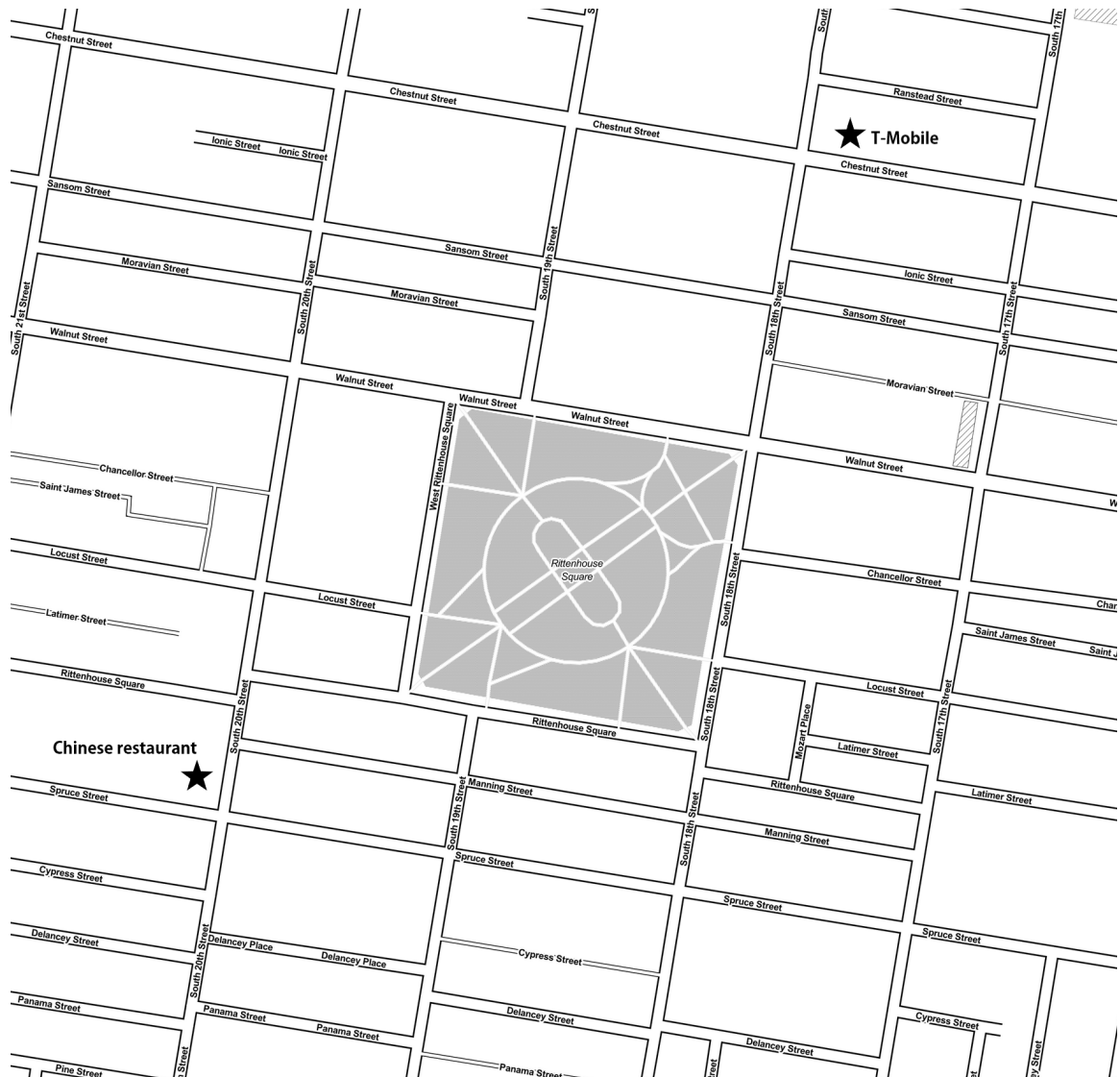


Figure 2.6: Locations of Rittenhouse Square park (at the center), the T-Mobile store, and the Chinese restaurant.

(Map tiles by Stamen Design (maps.stamen.com), licensed under CC-BY 3.0. Data by OpenStreetMap, licensed under CC-BY-SA)

the researcher is to quantitatively test the effect of wayfinding strategies or navigation technologies. The major drawback of this approach is that it may yield results that fail to be applied to everyday life situations. In addition, I find that when conducting an outdoor field study in a busy urban space, it is impossible to strictly control the environmental factors. A demanding research design, such as this one, would naturally result in research sessions being conducted across a long period of time. Depending on the day of the week

or time of the day, the weather conditions (strength of sunlight, temperature, etc.), road blockage due to construction, the number of pedestrians on the street, and the events occurring around the park, the condition of the research site could change dramatically from one study session to another. Instead of attempting to control the conditions of the study, I embraced the contingency that the environment and the participants brought. The “messy” data collected in this study allowed me to observe how real residents of a city make sense of an urban place.

Although participants had some knowledge of the Rittenhouse Square area, this does not mean that they knew everything about this area. First, all participants reported that they had no prior knowledge of the two designated destinations (the T-Mobile store on Chestnut Street and Szechuan Hunan Chinese Restaurant on 20th Street). This means that those participants were, in fact, performing a real wayfinding task. To quote one of the participants (when she arrived at the Chinese restaurant):

Yeah, I've never been to this restaurant. I don't think I've even noticed it before. I probably have walked by here a million times. Because it just seems kind of like a little neighborhood place. Like... I have a place like this in my neighborhood, so I would never come here. I don't usually come this way (this intersection). My daughter used to take dance class around the corner, so I used to come here (this area) fairly regularly.

Further, in the interviews, many participants reported that they had indeed discovered new places, which they would visit in the future. One participant (Annie), who lives three blocks from the Chinese restaurant, was not at all aware of the restaurant prior to the study and reported that she really likes Chinese food! She was very excited to find the restaurant. Other participants have discovered parks, boutiques, restaurants, frozen yogurt shops, and sports good stores. For most participants, walking in the Rittenhouse Square area was a familiar experience, but not without a few surprises.

2.4.4 Data Analysis

Mobile outdoor eye-tracking the field presents great challenges in not only data capturing, but also analysis. Particularly, the pre-study gaze calibration and post-study gaze fixation detection are prone to biases for quantitative analyses (K. M. Evans et al., 2012). When participants keep moving on the street, their gazes can fixate on both far and near, big and small objects or areas of interest (AOI). Although traditionally, eye-tracking data was predominantly analyzed quantitatively, based on gaze fixations detected using algorithms, such an approach might not be ideal in the context of this research. More importantly, the purpose of this research is to explore how people make sense of urban space. It is more important to examine and make sense of *what* the participants were looking at and *how* they interpreted such information. Previous outdoor studies that utilize mobile eye-tracking methods usually focus on finding out *which part* and *how frequently* the participants stare at a pre-defined area (e.g., K. M. Evans et al., 2012; Höller, Schrammel, Tscheligi, & Paletta, 2009; Kiefer et al., 2014; Maughan, Gutnikov, & Stevens, 2007). As such, a qualitative approach was more suitable for exploring complex eye-tracking data collected from this research. Because most of the findings from this study will be reported in Chapter 5, a more detailed discussion of the analysis procedure will be reported in that chapter, instead of here.

Chapter 3

Materiality of Urban Spatial Practices

3.1 Introduction

In the four years between June 2008 and June 2012, sociologist William B. Helmreich visited almost every single city block in New York City on foot, totaling 6,000 miles in distance. Throughout this incredible experience, he observed and documented how everyday life unfolds for residents across the city. His observations were later turned into a book titled *The New York Nobody Knows* (Helmreich, 2015). Indeed, the New York he documented was not the New York most New Yorkers would know. Living in any large city (let alone a city as vast as New York), individual residents are unlikely to know what life on every city blocks looks like. A city is a socio-graphical unit that is often referred to as a whole, but city residents rarely walk on every single street in the city. The city is full of “others” and “other places” with which any city resident may anticipate interacting in the future. In order to make sense of these “others” and “other places”, city residents would have to rely on a wide range of communicative resources. They talk to friends and coworkers, browse the Internet, read local news and guides, or rely on scholars like Helmreich to inform them about what happens outside of their living space. In other words, much of a city resident’s knowledge and understanding of the city in which he or she resides is mediated. And certainly, it is plausible to assume that such knowledge comes from a plethora of communicative resources. In this chapter I will address the research question: “With the proliferation of digitized information of our lived environment, what is the role of digital media and media technology in city residents’ understanding of the

city as a place?” In doing so, I will first address the question, “What are the communicative resources city residents in a large American city rely on to make sense of the city as a place?” These are really big questions to answer. As such, a theoretical framework about urban communication from a holistic, ecological perspective is needed.

3.1.1 Urban Communication beyond Neighborhoods

A prominent socio-ecological approach in urban communication is the Communication Infrastructure Theory (CIT). CIT came from a series of ongoing studies conducted by Sandra J. Ball-Rokeach and colleagues in the Southern California/Greater Los Angeles area, also known as the *Metamorphosis Project*. Built upon the Media System Dependency (MSD) Theory, CIT focuses on the impact of the multilevel communication infrastructure on issues such as health (Matsaganis, Golden, & Scott, 2014; Wilkin, 2013), civic engagement (Y.-C. Kim & Ball-Rokeach, 2006; Y.-C. Kim, Jung, & Ball-Rokeach, 2006; Y.-C. Kim et al., 2019), crime (Matei et al., 2001), consumption (Wenzel, 2016), and identity (Usher & Morrison, 2010) in urban communities (Ball-Rokeach, Kim, & Matei, 2001; Y.-C. Kim & Ball-Rokeach, 2006).

A key component of CIT is the *story telling network* (STN). The STN consists of storytelling agents on three levels: the micro-level (neighborhood residents and their social networks), the meso-level (community, ethnic media), and the macro-level (national media). This framework examines the inter-relationships between the communication environments, the individuals, and the communities. I found this perspective to be useful, but only to a certain extent. In this research, I only very loosely adopt the idea of an STN consisting of multiple story telling agents, which include both the individuals and the media institutions, but disagree with the CIT’s separation of storytelling agents into three distinctive levels. CIT has undeniably been a fruitful framework for studying the communication infrastructure/media ecology in urban communities. However, its strength has also determined its limitations. Researchers adopting CIT often show interest in the effect and use of communicative resources on these three levels but largely emphasize the

locally-bounded communities, especially “geo-ethnic” communities/neighborhoods (Y.-C. Kim et al., 2006; Wilkin, 2013). This drives its core narrative of multi-layered storytelling network that focuses on the neighborhood level. This focus on geo-ethnic communities can be traced back to two research traditions/conditions in urban studies. First, there has been a century-old obsession with local neighborhoods in urban studies. Second, the research sites in Southern California that gave birth to CIT represent a type of urban spatial-ecological logic that emphasizes fragmentation over concentration.

CIT’s focus on local, geo-based communities in urban communication studies reflects a longstanding research tradition in urban studies – the focus on neighborhoods (i.e., place-based communities). Beginning with the Chicago School of urban sociology, researchers seem to be seeking answers to community questions through investigating place-based communities (neighborhoods)¹. However, as the geographer Yi-Fu Tuan (1975) pointed out, neighborhood may, in fact, not be an ideal unit for place-based research, because it lacks distinctive visual and conceptual prominence as well as well defined boundaries. He takes one step further and claims that neighborhood as a spatial or social unit “existed primarily in the minds of urban sociologists and planners” (Tuan, 1975, p.158). Similarly, sociologist Barry Wellman argues that common locality and an occasional emphasis on solidarity has encouraged scholars to equate community research with neighborhood research (Wellman, 1999). This research tradition, additionally, reflects the nostalgic view of *community-in-the-past* that was “based on densely connected relations, organized around the home and small-town life”, where “people gathered on their porches to bond, to live in person and face to face.” (Hampton & Wellman, 2018, p.644). Hampton and Wellman (2018) warn us that this form of community should not be romanticized:

. . . . to idealize this form of community is to pervert contemporary notions

¹For example, Burgess (1925) explicitly stated that the term *community* “signifies individuals, families, groups, or institutions located upon an area and some or all of the relationships which grow out of this common location considered from the point of view of the geographical distribution” (p. 144)

of social justice, equality, and freedom. The nature of community in the nineteenth century, or in nearly any form where people lived in a densely knit network of close ties, had its drawbacks: the density of relations implied a high degree of conformity to similar beliefs, backgrounds, and activities. (pp. 644–645)

Instead of fixating on social relationships and activities occurring within the boundaries of the neighborhoods, Wellman and his colleagues (henceforth the “Toronto School” of community research ([Jankowski, 2006](#))) define communities from a social networks perspective and thus rejects the idea that community networks are confined within the boundaries of neighborhoods. This liberation of the community from geographical constraints is useful for studying contemporary social relationships in the era of prevalent digital technology use. For Wellman, increased mobility (as a result of communication and transportation technologies mixed with social forces) has changed the structure of community into being more diverse, fragmented, and less local. Such societal change leads to what he calls *networked individualism* ([Rainie & Wellman, 2012](#); [Wellman, 2001](#); [Wellman et al., 2006](#)). However, another prominent scholar from the Toronto School cluster, Keith Hampton argues that contemporary community structures cannot be explained solely by increased mobility. Instead, he argues that social media affords a new form of community structure that is a hybrid of pre- and post-industrial communities, characterized by both mobility and relational persistence and sustained awareness. This new form of community structure, which he calls the *persistent-pervasive community*, is a result of mundane, everyday use of social media ([Hampton, 2016](#)). It should be noted that the Toronto School scholars do not deny the crucial role of neighborhoods (or place-based communities) in our social lives. Nor do they ignore the importance of social support enacted in local, face-to-face interactions (e.g., [Hampton, 2007](#); [Wellman & Wortley, 1990](#)). Rather, they do not believe that “neighborhood” should be considered to be the quintessential unit of inquiry for urban studies.

CIT’s emphasis on geo-based community is also deeply embedded in the research sites of the Metamorphosis Project. The Metamorphosis Project was conducted in the Greater

Los Angeles area, with many of the research areas located outside of the city limits of Los Angeles ([Metamorphosis, 2019](#)). Additionally, there is a strong focus on ethnic communities, or more precisely, "geo-ethnic" communities. The decision to focus on peripheral regions rather than the city center as well as geographically-bounded ethnic communities was driven by the organizational logic of Los Angeles as a city and the state of digital technological adoption when CIT was developed. Compared with many metropolises in other parts of the world, Los Angeles, or more broadly, Southern California, represents a unique form of American urbanism. Urban studies scholar Michael Dear points out that that Southern California is an "unusual amalgam - a polycentric, polyglot, polycultural pastiche that is deeply involved in rewriting American urbanism." ([Dear, 2002](#); [Dear & Flusty, 2002](#), p. 6). Further, Dear argues that the research conducted by various scholars in the Southern California region gave birth to what he calls the Los Angeles School (of urban sociology), in comparison to the Chicago School of urban sociology. Specifically, Dear argues that the Chicago School represents the modernist analytical approach to studying the city, where the city is viewed as a coherent, unified whole, while the Los Angeles School focused on a postmodernist approach to studying the city, where the urban peripheries organizes the center ([Dear, 2002](#); [Dear & Flusty, 2002](#)). However, it should be pointed out that CIT advocates do not seem to associate themselves with the Los Angeles School. On the contrary, due to being situated in the academic discipline of communication studies, CIT researchers often see a connection between their research and the Chicago School, due to their shared focus on the ecology metaphor.

Of course, scholars of the Toronto School do not reject the role of place-based communities/neighborhoods in urban public life. Both Wellman and Hampton's research seem to support the idea that digital media often enhance local network structure, while residents have the choice to disengage from local places ([Friedland, 2016](#)). Nevertheless, the community network framework opens a door to examine the possibilities in contemporary urban living that are beyond the neighborhood. While CIT sees community/neighborhood as a distinct level of the STN and the central stage of urban communication, the Toronto

School simply sees a strong correlation between community network and local places. Additionally, as [Hampton \(2007\)](#) suggests, much academic work ignores weak social ties and social ties at a distance that are beyond the neighborhood. Although CIT does consider local network interaction as a key element in the STN, it ignores the extensive network outside of the scope of the neighborhoods.

Furthermore, even though neighborhoods and local community networks are important to contemporary urban life, city residents' overall social interaction is by no means constrained to their neighborhoods. Venturing out of the neighborhoods is crucial to accessing diverse social resources and could potentially increase urban serendipity or chance encounters ([Foth, 2016](#); [Zuckerman, 2011](#)). Empirical studies found that place attachment is higher at both the city and home level, while being lower at the neighborhood level ([Hidalgo & Hernández, 2001](#); [Lewicka, 2010](#)). Additionally, when city residents are not travelling to their work or home, they tend to visit places that are popular with their fellow city residents, rather than places close to home or work ([Hasan, Schneider, Ukkusuri, & González, 2012](#)). Sociologists Elijah [Anderson \(2011\)](#) calls these popular destinations in a city *cosmopolitan canopies*, where residents from different parts of the city and of different race and ethnicity gather and get along with each other. This concept originated from his observation of social lives in public or parochial places in Center City Philadelphia. In this research, I adopt this notion of cosmopolitan canopy and argue that many places in the city, beyond the boundaries of neighborhoods, afford opportunities for social mixing, serendipitous encounters, and exposure to diverse others from all over the city. Therefore, the awareness of these cosmopolitan canopies might disproportionately affect the city residents' understanding of the city as a place.

Finally, I need to point out that what I am advocating is not for urban communication scholarship to move away from neighborhoods or local communities. Rather, I am calling for a spatial-relational view of urban communication, where local neighborhoods are not viewed as isolated islands in the city but as foci of social activities in a complex, interconnected network of places, people, and media.

As such, in this chapter, I adopt a theoretical framework that draws upon: (1) CIT's story telling network concept which includes multi-modal story telling agents, (2) the Toronto School's view of community as social networks which extends beyond neighborhoods, (3) the non-representational, non-media-centric framework, and (4) time geography's focus on time-space constraints. The goal of this chapter is to understand how the sociomaterial image of the city is constituted through the city residents' embodied everyday life practices, network ties, media consumption, and digital media use.

3.2 Findings

3.2.1 Cosmopolitan Canopies on Cognitive Maps

Before each interview, participants sketched one or more maps representing their understanding of the places and activities related to life in Philadelphia. These maps were initially used to establish a common ground between the participants and myself. Additionally, the maps provided otherwise hard-to-describe information regarding residents' understanding of the city as a place. The extent of information yielded from the sketch maps vary, due to variations in participants' spatial literacy and tenure of residence. The accuracy of the maps is of no significance for this research. The salience of various elements on the maps is, however. It is obvious that elements that appear on a map were what the participant was aware of in the city, but the lack of a certain element on the map does not mean that the participant was not aware of it. Rather, the map reveals what the participant perceives to be important in understanding the city as a place.

3.2.1.1 Overall Description of Sketch Maps

Participants generated maps of all sorts. Mainly, maps vary along the following dimensions. First, the scope of the map varies. Some participants generated maps that describe the city as a region (e.g., Figure 3.1), while others focused on one section of the city (e.g.,

Figure 3.2). It should be noted that some participants drew several maps, with one depicting the outline of the region, and others depicting selected neighborhoods.

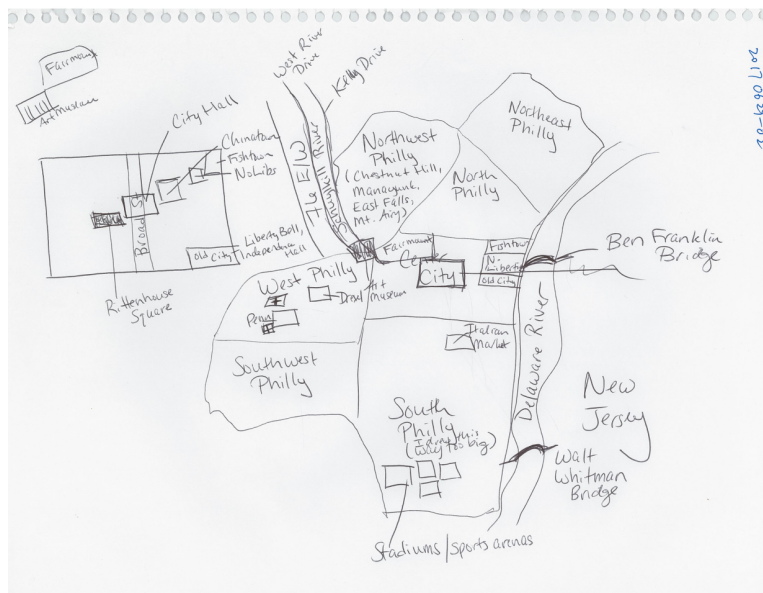


Figure 3.1: Jessica(38-yo white female, 14 yrs in Philly)'s map of the city, which depicts the outline of the city and major sections of the city.

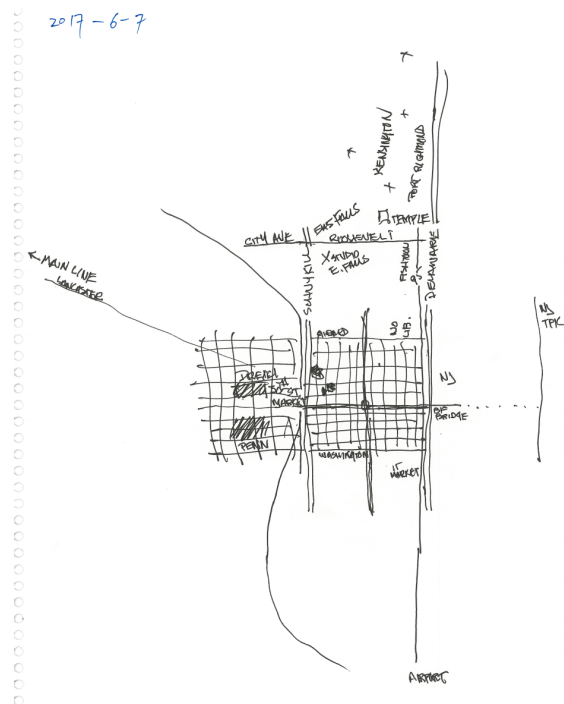


Figure 3.2: Paul (68-yo white male, 2 yrs in Philly)'s map, which depicts certain parts of the city.

Second, the level of abstraction varies. Some participants generated maps that attempt

representative regional elements (In [Lynch \(1960\)](#)'s terms: landmarks, districts, and major paths are salient), while others provided details, such as stores and small parks (e.g., Figure 3.5 and Figure 3.6).

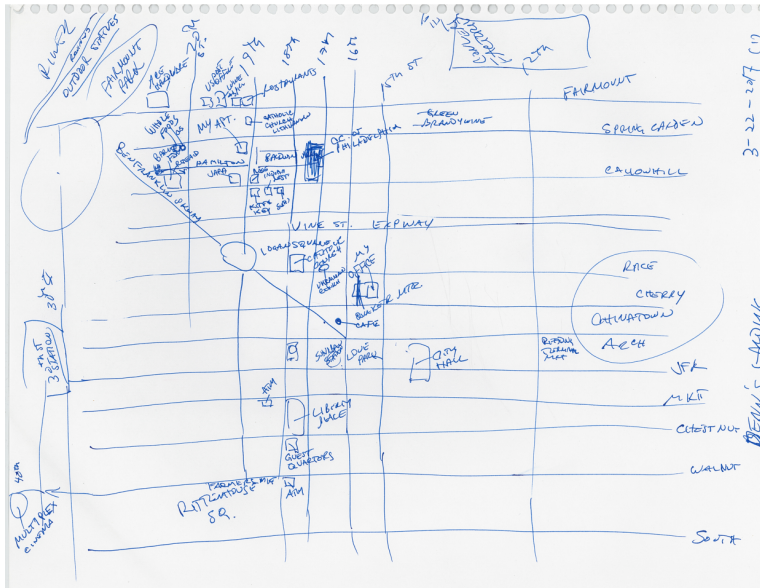


Figure 3.5: Sharon(70-yo white female, 7 yrs in Philly)'s map, depicting many details of places and activities in Center City

3.2.1.2 Salience of Map Elements

Elements on each map were identified and coded qualitatively. Many participants narrated while drawing their maps. Narrations were transcribed verbatim. The transcripts were used as supplementary materials when coding the maps. They were helpful when map elements were ambiguous or when handwritten labels were not legible. Additionally, participants sometimes mentioned, in their narrations, elements that they did not include on the map. These verbally mentioned elements were coded as well. Elements were identified according to ([Lynch, 1960](#))'s five categories: edges (such as boundaries and rivers), nodes (such as train stations, stores, or parks), landmarks, paths (such as streets, highways, subway lines, or railroads), and districts.

[Kitchin \(2000\)](#) warns researchers that collective aggregation of cognitive-map elements may lead to erroneous comparison in data analysis. As such, aggregation of map

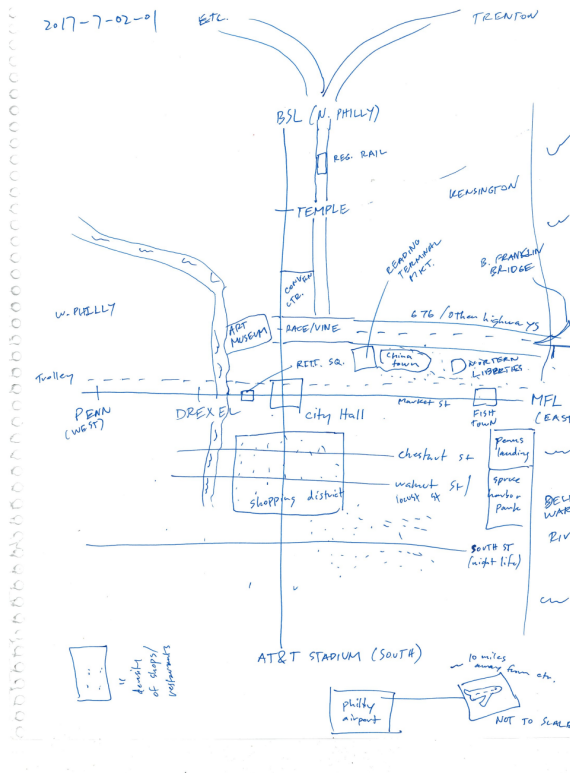


Figure 3.6: Ral(19-yo South-Asian male, 1 yrs in Philly)’s map, depicting many details of places and activities in the city

elements was cautiously applied when certain elements were often co-mentioned as a unit. For example, Market Street and Broad Street were coded as “Market/Broad Street Axis”. Fishtown and Northern Liberties (neighborhoods in the lower-north area) were coded as “Fishtown/Northern Liberties”. Elements that are too specific were aggregated, as well. For example, restaurants and bars mentioned were coded into “Food & Drink in South (/North/Center/West)”. This level of aggregation ensures the semantic salience of the map elements, but not at the expense of data quality. A total of 130 elements were identified. Table 3.1 shows a final list of coded map elements and their corresponding frequencies of appearance on participants’ maps. Not surprisingly, the most recognizable entity in Philadelphia is the City Hall, followed by the Market/Broad Street Axis (City Hall is located at the intersection of Market and Broad). The two main rivers (Delaware and Schuylkill) were also mentioned very frequently. This is consistent with Stanley Milgram and Denise Jodelet’s observation that the River Seine was the most salient element

on Parisians' sketch maps (Milgram & Jodelet, 1976). These elements co-define the basic structure of the topology of the city. As one participant explains:

Psychologically, City Hall is the center of the city... Market and Broad. And I think... Billy Penn³'s hat being seen from everywhere in the city. I come in across the Ben Franklin Bridge, you see Billy Penn's hat. You come down the Schuylkill Expressway, you see Billy Penn's hat. Belmont Plateau, Billy Penn's hat. It's, for me, in my head, the center of the city. . . . So, I think I put it there and then I said, "Okay. Now that I've drawn where my center of the city is, I now can arrange everything else, the places I go to, around that," because that's, for me, where usually we start from. I thought about, "How am I going to draw this map, and where am I going to start?" And I said, "Okay, it's got to be City Hall." (Maggie, 67-yo white female, 1-year residency)

Apart from these elements that define the basic structure of the city topology, the other major elements (mentioned by 30% or more of the participants) include major social institutions (University of Pennsylvania, Drexel University, Temple University, Philadelphia Museum of Art, Stadiums), open public spaces (Rittenhouse Square, Fairmount Park, Logan Square, and Washington Square), and "hip" neighborhoods (Fishtown/Northern Liberties). A few major elements received much more mentions than most other elements (see Figure 3.7). 7% of the elements were disproportionately mentioned by more than 50% of the participants. This result suggests that only a few elements can be considered to be the most representative of the city according to the participants' perception. It also suggests that there is a consensus among the participants regarding the most crucial places and spatial elements that define the city as a place.

To understand the cognitive relationships between the map elements, a co-occurrence network analysis was conducted. Co-occurrence network analysis is commonly used in studies of lexicon, ecology, and genetics. It explores the structure of the relationships of words/phrases, species, or DNA sequences, by examining the co-occurring or co-existing patterns of the members. A weighted, undirected co-occurrence network was propagated using the criterion that, if two elements appear on the same map, an edge between the

³The statue of William Penn, the founder of the city

Table 3.1: Map elements and number of maps containing the elements; n=44.

Rank	Element	# of maps	Rank	Element	# of maps
1	City Hall	35	72	Baltimore Ave	3
2	Market/Broad Axis	29	72	Branes Foundation	3
3	Delaware River	28	72	Train Stations in Center	3
3	Schuylkill River	28	72	Ethnicities	3
5	Upenn/Drexel Univ	28	72	Fairmount Ave	3
6	Art Museum	25	72	Fitler Square	3
7	Rittenhouse Square	24	72	Food & Drink in Fishtown/Northern Lib	3
8	Sections	21	72	Jefferson U Hospital	3
9	Center Street Grid	19	72	Liberty Place	3
9	Fishtown / Northern Liberties	19	72	Stores in lower-north	3
11	Temple University	18	72	Queen Village	3
12	Fairmount Park	17	72	Port Richman	3
13	BenFranklin Parkway	16	72	Free Library of Phila	3
13	PHL Airport	16	72	Navy Yard	3
13	Stadiums	16	72	Spruce Street Harbor Park	3
16	Logan Square	15	72	Cinemas	3
16	30th Station	15	72	Food and Drink in West	3
18	Stores in Center	14	72	Local Details in Wet	3
18	Washington Square	14	90	Parks in West	3
18	Phila outline	14	90	Academy of Music	2
21	Old City / Society Hill	13	90	Brewery Town	2
22	BSL subway	12	90	Bucks County	2
22	Italian Market	12	90	Chestnut Hill	2
22	South Street	12	90	Cloth Pin statue	2
25	Chinatown	11	90	Convention Center	2
26	Food and Drink in CC	10	90	Fox Chase	2
26	MFL subway	10	90	Mario Lanza Park	2
26	Penn's Landing	10	90	Grays Ferry	2
26	Food and Drink in South	10	90	Huntingt Park	2
30	BenFranklin Bridge	9	90	Olney	2
30	Independence Mall	9	90	Reading Terminal Market	2
30	Franklin Square	9	90	Rodin Museum	2
30	Washington Ave	9	90	Malls in the suburb	2
34	I-76	8	90	Local Details in Upper-North	2
35	Kensington	7	90	Food and Drink in Upper-North	2
35	Food and Drink in Lower-North	7	90	Route 1	2
35	New Jersey	7	90	Stores in West	2
35	Stores in South	7	109	Bella Vista	1
35	Spring Garden St.	7	109	Church in CC	1
35	Streets in West	7	109	Groceries in CC	1
41	Germantown	6	109	Hip art galleries in CC	1
41	I-95	6	109	Community org in CC	1
41	Kimmel Center	6	109	Drake Theatre	1
41	Manayunk	6	109	Hip art galleries in Fishtown	1
41	Zoo	6	109	Gallery Mall	1
46	Crime and safety	5	109	Montgomery County	1
46	Eastern State Penitentiary	5	109	Mayfair	1
46	Franklin Institute	5	109	Point Breeze	1
46	Lancaster Ave	5	109	Ritz Carlton	1
46	Local details in lower-north	5	109	Roxboro	1
46	Streets in lower-north	5	109	Local details of South	1
46	Main Line	5	109	Streets in South	1
46	SEPTA Regional Rails	5	109	U of Sciences	1
46	Passyunk area	5	109	Streets in Upper-north	1
46	Hospitals in West	5	109	Upper Darby	1
56	Avenue of the Arts	4	109	69th Transportation Center	1
56	Comcast Building	4	109	Groceries in West	1
56	Local details in CC	4	109	Walnut Theatre	1
56	East Falls	4	109	World Café Live	1
56	Girard Ave	4			
56	I-676	4			
56	groceries in lower-north	4			
56	Love Park	4			
56	Mt. Airy	4			
56	Fairmount neighborhood	4			
56	Graduate Hospital	4			
56	Powelton Village	4			
56	Big Box stores in South	4			
56	Trolley Line	4			
56	Whitman Bridge	4			
56	Wissahickon	4			

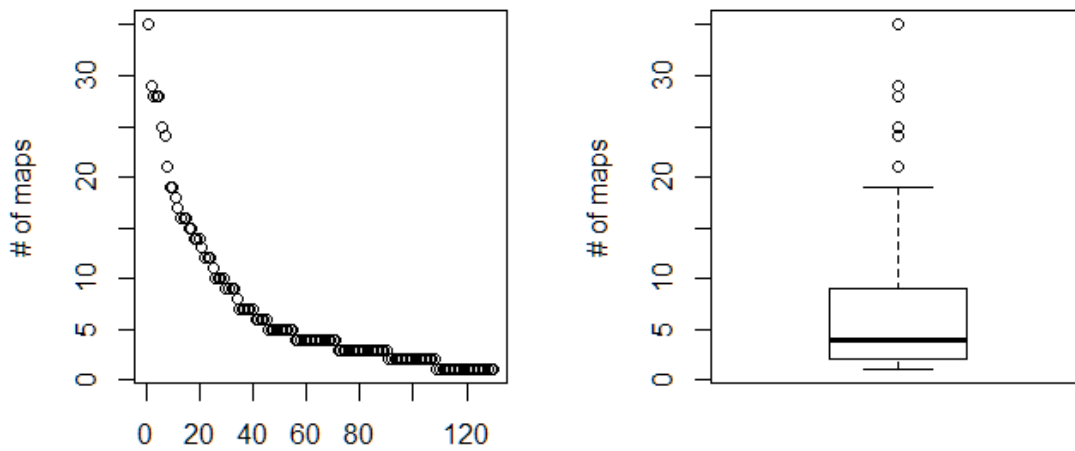


Figure 3.7: Distribution of the frequencies of appearance of the map elements

two elements would be established. The weight of the edge is defined by the number of maps where the two elements co-occurred.

The R package *igraph* 1.2.2 (Csardi & Nepusz, 2006) was used to analyze and plot the co-occurrence network. The initial network contains 120 nodes and 4,116 edges, and appears to be quite dense (density = 0.49, transitivity = 0.69). This is due to less-mentioned elements being likely to co-occur with a large number of elements on the same map. That is to say, participants who put less-known elements on the map are likely to be those who tended to put a large quantity of elements on the map. However, this resulted in thousands of edges stemming from only a few map elements. These nodes disproportionately affected the structural measures of the network. A decision was made to simplify the network by eliminating these map elements that only appeared once (the bottom twelve elements in Table 3.1). The simplified network contains 1,954 edges and 108 nodes. It is still a relatively dense network (density = 0.34, transitivity = 0.59).

Weighted degree centrality and betweenness centrality of nodes were calculated, as can be examined in Table 3.2 and 3.3. Figure 3.8 and 3.9 show the visualization of the network with two centrality metrics. Degree centrality measures the centrality of a node by summing all the links held by a node. Weighted degree centrality considers the weight

Table 3.2: Weighted degree of nodes

Map element	Weighted degree	Map element	Weighted degree
City Hall	694	Crime and safety	80
Schuylkill River	627	Girard Ave	79
Delaware River	618	Big Box stores in South	76
Upenn/Drexel	596	Local details in CC	73
Market/Broad Axis	581	Comcast Building	72
Art Museum	568	Graduate Hospital	71
Rittenhouse Square	490	Whitman Bridge	71
Fishtown and North Liberties	454	Eastern State Penitentiary	63
Sections	380	groceries in lower-north	63
Temple University	380	Hospitals in West	63
Logan Square	370	Wissahickon	63
PHL Airport	355	I-676	62
CC Street Grid	345	Free Library of Phila	60
Fairmount Park	342	East Falls	55
BenFranklin Parkway	341	Baltimore Ave	54
30th Station	317	Food and Drink in Fish/NL	54
Washington Square	315	Spruce Street Harbor Park	52
Stadiums	288	Navy Yard	51
Chinatown	264	Powelton Village	49
Stores in CC	252	Avenue of the Arts	47
Italian Market	248	Mt. Airy	45
Phila overview	248	Food and Drink in West	43
Old City and Society Hill	236	Fitler Square	42
Food and Drink in South	222	SEPTA Train Stations in CC	40
Food and Drink in CC	201	Jefferson Hospital	39
MFL subway	200	Port Richmond	39
BSL subway	198	Local Details in West	38
Franklin Square	198	Branes Foundation	37
South St	190	Parks in West	37
BenFranklin Bridge	172	Fairmount Ave	34
Washington Ave	171	Fox Chase	34
Independence Mall	170	stores in lower-north	30
Penn's Landing	168	Love Park	30
Stores in South	163	Queen Village	30
Kensington	157	Rodin Museum	30
I-76	151	Academy of Music	28
Food and Drink in Lower-North	139	Brewerytown	24
New Jersey	136	Liberty Place	24
Germantown	119	Hunting Park	22
Passyunk area	117	Olney	22
I-95	113	Route 1	22
Manayunk	112	Ethnicities	21
Spring Garden St.	111	Chestnut Hill	18
Streets in West	106	Grays Ferry	18
Franklin Institute	104	Malls in the suburb	16
SEPTA Regional Rails	99	Convention Center	14
Zoo	97	Reading Terminal Market	14
Kimmel Center	93	Cinemas	9
Main Line	93	Local Details in Upper-North	8
Local details in lower-north	90	Cloth Pin statue	6
Trolley Line	85	Mario Lanza Park	6
Lancaster Ave	83	Stores in West	6
Fairmount neighborhood	82	Bucks County	4
Streets in lower-north	81	Food and Drink in Upper-North	4

To generate more meaningful information, the degree centrality and betweenness centrality were normalized using the min-max method. For each map element, the difference between the normalized degree centrality and the normalized betweenness centrality was then calculated. Using this method, I identified map elements with high betweenness centrality but low degree centrality and map elements with high degree centrality and low betweenness centrality, as well as nodes with high degree centrality and high betweenness

Table 3.3: Betweenness centrality of nodes

Map element	Betweenness Centrality	Map element	Betweenness Centrality
City Hall	202.41	Kimmel Center	28.26
Market/Broad Axis	168.10	Girard Ave	27.92
Food and Drink in CC	156.08	SEPTA Train Stations in CC	26.07
Phila overview	155.65	Parks in West	25.15
Art Museum	145.31	SEPTA Regional Rails	23.82
BSL subway	137.11	I-76	23.71
Fairmount Park	128.39	groceries in lower-north	23.59
Rittenhouse Square	127.21	Branes Foundation	22.31
Chinatown	116.04	BenFranklin Bridge	21.74
Germantown	113.92	I-95	21.63
CC Street Grid	112.21	Free Library of Phila	21.29
Upenn/Drexel	103.86	Queen Village	21.20
Sections	101.82	Streets in lower-north	21.18
Temple University	101.13	Spring Garden St.	20.85
Stores in CC	99.08	Brewery Town	20.69
Food and Drink in Lower-North	99.07	Lancaster Ave	20.07
Logan Square	96.93	Powelton Village	18.98
Food and Drink in South	95.97	Mt. Airy	18.97
Fishtown and Norten Liberties	94.06	Spruce Street Harbor Park	18.95
Washington Square	89.43	Fairmount Ave	17.54
BenFranklin Parkway	86.51	Zoo	17.07
30th Station	82.05	Avenue of the Arts	16.96
Old City and Society Hill	77.01	Academy of Music	16.92
PHL Airport	76.45	stores in lower-north	16.84
MFL subway	73.62	Big Box stores in South	16.24
Franklin Square	64.62	Food and Drink in Fish/NL	14.96
Penn's Landing	63.63	Graduate Hospital	14.94
Schuylkill River	60.21	Hospitals in West	14.27
South St	56.65	Hunting Park	12.87
Independence Mall	55.25	Olney	12.87
Stores in South	53.33	Manayunk	12.33
Jefferson Hospital	51.32	East Falls	10.63
Trolley Line	49.51	Navy Yard	10.20
Italian Market	47.88	Local Details in Wet	9.38
I-676	46.65	Wissahickon	9.36
Food and Drink in West	46.18	Ethnicities	9.26
Local details in CC	44.34	Grays Ferry	9.17
Franklin Institute	42.77	Eastern State Penitentiary	8.81
Passyunk area	42.46	Liberty Place	7.38
Delaware River	41.47	Chestnut Hill	7.23
Fox Chase	38.66	Whitman Bridge	7.09
Baltimore Ave	38.61	Reading Terminal Market	6.02
Kensington	37.95	Convention Center	5.54
Stadiums	37.49	Port Richman	5.34
Crime and safety	35.93	Malls in the suburb	5.24
Comcast Building	35.41	Love Park	4.27
Local details in lower-north	34.42	Fitler Square	3.14
Main Line	33.30	Local Details in Upper-North	2.35
Rodin Museum	32.97	Stores in West	1.28
Fairmount neighborhood	30.83	Mario Lanza Park	0.91
Route 1	29.20	Cloth Pin statue	0.69
New Jersey	29.13	Food and Drink in Upper-North	0.43
Streets in West	28.46	Cinemas	0.40
Washington Ave	28.40	Bucks County	0.22

centrality. Table 3.4) shows the result (only top results are shown). First, the nodes with high degree centrality but low betweenness centrality are these elements that were mentioned frequently but may also be mentioned along with similar elements on most maps. Second, nodes with high betweenness centrality are those map elements that co-occurred with map elements that, in turn, co-occurred with “niche” map elements. What is worth

Table 3.4: List of map elements with disproportionate betweenness centrality and degree centrality

High betweenness centrality- high degree centrality	High betweenness centrality- low degree centrality	High degree centrality- low betweenness centrality
City Hall	Food and Drink in Center City	PHL Airport
Market/Broad Axis	Phila outline	BenFranklin Bridge
Art Museum	BSL subway	Fishtown/Northern Liberties
Rittenhouse Square	Germantown	Stadiums
City sections	Food and Drink in Lower-North	UPenn/Drexel
Temple University	Jefferson Hospital	Schuylkill River
Center Street Grid	Chinatown	Delaware River
Fairmount Park	Food and Drink in West	

& Jacomy, 2009), nodes were projected onto a map of Philadelphia (Figure 3.10 and 3.11). Large, regional elements (such as city outline) were removed from the network.

It is found that Map elements near the downtown core are more densely connected. Peripheral nodes are rarely interconnected, but they are strongly connected to the downtown core nodes. This suggests that participants' collective representation of the city gravitates towards the downtown core.

As seen in the zoning map of Philadelphia (Figure 3.12), Philadelphia's Center City and its adjacent areas are the dominant center for commercial activities. This is consistent with participants' remarks on recreational activities in the interviews. They often mentioned the same areas for recreational activities, such as Center City, Rittenhouse Square, South Street, Northern Liberties, and Fishtown, with some variation corresponding to their demographic characteristics.

Overall, findings from the cognitive maps show that: (1) Life in the city gravitates towards the downtown core (cosmopolitan canopies); (2) There is a great amount of discrepancy in the awareness of places in peripheral areas; and (3) Food and public transit may be related to diverse exposure to different parts of the city.

With this understanding of "what" the participants were aware of in the city, in the following section, I will examine the material-discursive practices that shaped the participants' understanding of the city as a place.

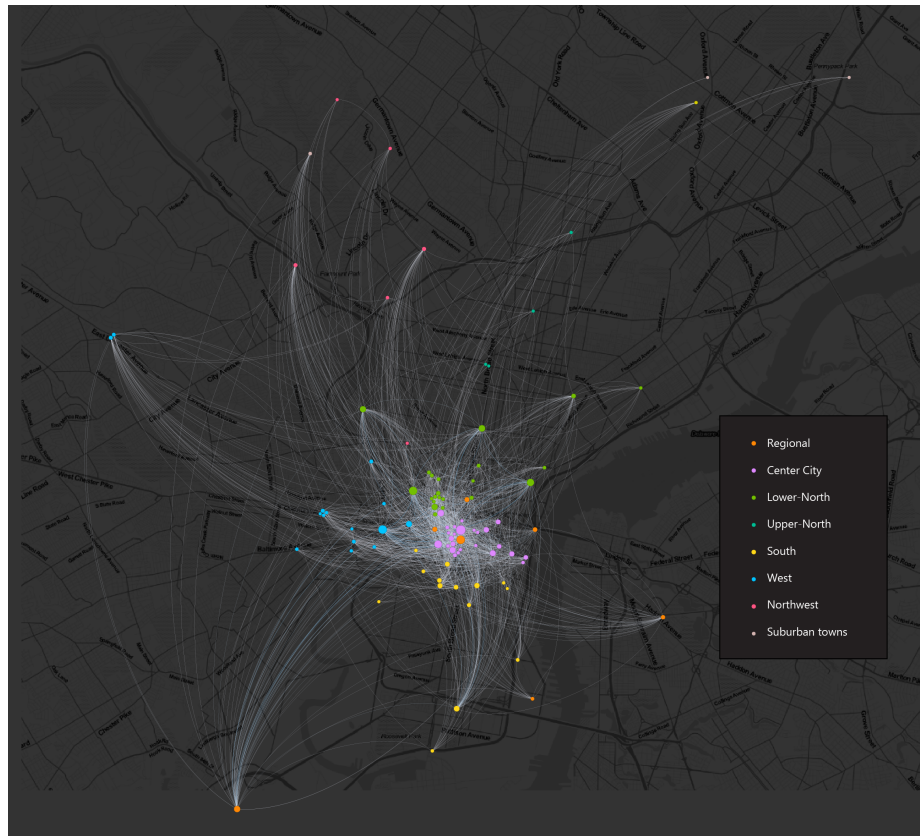


Figure 3.10: Visualization of the co-occurrence network of map elements over the map of Philadelphia. The sizes of nodes correspond to weighted degrees. The widths of links correspond to their weight.



Figure 3.11: A local view of Figure 3.10, zooming in on Center City (downtown core)

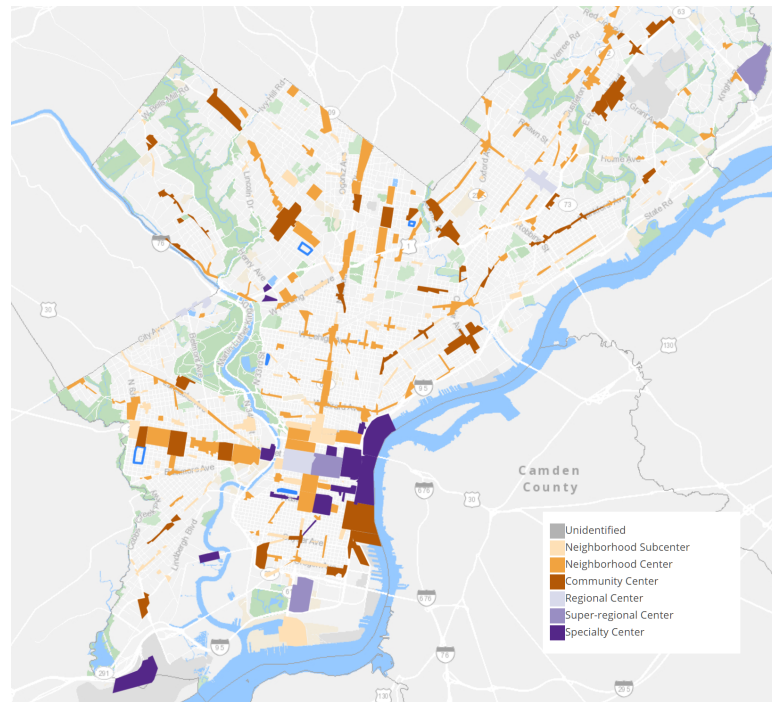


Figure 3.12: Zoning map of Philadelphia, reprint from phila.gov

3.2.2 Physically Being in Places

The most fundamental spatial, material practice is of course physically being in a place.

3.2.2.1 Living in the neighborhood

Perhaps the most important reason for being in a place is living in the area. Living in an area helps city residents to be fully immersed in the surroundings and familiarize themselves with the amenities in nearby areas. Even the least adventurous city residents were familiar with places near where he or she lives. Many city residents have lived in various neighborhoods in the city. In doing so, they have established familiarity with multiple areas in the city. Some of them developed an attachment to the places they have lived in the past. Such attachment may influence their preference in using urban spaces after they have moved out of the neighborhood.

[Janet, 62-yo African American female, born in Philadelphia]: Well, actually I'm still very, very connected here (Walnut Hill) in many, many ways. And then after I became an adult, my first apartment was only a few blocks from where I grew up. And so my son went to the same elementary school that I went to. And as a matter of fact, his science teacher was the same science teacher I had. And right around the corner from my apartment, was the same swim club that I swam in, as a kid. My kids learned how to swim. And we still keep that membership at that same swim club.

[Todd, 50-yo African American male, born in Philadelphia; when asked "Had I interviewed before you moved down to South Philly, would this map be different?", he said]: Very, very. It would be very different. (On the map) This would be gone. That would be gone. It wouldn't be "crowded down here". This "diverse population" wouldn't be here.

3.2.2.2 Going to Work and School

There is a separation of place of work and place of residence in contemporary social lives. Because of this separation of work and home, most city residents need to travel to different parts of the city for work. During the interviews, participants rarely spontaneously

discussed their workplace where they go for a nine-to-five job. More commonly, some participants brought up their experiences with temporary jobs, or “gigs”, which take them to different neighborhoods in the city. Janet (62-yo African American female, born in Philadelphia), for example, told me that she used to be the arts and entertainment editor for a local newspaper when she was about 24 years old (c. 1979). For her job, she reviewed movies, restaurants, and concerts, which took her to different venues throughout the city. Similarly, Lauren (59-yo white female, 30 years in Philadelphia), who is a veteran, held various temporary jobs throughout the years. The temp agency sent her all over the city for different jobs. Other participants had similar experience. Craig (42-yo African American male, born locally) worked as a home visitor working for a social work team. Aaron (24-yo white male, 6-year residency), who came to the city for college, worked at different bars in different neighborhoods. He also worked as a college advisor, which helped him familiarize him with all the colleges in the city. Other participants reported working at clinics in underprivileged neighborhoods, as an insurance adjuster, a music teacher, et cetera. These jobs took the participants to different neighborhoods that they would otherwise not visit. For example, Lauren mentioned that, from her temping experience:

They were sending me on temp jobs all over the city. So I had a lot more exposure to—I mean, there are some people that haven’t had exposure to certain neighborhoods at all, but I’ve had at least a little exposure to every neighborhood, just because they sent me to so many different places to work. So I would always have to get the exact address, and then it would stick in my mind what was there. The job might only last for a month or two or something, or a week, or whatever, but I would remember the location.

Sometimes, having to travel for a job even forced the city resident to visit parts of the city that they normally would avoid. For example, Lisa (38-yo white female, 14-year residency) mentioned that she once had to visit a clinic in Northeastern Philadelphia as a volunteer. In doing so, she had to travel through North Philadelphia, an area which she hated.

I know how to get to Northeast Philly from here, but I don’t really have any occasion to go there. I hate the road that you take to get there, Roosevelt

Boulevard. I avoid it if I can. North Philly is, I mean, one of the most plagued neighborhoods in Philly.

3.2.2.3 Visiting Local Network Ties

Another important reason for the participants to visit an area of the city was to visit friends or family members. Participants usually did not spontaneously mention friends and family who live close to them. Instead, they brought up friends and family who live in a different part of the city. There are two main ways in which friends and family affected city resident's footprint in the city.

First, when people meet their friends or relatives in a public setting, the occasion usually demands finding a suitable venue for the get-together. Many participants, young and old, told me that they and their friends would regularly get together and seek a place to go together (usually at a restaurant or bar). For newcomers to the city, meeting friends at public places often mean that their friends would become a local guide, taking them to different places, expanding the scope of their spatial knowledge of the city. Second, visiting a friend or family member at their home could help a city resident be exposed to an area in the city which he or she otherwise would not visit.

Second, visiting friends and family in a different part of the city may force the resident's to be exposed to neighborhoods that he or she normally would avoid or ignore. As mentioned above, some residents may not want to go to certain parts of the city, due to concerns of safety, poverty, or simply lack of recreational activity. As some participants explained:

[Angelo, 30-yo white male from Italy, 2-year residency]: . . . because of friends. You have the invitation to go to their house. Something that enlarge our boundaries, because you have to take the bike and go to a place you wouldn't go, because there's nothing but houses. Why should you go if you don't live there? So that's probably the thing that enlarge our scope more.

[Janet, 62-yo African American female, born in Philadelphia]: Because some of those unsafe places are places where you're—might as well be home. Say

for instance I went to Temple (University) and I have friends that live in North Philadelphia, why would I be afraid to go visit a friend?

Sometimes, gaining and maintaining a new romantic relationship led to the exposure to parts of the city a participant would not otherwise set foot in. Ral (19-yo South Asian male, 1-year residency) mentioned that he would frequently go to the University City area (in West Philadelphia), solely because his girlfriend lives there, and he did not know anyone else who lives on the west side of Philadelphia. Another participant, Aaron (24-yo white male, 6-year residency) mentioned that he visited Manayunk (a remote neighborhood on the outskirts of the city) frequently to see his girlfriend. And only because of this, he is very much aware of the presence of highway I-76. He said, “I will never put 76 (on the sketch map). It’d never be on there. I never took 76 before I was dating her.” A newcomer, Natalie (41, half-year residency), said that she went on a lot of dates using the dating app *Tinder*. Her dates often took her to different parts of the city that she had not been to. She explained:

They took me on dates to all these different places. They were like, “Oh, you’re new in town. Let me take you to my favorite blah, blah, blah.” Or, “There’s this thing that you would need to see. This is the most amazing thing I know about Philadelphia, so let me take you here.” And I would find these incredibly random or they would take me to these really random, special little pockets inside of Philadelphia.

I use *Tinder* so that I could learn more about the city and I don’t know where these people live or anything like that so I meet them wherever they are so I have to navigate through the city on my own to meet them wherever they’re at and then I see all these other places along the way and so it just fills up my knowledge of Philadelphia more that way.

3.2.2.4 Recreational Activities

One of the reasons the participants left their homes to visit other parts of the city was for recreational activities. As discussed above, recreational activities do not happen everywhere. Many areas in the city are often viewed as “residential” and do not appeal to city residents for occasional visits. As has been shown previously, unlike visiting a friend

or going to work, recreational resources concentrate in certain parts of the city, namely, neighborhoods that are in or adjacent to Center City.

There are different types of recreational activities that take place in major commercial zones in the city. These activities include recreational shopping, visiting parks, outdoor sports (especially jogging and cycling), cultural activities (such as seeing a movie, visiting museums or galleries, attending concerts, etc.) and nightlife. Some of the activities take place in specific areas of the city. For example, museums are concentrated in the northwest corner of downtown, concerts are usually held at the Navy Yard (the south tip of the city), or Fishtown / Northern Liberties, if it is not a mainstream music event. It is not within the scope of this research to list and describe in detail every possible activity city residents partake in outside of their homes, but participants often cited food and restaurants, among other activities to be one of the biggest reason for them to visit a different part of the city. (An extensive discussion of how this type of activities is related to the participants' spatial practices can be found in Chapter 4)

3.2.2.5 Walking or cycling in the city

Visiting a place in the city does not necessarily need to be purposeful. Urban studies scholars have always been interested in purposeless wandering and serendipitous encounters in the city (Foth, 2016; Hampton, Goulet, & Albanesius, 2015; Zuckerman, 2011). Of course, serendipitous encounters could occur as a result of either aimless wandering or purposeful traveling from point A to point B in the city.

Philadelphia is in fact a very walkable city, especially in areas near its downtown core. However, it is not just the participants who live in these areas that enjoy walking around in them. Exploratory or leisure wandering was mentioned by participants of various races or ethnicities, genders, age, and living in different neighborhoods. Participants mentioned different reasons for wandering in the city, including exploration of their neighborhoods or commercial hubs, house hunting, looking for a new restaurant or bar, or simply wandering for pleasure. Although truly purposeless *flânerie* type of wandering

is often romanticized in the urban studies literature, participants often mentioned a vague or non-predetermined purpose for wandering around, rather than no purpose at all. Although sometimes participants may seem to describe random wandering behavior, they often included phrases like “learn things from around my house” or “just to get myself to know the city better”. When Natalie (40-yo African American female), a newcomer in the city, described her “wandering” in the city, it was clear that she had a purpose in mind while doing so:

I do a lot of just wandering. So I'll pick a neighborhood that's known for something and I'll just kind of walk around until I see something interesting. And so a lot of people told me to come down to central Philadelphia and they said Gayborhood is down there. . . . So, I explored those neighborhoods a little more. And then I look for where the art galleries are because I love art. So, I just kind of find the little pockets that have what I like to do in it. And the shopping, of course, but I don't like mall shopping. I prefer boutique shopping. So I look for the areas for that. So I was told that center and south Philly had those kind of things.

Walking through the city space, therefore, offers opportunities for obtaining first-hand information of the city space. It is not only the newcomers who become familiar with the city by wandering around; because of the rapidly-changing city space, long-term residents also learn new things while walking in the street. As some older, long-term residents noted:

[Gary C., 51-yo African American male, 40-year residency]: Even though I know the city. Like, I know most of the streets by name. I know how to get to them. It's just the new stuff that's popping up. . . . I sometimes run into stuff that's new. Like today, I ran into something that opened that I didn't even know opened. And it was just a restaurant around here. Just walking around.

[Gina, 67-yo white female, 38-year residency]: You may go into an area. You think you knew everything. And you find out you don't. As you know, you travel through the city, all these alleyways and stuff. You may look down and say, “Oh that's nice”, maybe I'll take a walk down there. And you find out you walk into some alleyway, some place very interesting. You see these pocket parks in the neighborhoods, even. You would never even know that they're there. You just notice nice little things.

In the interviews, participants mentioned serendipitous discoveries of different types of places. Some are trivial, such as a quiet hidden neighborhood park or a shortcut. Some can be significant in a person's life, such as their favorite bakery or even their future home:

[Paul F., 31-yo African American male, born in Philadelphia]: It was one of those places, you'd miss it if you just walking. You don't even notice, you know what I mean? And I just so happened to be on this—I was working at a place one time. Doing contract work. . . . And I'm lost as hell. . . . So I had to get off (the bus) and I'm sitting there and I'm pissed off. Man, you got me sitting there. I'm hungry. And I just look over. And this small—and I just keep seeing people come in and out. It was called *The Sweet Life*. And I'm looking. And I'm like, "Well, shit. What is this?" So I get up. I'm like, "All right. I'll get up and go see what this is." And I go in there, and man, that's the best banana pudding I've had in my fucking life, dude. I love the place. I have the number, their card, I have it on my refrigerator.

[Paul H., 68-yo white male, 2-years residency]: When we found XXXX Street (where the participant lives), we literally were just walking down the block and there were these—it was Sunday afternoon—There were these two older guys sitting on a bench in front of one of the houses drinking beer. And they engaged us in conversation and it turned out one of them was a retired botanist from XXXX and the other one was a pediatric neurosurgeon. Both of them wound up having weird connections with my wife and we wound up just chatting with them and being really engaged. And they were really nice and they wanted to take us up the street and knock on the realtor's door and have him find us a house there.

3.2.2.6 Sensing the "Vibe" of a Place

Why is being in a place so important? When in a place physically, people could look around and observe the environment in all directions ("I like seeing people sitting there"); they could hear the sounds ("southwestern part of Philly is much quieter than some neighborhoods", "There'll be music in the summer and I can hear it when I'm walking home"); there are smells coming from food, flowers, garbage, and maybe even people, and each neighborhood might have its own unique smell (Henshaw, 2013). During the interviews, many participants used the word "vibe" to describe the type of first-hand, multi-sensory

information they could gather from being in a place. Such “vibe” is essential to the experience of physically being in a place.

Participants often described the “vibe” in a sense that it is the more superior means to gather information about a place (compared to other communicative resources). “You get a feel by going there in person to understand really what it’s like.” (Ben A. 24-yo white male, half year in Philadelphia). The so-called “vibe” is viewed as something that cannot be replicated and/or transmitted through media. Mark (59-yo white male, 10 months in Philadelphia) said in the interview, “There’s something also that technology can’t give you. And that’s a vibe. As much of a vibe as my intuition, that’s internal to me.”

Knowing that this “vibe” is crucial for understanding the city space and places, I looked at how the participants were exposed to different places of the city in order for them to sense such vibe.

3.2.2.7 Absence in Parts of the City

Before discussing where city residents go in the city and the reasons for visiting them, I will first explore the reasons for them to not visit certain places in the city. By doing this, I will demonstrate the point that city residents do not just randomly wander around in different parts of the city. There are parts of the city where they would not go, for various reasons.

In this research, most participants were recruited from neighborhoods that are not on the outskirts of the city. When asked which part of the city they are not familiar with, the answers were usually north or northeast Philadelphia. This is consistent with the maps that the participants generated. As Sam (70-yo white male, born in Philadelphia) said:

Parts of Northeast Philadelphia, I’m not that familiar with. ‘Cause that’s a huge area. That could be a whole city on itself. That’s this section here (points at his map). Starts around down here, goes all the way up to Bucks County, Montgomery County on the side.

Of course, distance is not the only reason why people do not visit other parts of the

city. Sam goes on and explained, “Well, Philadelphia as a city, as all big cities are... It’s not like people say ‘This is New York City’, or ‘This is Chicago’. When you go through it, they are really villages and sub-cities”. The idea that Philadelphia is a “city of neighborhoods” was brought up again and again in the interviews, with eleven participants explicitly mentioning the phrase itself. Paul H. (68-yo white male, 2 years in Philadelphia) recalls his experience in finding a place to live in the city:

I met with real estate people to try to figure out where I wanted to live, and realized really quickly that Philadelphia is a city of neighborhoods. And people tend to love the neighborhood that they live in, but two blocks away it’s a completely different neighborhood, or maybe five blocks.

The city has such a large number of neighborhoods⁵, most residents could not keep up with it. As a participant pointed out:

When I picture Philadelphia, I always think of Philly as a city of neighborhoods. I don’t even know how many there are. It seems like I find out about a new one every week. And so that’s how I picture it because it’s a very diverse city. And so when I think of Philadelphia, I think of the sections. Because every one of them is very different. (Kevin, 52-yo white male, 10-year residency)

It was a consensus among many participants that the city is bigger than some might imagine. Most participants, even those who have lived in the city for a very long time and have moved around in different neighborhoods, had only been to selected areas in the city. However, the sheer size of the city is perhaps not the most important reason why the participants did not visit most parts of the city. Again and again, the participants mentioned one key factor that determined the lack of their footprint in most parts of the city—“There is no reason to.” Participants mentioned that:

[Lauren, 59-yo white female, 30 years in Philadelphia]: I’ve been to enough of the other parts of the city. I’m not saying I dislike all of them. Some I like,

⁵Officially, the city recognizes nearly 200 neighborhoods ([City of Philadelphia Department of Records, 1998](#)). This number is much greater than that of larger cities such as Chicago or New York.

some I don't even care for, but the thing is, for myself, there is no specific reason for me to return there if I wasn't going there to work. There wasn't anything in particular for me to return to that neighborhood.

[Gary C. 51-yo African American male, 40 yrs in Philadelphia]: But then I wouldn't have no other reason to go in the Northeast, other than going to Franklin Mills, Philadelphia Mills. I don't really have no other—it's not something up there that I would want to experience because there's really no corner stores. So it's not like there are supermarkets and all of that kind of stuff. But it's just I don't really have no need to be going to spend time up there in the Northeast other than at Philadelphia Mills. Even the Southwest Philadelphia, I don't have no desire to be down here either. And that's not even—that's a mixed area. All these other areas are all the areas that I need to be in, that I'm always in.

[Habib, 30-yo South Asian male, 1 year in Philadelphia]: So I did not walk on that part of the street for a very specific reason—because it was not in my way. Let's say I use this road to go—because my work is at that place, my home is at that place. I wouldn't be interested on the other side unless it's something that fills the need.

Participants of different ages, races, and education backgrounds explained that the reason why they were not familiar with certain areas of the city was that they had no reason to go there. The city might be a diverse and vibrant place, but the diverse activities do not happen everywhere. Some areas may have higher concentration of activities than others (the cosmopolitan canopies). Even residents who live or had lived in certain peripheral neighborhoods acknowledged that there was not much to do where they live(d). For example, Lily N. (23-yo Asian female, born in Philadelphia), a graduate student who once lived in Northeast Philadelphia for many years literally wrote “not much to do” in the northeast region on her sketch map (See Figure 3.13).

Additionally, the word “residential” was frequently used by many participants during the interviews to refer to areas of no particular value for visits. When participants used this word, it was often to illustrate the lack of activities in the area:

[Ben, 24-yo white male, half-year in Philadelphia]: This area (Southwest Philadelphia) is, I just know is more residential and never really had anything to do down here specifically. .

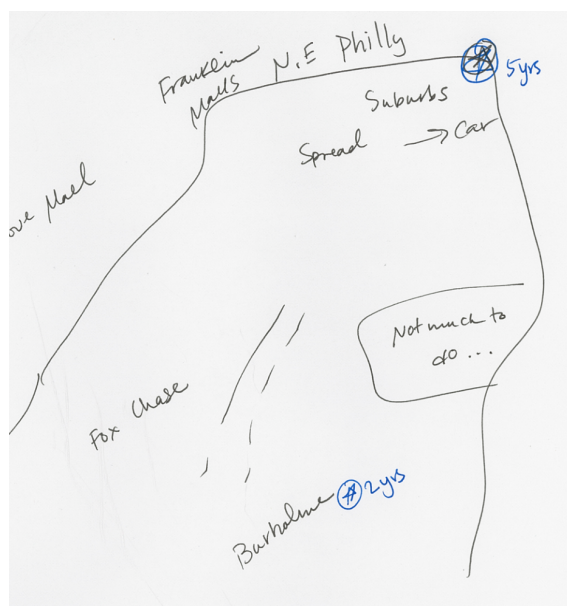


Figure 3.13: A section of Lily N.'s sketch map, where she wrote "not much to do" in the area where she had lived for many years.

Chad (27-yo White male, 1-year in Philadelphia): The south part of the city to me... I'd very rarely walk a few blocks than south of South (Street) because it becomes very residential and there's not much to do if you're just a pedestrian going anywhere.

Gary C. (51-yo African American male, 40 years in Philadelphia): But (North-east Philadelphia) it's not like an area I just go and want to wander around. It's a residential section.

Not only participants said that they ignored certain parts of the city due to not having a reason to visit there, but also they intentionally avoided certain areas if they perceive it to be dangerous. City residents could perceive an area to be unsafe for several reasons, such as perceived high crime rate, perceived poverty, perceived drug activities, or for some, hostility towards minority.

[Janet, 62-yo African American female, born in Philadelphia]: Now I can also say because of the Northeast having the perception of being a place that was very unwelcome to black people—I still hold that perception even now—I hate going to the Northeast. I absolutely hate it. When my son was growing up he played soccer and was on the traveling team, and every time he had to play in the northeast, I'd make up an excuse that I had to work late, and get him to

ride with another parent so I wouldn't have to drive to the northeast. I hate Roosevelt Boulevard and I have everything about Northeast Philadelphia. I grew up with Northeast Philadelphia having a reputation for hating black people.

Adam W.(24-yo white male, 2-year residency): And then places I don't know and why I can't think of those—a lot of those places—sometimes safety is an issue in Philadelphia as far as neighborhoods and whatnot, I know Strawberry Mansion and things—up to Northern Philadelphia, there's areas that I couldn't tell you about because I don't go there, because they're not the safest parts, and same even in South Philly, there's some places.

Lisa (34-yo white female, 10-year residency): I called it (Kensington) “*No Man's Land*” because I just don't go there, there's no reason to go there. I'm not a drug addict, I don't need to buy drugs.

City residents' presence in the city is selective and constrained by many factors. Most residents are not attracted to many if not most neighborhoods in the city. This selective exposure to places in the city means much of the information about those parts of the city would need be obtained through other communicative resources.

3.2.3 Mediated Image of the City

Although the embodied experience of physically being in a place is considered to be both authentic and rich, city residents are not able to experience all parts of the city to sense the “vibe” of the places throughout the city. This means that they often rely on various communicative resources to obtain mediated or augmented information about places that they would or would not visit in the future. During the interviews, participants mentioned a plethora of communicative resources they rely on to make sense of the city space and places. I categorized these communicative resources into four types: social ties, traditional media, personalized online information, and geo/locative media.

3.2.3.1 Local Social Ties

A very important source of information for city residents is their local social ties. This is especially helpful according to many newcomers in the city. For example, when asked how he got to know about different parts of the city throughout the years, Charlie (52-yo African American male, 5 yrs in Philadelphia) said

It's been through talking to people, getting a better idea, people who I work with giving me information, input. When I first got here, I didn't know what area, where to move into. But over the course of time, in talking to people I work with, just coming to people I encountered, they told me about certain areas which are deemed okay, some areas are deemed not so okay.

Another participant, Chris (23-yo African American male, 1 year in Philadelphia) explained why he is familiar with the map elements that he drew on his map:

I am familiar with the areas that I have marked up, because I was familiar with them based off people that took me there prior. . . .spots like Independence Hall, Benjamin Franklin Bridge, I have been there just from asking people cool places to check out in Philadelphia, as well as this area. People recommend, "Oh, they got good food in this area around 15th." "Samson", "Walnut". So that made me check out these areas. The Ben Franklin Bridge, people had took me to walk over the bridge for different reasons, so that made me check this area out.

For newcomers, assistance from local ties could jump start their life in the city. Annie (32-yo African American female, 10 years in Philadelphia) recalled how her roommate helped her navigate the city when she first started living in Philadelphia:

And I didn't know where Rittenhouse Square Park was. Actually, I didn't know what was what. So I looked at the bulletin board and got the information off of it. So I said, "I don't know how to get there." She said, "It's right there." I looked at her like she was crazy. "Do you know I just came here?" She said, "No, let me take you. Let me take you." . . . I really didn't know anything when I first came here.

Even for well-educated young city residents who start living in the city during a time when digital information about city places is abundant, information from local ties can

still be crucial. Chad (27-yo white male, 1 year in Philadelphia), a medical student who moved to the city very recently said:

I think the biggest benefit of having a friend who knows the city is they can give you general ideas of what to do outside of the place that I would normally go to. Because left to my own devices, I might just have seen these areas, but having friends in the city kind of will take me out to places like Fishtown, or North Philadelphia, or out to the parks, or to go to the zoo, or something beyond.

It should be noted that local ties who provide information are not always long-term residents who act as local “guides” for newcomers. Especially, in areas where newcomers concentrate and changes in the neighborhood occur frequently, the collective, reciprocal information exchange among newcomers themselves might be more important. As Chad explained:

To be honest, I think it’s probably more the newcomers, because they’ve taken time to explore the area where I am. And, as you can see on the map, that’s probably more helpful to me as navigating the immediate area where we live. And they’ve done more exploring of different cheap places to eat and things like that. Whereas people who’ve been here for a while, they’re already pretty set in their ways, and they’ll live further away in different parts of the city away from [my neighborhood]. And so their recommendations are more for the days where I am off and at the park instead of, where’s a good place to eat near me, or where can I go to get my laundry done.

This type of networked information, according to the participants, may supplement the “vibe” the city residents get from going to a place. It may create an augmented sense of place without being there. For example, when Stephanie (26-yo Asian female, 4 years in Philadelphia) talked about South Philadelphia, she said:

That’s just what I associate with—you know, I don’t really go to South Philly a lot, but I know most people, when they go there, they’re always talking about how it’s like really known for its food, you know? And that’s... I feel like, even if I’m not going there for food, that’s always how I think about it.

3.2.3.2 Traditional Media

By “traditional media”, I refer to the institutional, (often) commercial media that curate and broadcast information to the public. This of course includes traditional mass media institutions such as newspapers, broadcast radio programs, and television channels. It also includes professionally-operated websites and blogs, especially by large organizations. Perhaps more importantly, city residents consume information from this type of media “as is”, without much freedom of personalization or tailoring.

In the interviews, participants did not talk much about local news media, as it is not always related to their understanding of places in the city. However, they did mention several commercial or noncommercial local information curators, online and print. For example, many participants mentioned that they often check websites such as Philly.com⁶ or *Uwishunu.com*⁷ for things to do in the city:

Maggie (76-yo white female, 1 year in Philadelphia): I use *Uwishunu* a lot. I look at that to see what’s going in the city and read up about it. I may not get to most of what I see, but it really helps you to figure out what’s happening where and what’s going on and what might be fun to do. And so that’s handy.

Adam A. (33-yo white male, 20 years in Philadelphia): There’s a blog I like to use, it’s called *Uwishunu*. I heard about from somebody a year ago or so. And it just has—so it’ll say like, “Oh. Fun things in Philadelphia this week” or “10 restaurants to check out” or new bars that just opened. So, I’ll always look at that. They have a little map on their web page of where things are and they’ll have a little description of what event or place or food option it is. So I might go to the website directly from there and look at that and read about the restaurant bar event if I need to get in, and once I set that up and interested in it, have that plan set.

Natalie (41-yo African American female, 3 months in Philadelphia): When I’m looking for things to do, I look on Philly.com, and then *Uwishunu* is usually the second or third listing after that. And yeah, so I go back and forth to those.

⁶Philly.com is the website of the prominent local newspaper, *Philadelphia Inquirer*

⁷*Uwishunu* is a blog professionally-operated by *Visit Philadelphia*, the city’s official tourism marketing agency.

Those are actually the ones that I kind of check background information on different restaurants or neighborhoods or anything like that. So I'll hear about it from somebody and then I'll type it into philly.com and then they'll have their idea of whatever it is that I'm looking at. And then I'll also look at *Uwishunu* because that seems to be a little more, I don't know, it's made for a younger demographic than the philly.com. So they'll say something different and they'll have more funky events I think than philly.com.

Lily N. (23-yo Asian female, 23 years in Philadelphia): So what *Uwishunu* does is it will post really cool events in the city throughout the week, and also have a digest for the weekend. So you can go on maybe once every Thursday or Friday and they'll have one post saying what to do in Philly this weekend. And it'll post in all different parts of the city, festivals or events.

3.2.3.3 Personalized Digital Media

This category is called “personalized digital media,” to be differentiated from passive consumption of curated information from online sources. Such use refers to obtaining information about local places and activities through either active use of technologically-interactive services or platforms such as search engines or interactive digital maps or passive consumption of algorithm-optimized information.

First, participants reported using the Internet to research a place or places in relation to an activity. For newcomers, this often means researching the conditions of and amenities in neighborhoods, while looking for a new place to live. Often, newcomers can learn a lot about the neighborhoods in the city in a short time while searching for a place to live. For example, Habib (30-yo South Asian male, 1 year in Philadelphia) had this to say about the information he got online while looking for a new apartment:

Online, looking up stuff, as well as—even if you're just browsing, you're soaking up information. So, if you just look at Craigslist, you'll find places of people who, either they have a nicer home, it would be like ten people living in it on campus, but they would be charging anywhere from \$800 to \$1,000, because it has nicer furniture and stuff like that. As well as, if you go to [inaudible], you have the same stuff. But if you gravitate towards the outside of the city, it would be less expensive, a nicer place, and maybe just even a single occupant, as compared to the campuses. So, based on that information from

Craigslist, I got an idea of where the different prices in the city are, and what I have to explore from.

Information can be obtained and triangulated using multiple online sources:

Lisa (34-yo white female, 10 years in Philadelphia): Maybe you find information about a place to live on something like Craigslist, and then cross-reference it in different websites to see what that neighborhood is like and if that's the neighborhood where you want to live. Actually, when I was looking for a house, I had a bunch of different apps for—like Trulia, Realtor.com, and things like that. And they have different ratings of neighborhoods, and different information about the average income of people who live there, and property taxes there, and the ratings of the schools there, and stuff like that. The crime rate, etc.

More importantly, some participants reported that one benefit of information obtained from online sources is the possibility for personalization, especially for those with special needs, such as dietary restriction or niche hobbies. And as certain city places are often tied to certain types of social networks, such use of digital resources can enhance local social ties with niche interests. For example:

[Habib, 30-yo South Asian male, 1 year in Philadelphia]: And I put in there (Craigslist), location, that it should be close to the public transport. It should be close to a gym. . . . as well as Halal food. For me, that is something that a landlord wouldn't know, that I would be able to look up (online) myself.

[Lois B., 58-yo white female, 30 years in Philadelphia]: Well, my diet's restricted. . . . I did find, using my laptop and doing a search for vegetarian restaurants in Philadelphia, I found a lot of lists and then I looked at the Yelp reviews for those. And I found this one. It's like *Su Xing* or something. I forget. It's a vegetarian Chinese. And we went there. And I loved it and the kids loved it.

[Todd, 50-yo African American male, born in Philadelphia]: I had an app that—for dietary concerns. You can hit it and it'll tell you all the stores where you can get your food that—It's called *Tasteful*. . . . I just started eating a lot healthier in the last two years. . . . And actually using the technology to find some places to eat. It does help you figure out where you're going to go to eat, and where you want to live at, and where you want to spend most of your time at. (See Figure 3.14)

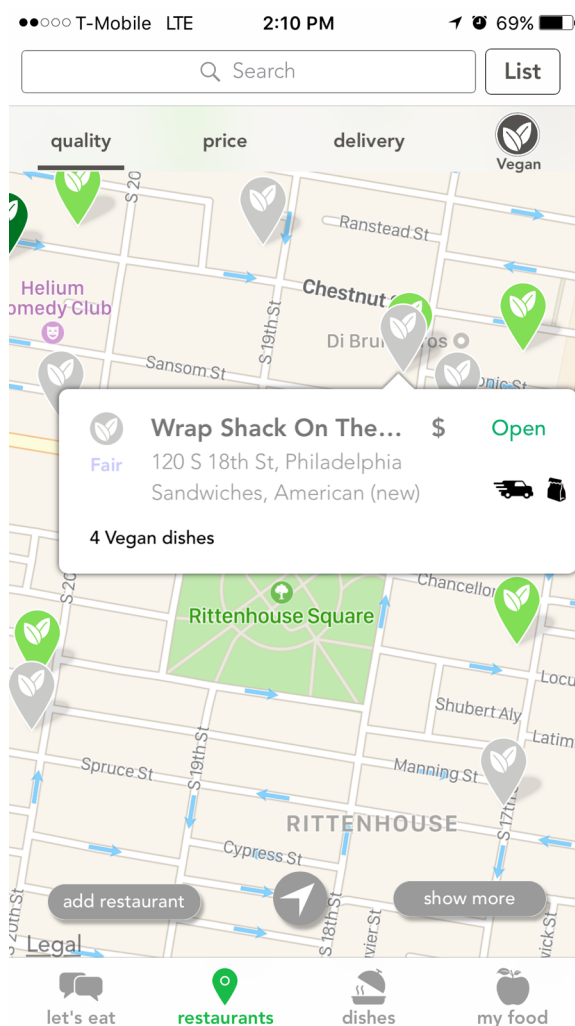


Figure 3.14: Screenshot from Todd's phone demonstrating the app Tasteful

[Maggie, 67-yo white female, 1 year in Philadelphia]: Since my focus is more now towards theater than advertising—I had to go out and find them. So, I found them—largely and in a lot of cases, I started online. Like I said, I did a search. And I went, “Playwriting Philadelphia”, and found the Philadelphia Drama Center and went to some of their meetings and joined!

Secondly, as previously established, exposure to city places is tied to social activities taking place there. Some participants, mostly younger ones, mentioned that social media, especially Facebook has become crucial for getting timely information about organized activities in the city. For example, Stephanie (26-yo Asian female, 4-year residency) commented that:

More often, I'll Facebook to figure out about events, because there're just so many events that are being circulated through Facebook right now, or on Instagram. That's primarily how I know about what to do in this city. . . . So much of that information is just constantly going through Facebook already, that I don't even need to look for it. In some ways it's almost like a passive process, because Facebook at this point has become pretty much like an event interface, more than anything else.

Another participant, Lindsey (46-yo African American female, 22 years in Philadelphia) mentioned that the Facebook events were "the best source" for getting to know the city, because it is highly personalized (through algorithm):

Because it's tailored to you, and things that you've said you're interested or you checked-in at before. And also to your location, and also to—it gives you alerts based upon who your friends are. So that actually works, because I find myself interested in things my friends are interested in, and it will show me those events. So it's a—I mean—your friend so and so is interested in this event.

A type of online social media platform that was not mentioned by many participants but worth noticing was the parenting blogs and listservs⁸. Participants who mentioned this were typically young, well-educated mothers who live in wealthy or gentrified neighborhoods. One mother, Yvonne (44-yo white female, 20 years in Philadelphia) mentioned this about their neighborhood listserv:

So there's a lot of trading and recycling of kid gear—and clothing, so there's a lot of—and even other household goods. . . . There's a lot of sharing about other activities in the city. So it could be that there's a special thing happening at the Art Museum for families. Or there's signup for tee-ball for kids thing, so there's a sharing of information of different kinds of resources available and notices of things happening.

However, another mother, Amy M. (40-yo white female, 2 years in Philadelphia) who used to live in New York, was not very happy with the availability of supportive resources in Philadelphia. She noted that:

⁸Of course, they were not frequently mentioned by participants, because most participants did not have the need to use these services at the time

One thing that has not been helpful here that I did have in Brooklyn—in Brooklyn—the mommy blogs, like the *MommysListers* were really powerful. . . . I have only heard of one—and I looked hard—listserv for families in Center City, and that’s where they all get information about what events are coming up, what to check out. I think it’s called *KenzieMom*, but I tried three times to get on it and I never did. So, I’ve had no support through the blogs here.

3.2.3.4 Geo/Locative Media

Lastly, geo/locative media and apps were frequently mentioned. Although the participants were aware of many different services and applications, again and again, Google Maps and Yelp received the most mentions in the interviews. Three themes related to geo/locative media emerged from the interviews: enhancing the imageability of urban space, exploring urban places, and independence.

Firstly, during the map sketching sessions, some participants were able to create a map with a fairly accurate depiction of the city topology. When asked why they were aware of this, participants mentioned that they were previously exposed to some type of map (not always digital maps). For example, Angelo (30-yo white male from Italy, 2 years in Philadelphia), a historian, told me that he was able to produce an accurate map of the city because his research required him to look at a lot of maps. Chad (27-yo white male, 1 year in Philadelphia) mentioned that he once saw a tourist map where the five squares that define the Center City topology were salient. Jessica (38-yo white female, 14 years in Philadelphia) mentioned that she saw a neighborhood map of Philadelphia when house-hunting, which gave her a rough idea of what the city looks like (Jessica’s map can be seen in Figure 3.1). However, most participants who were able to produce a geographically-accurate map told me that it was through the frequent use of digital maps they acquire the spatial knowledge regarding the topology of the city. Participants told me that:

[Ben A, 24-yo white male, half-year in Philadelphia]: Oh no, without Google Maps, I wouldn’t know what’s Philadelphia city limits or anything like that. I really wouldn’t know where the highways go, either. . . . It’s just that when

I zoom into this far on Google Maps, for example—When I type in “Philadelphia”, it draws the red line around the city and I figured out that is the county, the corporate part of the city of Philadelphia. So that’s generally what I got out of that, and I think it’s good that I know where it’s concentrated and not get things mixed up.

[Adam W., 24-yo white male, 2 years in Philadelphia; when asked why his map tilted towards northeast]: First off I decided to—whenever I look at Google, it’s always north and south is a little bit off in Philly I’ve always remembered so it’s kind of why I twisted the paper a little bit and drew it like that. When I look at Google a lot of times, the city is kind of tilted a little bit.

[Sharon, 70-yo white female, 7 years in Philadelphia]: Now it’s all about looking at Google Maps. I mean, if I want to know about a place, even just curiosity—like, “Oh, is that northeast or just dead east of there?” You go into Google Maps and you can put in Shanghai and New York City and see which one is—where are they in relation to each other? So, yeah, I mean, I think a lot of my views of the world come from interacting with Google Maps.

Secondly, locative media were often used by the participants to explore either the unknown parts of the city or places near where they live. This is often a personalized, on-demand process. Some participants said they did use Google Maps to purposelessly browse the city space—

[Kevin, 52-yo white male, 10 years in Philadelphia]: If there is something adventurous that is on the map, you can click on it and it’ll bring up information about that place, look at photos. I’ll use the Street View, see what’s around. If I’m looking for bike parking or car parking I’ll look and just see. I’ve used it to buy homes or find a new place to live. So I use it for that sort of thing and Street View is great and I love that thing, especially when house buying.

—more so, participants told me that using locative media to explore a place was often a situational practice. This means that they do not often use locative media to explore the city when there is no immediate need to do so. Rather, such exploration often take place when the occasion or situation calls for it. One such situation is visiting another neighborhood and wishing to know more about their surroundings—

[Adam A., 33-yo white male, 20 years in Philadelphia]: There are plenty of times I can recall, when I would look at a mapping app, particularly when I was either tutoring, or teaching, or going to various places for that—When I would go to these different neighborhoods, I would definitely be curious about what else is there. So I would look kind of peripherally around and say, “Well, I’ve never been to this neighborhood. What else is there in that area?”

—or when a specific need arises:

[Leah, 19-yo white female, 1 year in Philadelphia]: I think those searches are probably more need-based, in the moment because it’s like I don’t know where I’m going. So I will look at their (restaurants’) menu again. Usually, that’s offered on their website or Google has it right there, their hours, and the cost of the food. And sometimes they are rated with stars or something. So, I mean, I would prefer the higher ratings.

[Brian, 39-yo white male, 7 years in Philadelphia]: My wife and I have used digital technologies to find restaurants. We’ll use OpenTable sometimes to see there’s a place—like we had a date night last month where we weren’t sure where we wanted to go and we found a place through there. We found out how to get there. We made a reservation. We looked at the menu before. So we used website to do all of that.

An extensive discussion on findings about situated use of locative media can be found in Chapter 5.

Lastly, locative media may give city residents a sense of security or confidence, allowing them to venture in the city independently. This is mostly because of the use of mobile mapping apps. There is a sense among the participants that the locative use of their mobile devices became an extension of their mind and body. Some participants described their reliance on mobile devices with analogies such as “a crutch” or “safety blanket”.

[Leah, 19-yo white female, 1 year in Philadelphia]: In my first few weeks at Penn, I always had my phone open to Google Maps. And sometimes I would even turn it on so that it would be telling me the verbal directions. Because I’ve never really been in an area—because I’ve always lived in the suburbs or very small towns where I either knew it really well when I was walking on my own or I never needed maps. So I think that was really vital.

[Lily, 23-yo Asian female, born in Philadelphia]: I would say I, personally, might not have ventured out into certain parts of the city if it weren't for friends or online resources. I get lost a lot. So if I didn't have technology, I wouldn't just be, like, "Let's go to South Philly and hope that I make it back before the sun goes down." That just wouldn't work for me, so. I feel like it's a security blanket. I rely on it as a crutch. When I was studying abroad in the UK, I went to cities that were outside of the UK. But my phone plan was only for the UK, so I didn't have data in other countries. And I had to plan out, beforehand, and print out MapQuest stuff. And that was pretty terrifying.

As Lily has suggested, venturing into unfamiliar territories in the city without using mobile locative media can be disorienting experience. Relying on locative apps in these situations has become a habit of smartphone users. One participant, Brian (39-yo white male, 7 years in Philadelphia) told me a story of how he refrain from using a smartphone in everyday life, only to find that he could not live without it:

So my wife broke her phone, and she bought a new one. It was going to take a couple days to get there, right? And so since I have ADHD (attention-deficit/hyperactivity disorder), sometimes I try not to use my phone as much because it's distracting. So, I have a burner phone that I use. I gave her my phone to use for those couple days. And I mean... it's fine, I can text with it, but then I didn't know when the subway was coming. I didn't know when to leave the house for something. And it was like, "Oh man. Why did I do this? Why did I give her my phone, because this is horrible?" . . . (Using a smartphone,) I know that I will be able to get around anywhere. If I have to call a Lyft or an Uber to get somewhere—I know that I can do it in a second, and they'll be there. And I can trust it. I'll know probably the best way to get somewhere on a bus or on a transit. I'll also be able to know where I can get some cash if I go to a different place, and a drugstore, or whatever. I mean, I know that I'll know how to find it. Especially in a new city, those kinds of things can be very, not only very convenient but can make or break your time if you can find a place that you need to go to.

Stemming from the remarks above, I also found that this sense of security seems to be a result of externalized spatial knowledge; a city resident does not need to internalize the complex structure and details about the city and the places in it, as some participant mentioned:

[Aaron, 24-yo white male, 6 years in Philadelphia]: I mean, I can get from one of these landmarks to the next. But specific locations, if I'm going to a friends

house, I can't get there without my phone. . . . If they are at 1026 Ohio Avenue, I don't even know if there's an Ohio. I just wouldn't know where that is without my phone. . . . I mean, I still sometimes forget there's an Apple store on Walnut or Chestnut, right? I mean, I can remember big things, but sometimes I forget what the specific stores are. And if I'm in a rush and looking for a specific store, I need my phone to figure it out. And it's sad, but I definitely need my phone to get around Philadelphia. And I don't think I could do it without it.

[Rick, 40-yo African American male, born in Philadelphia]: Nowadays you have your phone on you and you got to be walking somewhere and doing the same thing you have to do with a newspaper (in the past). Just for instance, before, you would look at a newspaper and have to remember all that information as you go to somewhere, whether it be the movie theater, whether you go to a restaurant. Now you can have that thing in your hand and it's more convenient.

Additionally, in a large city where the landscape changes frequently, internalized knowledge of places in the city might not be realistic for many people. As Yvonne (44-yo white female, 20 years in Philadelphia) explained:

Online maps do help me to understand—what's in a neighborhood, or what sort of businesses are in the neighborhood—Well, things have changed in the last 20 years, in terms of you used to go somewhere and you'd get an address, and you'd go there and you wouldn't know necessarily what was around. But now you can open a map and it will tell you all the things that are—if you look at a map, it'll say, "There's a nail place here. And there's a restaurant here." And you can see all the different things in the neighborhood. Whereas, you used to have to get lost to discover. Things have changed, I think, how people interact with this city. And now you can know what to expect a little more, maybe, from the map.

3.2.4 Mixing the “Vibe” with the Mediated Sense of Place

So far, it has been discussed in the preceding sections that the spatial and informational practices of city residents are done through various modes and channels. People make sense of the urban space by physically being in places, discussing with network ties, receiving information from mass media, or using locative media. It was also discussed that

the participants perceive embodied spatial practices to be the most authentic and reliable. These findings beg the question: If city residents believe that the “vibe” they sense from being in a place carries the richest information, and therefore yields the most faithful interpretation of the state of a place, what is the role of mediated information on their perception and understanding of places in the city? Is such information always secondary to the first-hand, embodied exposure to places? The answer is “it depends”. Participants reported various ways in which embodied experience, network influence, and various types of online information supplement or verify one another (though not necessarily through triangulation). Further, I found that the confidence the participants placed in different communicative resources varies, depending on the nature of the situation.

Firstly, although information from network ties was valued, the information often needed to be verified. Online sources were often used when the information was regarding activities of low stake to the participants, such as places related to leisure activities or news that took place in another part of the city:

[Paul H., 68-yo white male, 2 years in Philadelphia]: Somebody mentioned a pizza place. “This is the best thin-crust pizza you’ll ever have.” I just tucked it away in the back of my head. Then a couple weeks ago, [My wife] and I said, “We haven’t figured out a good pizza place.” I said, “Oh, somebody told me about this place.” It starts off as a word-of-mouth. I couldn’t remember the name, so I had to research all pizza places in Philadelphia, but I remembered that it was in Port Richmond, so eventually I figured out what place it was. It was rooted in social networking, but in order for me to figure it out, I had to research it online.

[Jessica, 38-yo white female, 14 years in Philadelphia]: If I hear about a place (from friends) I’ll make a mental note of it, and then later I’ll go, “Oh, what was that place that so and so told me about?” And I’ll look it up and get more information and I often like to you know, look a place up and see pictures of it and things like that. Also, if you hear about something happening in a specific neighborhood, I will often, like you said, cross-check or fact-check, I think. And if someone says, “Oh, I heard about this terrible thing that happened.” Or, “I heard about this really great thing.” I’ll Google it. I’ll look it up and see what really happened.

[Paul F., 31-yo African American male, 30 years in Philadelphia]: So he (a friend) told me the place—and I forget the name of the place. He sent me the name. I looked it up, and just the look of it was seedy. . . . It's like a Yakuza hangout in the back or some shit like that? You know what I mean? Like, the Asian mob is back there? That's how it looks to me. You know, old guy smoking a cigarette out front, and this long-ass cigarette. You know, he's like, "Man, go there" And I'm like, "No."

[Chad, 27-yo white male, 1 year in Philadelphia]: What I will do is if someone recommends a place to me, I will look it up online to get a better sense—get more complete information rather than just, "This is a good place to eat, and I like to get this dish." So very frequently, if someone tells me to go somewhere, I will look that place up online to get a more comprehensive view.

Why is that? Participants told me that it was because they did not want to waste their time and energy being adventurous. For example, it was mentioned previously that many city residents valued quality experience with regard to restaurants, so they did not want to take a risk when going to new restaurants. Also, many young, professional city residents expressed that they are busy. "downtime is not something that I have much of" (Amy, 40-yo white female, 2 years in Philadelphia). One participant, Adam A. (33-yo white male, 20 years in Philadelphia) is a investment banker living in Center City. He had this to say about how the use of digital media helps with his busy schedule:

(Without digital media) I would see a decrease in my quality of living just because my lifestyle is—I'm busy enough, and I've always been busy and pre-occupied with my work, etc., such that I don't plan my social life months in advance. And I just enjoy the freedom to do things. . . . with my time, I don't like to take complete gambles unless I'm a tourist in another city. When I'm in the city here, I like to kind of—I would almost say, it gives me an additional sense of safety.

Ral (19-yo South Asian male, 1 year in Philadelphia), a student at Temple University (located in North Philadelphia), said:

I think I'm very cognizant of my time use. So even if I got to Center City, I don't think it's an efficient use of time just walk down Walnut or Chestnut all the way till I find a restaurant. So I use the phone—even though I know

the area, I would use the phone to pick out which restaurant is good from the rest. Because there's plenty... plethora of restaurants here, but the phone is mainly just to filter out everything.

It is not just young, highly-educated white participants who are looking for quick and convenient ways to filter out information about places in the city; other participants expressed similar opinions, as well. For example, Charlie (52-yo African American male, 5 years in Philadelphia) believed that extensive research using Google, albeit being convenient, still consumed too much of his time and energy:

I don't like using Google. I mean I like using Google and I know it's a popular search engine, but at the same time, if I'm looking for something really quick, I want something just to come up right away. I don't want to have to click at every little—you know the top five things—I don't want to do that. I want to search it by like—if I'm living in Philadelphia I'm going to search by restaurants, top major restaurants, not using Google. It should be some sort of automatic search forum, like alright, these are the top five, not using Google. You know what I mean? Like I could use a map code or whatever it is I need to use.

However, when the stakes are high, people might prefer to use their own judgement over network influence or online research. This is particularly true when it comes to finding a house or apartment. As mentioned previously, many participants informed me of their experience of physically visiting a neighborhood when looking for a place to live. Sometimes, this could be a process of verification:

[Charlie, 52-yo African American male, 5 years in Philadelphia]: So the location and the street is a big determining factor here, what the street is and the area is like, you could live in the area and be giving something, but you got to see the area itself and the street determines that, too. . . . I can give you one example: So I lived in South Philadelphia. They wanted me to check out an area for—down by 7th and 8th Street, in South Philadelphia. I went down there and looked at the area. There's a side street from that area and just so many things that were going on there, I'm like—"I couldn't do it." Different activities were happening on that street, and the area didn't look too safe. And I would told them, "Why would you tell me to go down there when the area wasn't that great?" And then they gave me another area. Somebody gave me another specific area, and it was at— and it was different. It was a lot

different, as far as the community and stuff like that. So it was more, not as—it was more open, and it was more livable. You could tell by the structure of the houses. Things were around them. It was more safer in that sense.

What concerned Charlie was safety in the neighborhood. As mentioned before, safety is a crucial factor in participants' desire to explore a different part of the city. Below, I will specifically discuss the awareness and understanding of city spatial order related to safety, and how the embodied, material experience and mediated communicative resources help co-construct the image of urban poverty and safety.

3.2.5 Materiality in Urban Communication: Crime, Safety, and Media

During the interviews, participants were asked where in the city they consider to be safe or unsafe. They were additionally asked how they came to perceive certain areas to be safe or unsafe. I found that the answers and comments from the participants very well illustrate the entangled role of materiality and mediated information in urban communication, specifically, how the embodied experience, word-of-mouth storytelling, news media, and data through interactive digital media platforms co-construct city residents' understanding of safety and crime in the city.

3.2.5.1 The Not-so-simple Answers to “Where is safe?”

When asked to describe areas in the city they perceive to be safe or unsafe, participants did not always offer straightforward answers, although many of them did. Twenty participants gave me unambiguous answers. And these answers were highly consistent. Most of them mentioned that Center City, the downtown core was generally safe. Areas away from downtown were considered to be less safe or unsafe, with North and West Philadelphia being mentioned more frequently as unsafe. This conclusion is generally consistent with the city's official crime statistics (See Figure 3.15).

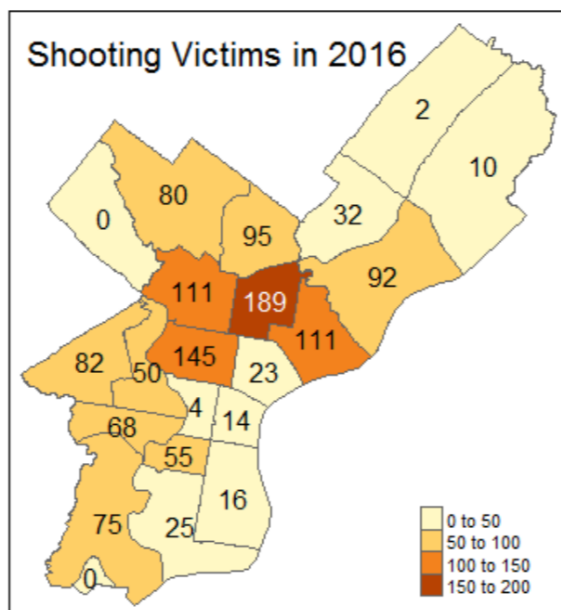
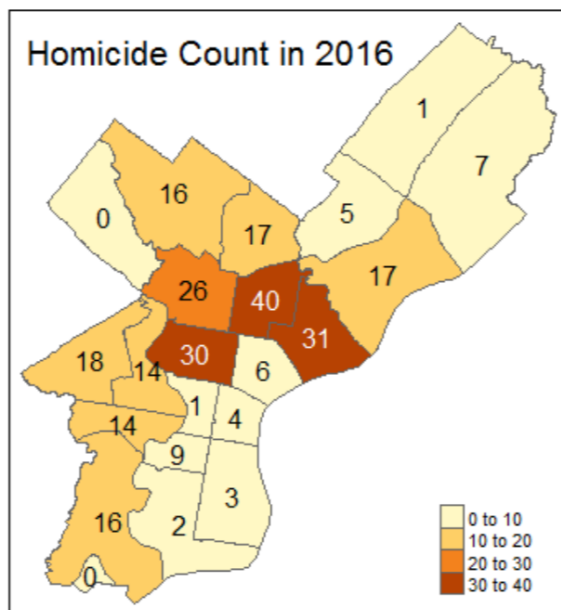


Figure 3.15: Homicides and shooting victims, divided by districts. Reprinted from *Annual Murder and Shooting Victim Report: 2016*, by Philadelphia Police Department, January 20 2017, retrieved from <https://www.phillypolice.com/assets/crime-maps-stats/2016-Homicide-Report.pdf>

However, many other participants did not offer a direct answer. Firstly, some participants, who predominantly (but not all) were white and highly-educated, were hesitant to answer the question directly. Such hesitation, or rather, self-censorship was a result of the awareness of the racial segregation in Philadelphia. For example, Brian (39-yo white male) said he hesitated to answer the question, because “I don’t want to admit my own bias”. Some participants blatantly pointed out that this question was “a pretty charged question” (Yvonne, 44-yo white female) that was “looking for a racist response” (Amy, 40-yo white female). An African American participant, Rick (40-yo, born in Philadelphia), who lives in a neighborhood in North Philadelphia, started to giggle at this question and said “I know what you’re trying to get me to say, but [giggle]you want me to be as honest as possible, right?” He then said, “I’m going to say more affluent areas, no matter if it’s black or white people...” What Rick meant was that he interpreted this question to be about the relationship between crime and race. His answer, “no matter if it’s black or white” confirmed this speculation. Many other participants also offered similar answers, that safety was associated with the socio-economic status of people living in the area, avoiding mentioning race.

Secondly, some participants pointed out that that safety in the city was not determined by area or neighborhoods boundaries. Time of the day was an important factor mentioned by several participants. Some mentioned the “block-by-block” variation (that one street block could be safe, but the next one could be unsafe). Several participants mentioned gender as an important factor (that females could feel relatively more unsafe in the same area where a large man would feel safe).

Lastly, there were some contrasting views regarding safety between different participants that were worth noticing. Some participants said that they believed that nowhere in the city was really safe, while some other participants told me that there was not really many place in the city that were unsafe. These two opposing views seem contradicting, but when examined closely, I found that they share a commonality, which is that these

participants believed that safety was not an inherent characteristic of a place; it was situational. As such, these participants all claimed that one should always be cognizant of the surroundings to avoid danger. Interestingly, these participants were all men. Among these participants, the African American participants often claimed that it could be dangerous anywhere in the city; and therefore it was crucial to take precaution wherever they were:

[Craig, 42-yo, born in Philadelphia]: Let's say a city block in a neglected neighborhood, if I compare that to a suburban neighborhood, which appears more pristine, the first reaction will be this suburban area is more safe than the area that's dirty. But I know equal danger can be in both places. You might have a serial killer in a suburban neighborhood. That's just a reality.

[Gary C., 51-yo, 40 years in Philadelphia]: I would say North Philly would be safe to me. Other people always say, "You can't go to North Philly." But you can go to West Philly and get robbed, too. You can go to South Philly and get robbed. It's just the same. You can go up to the northeast and they get you up there. You can go right outside, step out for Philadelphia and they get you out there. . . . and you just got to know—you just got to be careful of where you're going. And you're not going to pull out a pocket full of money at 10:00 o'clock or 12:00, 1:00 o'clock in the morning. You'd be a fool. . . . You should be safe just as long as you're watching your surroundings like trying to go in your pocket.

[Rick, 40-yo, born in Philadelphia]: I'm alert all the time. I don't walk around with my headphones on when I'm out at night, stuff like that, even if I'm downtown. . . . I mean, I don't want somebody walking up behind me no matter where I'm at, including downtown.

On the other hand, there were the non-African-American-male participants who talked about being cognizant of the surroundings, as well, but in a different tone:

[Aaron, 24-yo white male, 6 years in Philadelphia]: I honestly—I personally feel safe almost everywhere in the city and even in the areas that I said earlier—far north and far west. It's not that bad as long as it's during the day and you're not doing anything disrespectful to anyone. There's very little unprovoked. So I don't feel really unsafe anywhere. I know some areas are unsafe in general, but not—I don't feel unsafe personally.

[Ral, 19-yo South Asian male, 1 year in Philadelphia]: I'm alert of my surroundings. I'm very analytical about my surroundings. And I think if you are analytical of your surroundings, you know what to expect. You know if something's not safe. You know something to avoid. I don't think it had anything to do with sketchy, living up in this hard area and all. I don't have the right to say that I lived in a sketchy area.

It appears that these participants all believed that it was their being cognizant of the surroundings that ensured safety wherever they went. The difference was that African American participants took that alertness to neighborhoods which some other participants believed to be safe, for example, downtown; and the non-African-American participants claimed that although some places could be perceived to be unsafe, for example, North Philadelphia, what really made those places unsafe was that people did not know how to protect themselves. These claims also implies the level of self-confidence of these participants.

Overall, most participants' responses were consistent. Even those participants who provided ambiguous answers acknowledged, to some degree, that they were aware of the common belief that North and West Philadelphia might be dangerous. However, how the participants interpreted this common belief varied. I looked into the communicative resources through which the participants obtained such information to find out the source of this variation. The key take-away of the findings was that the participants disproportionately reported that their personal experience and observation, and additionally information gained from close network ties mattered the most. Although they did learn about crime and safety in some parts of the city through news media and online sources, they were often skeptical of the truthfulness of such information. I will elaborate on this finding in the following sections.

3.2.5.2 News Media Exposure

Traditional news outlets (including news from online sources) was not brought up by a lot of participants as their source of information about crime and safety in the city.

Although ten participants did mention being influenced by journalistic media, most of these did not suggest that information from news media was reliable. Three participants said that they were largely influenced by news reports, two were elderly (Sam, 70-yo white male, born in Philadelphia; Paul H., 68-yo white male, 2 years in Philadelphia), one was a locally-born African American man (Rick, 40-yo). The other participants were somewhat skeptical of the news media—not about the truthfulness of the reports—but rather about the journalistic framing and agenda-setting. These participants suggested that news media often sensationalize and exaggerate crimes that occurred in some parts of the city. Many of them cited a very similar reason—prior experience in the city. For example, Lily N. (23-yo Asian female, born in Philadelphia) said that she grew up in neighborhoods that were often depicted in a negative light in news media. She did not perceive these neighborhoods to be as dangerous as they were depicted to be in news media:

I know the areas that are commonly poorly depicted in media. So, the end of my parent's house will be in the news a lot. Or even—growing up, in high school, I would still have to leave the house at 5 a.m. to get to school in the winter when it's dark, when the "Kensington Strangler" was on the loose and it was like six victims later—whose demographic all fell into mine. But those experiences are depicted in a very poor light in media. And those are often times the only news that come from those areas so it's not as attractive to promote the local elementary school in that area. So, yeah—I don't know—I'm very skeptical of media when it comes to—especially reported from areas like that in Philly.

Further, she was not only skeptical of the image of local neighborhoods depicted in news media; this skepticism extended to media coverage on other places, as well:

So I went on vacation with my brother to Baltimore. And Baltimore doesn't have a very good rep colloquially as well as through media. But I always had to tell myself that you can't really judge an area unless you go there yourself and experience it yourself, I would say. Yeah, I guess I project that onto other areas as well.

Similar reasons were expressed by other participants as well, even by newcomers. For instance, Jessica (38-yo white female, 14 years in Philadelphia) recalled her experience of living in Fishtown/Northern Liberties area when she was a newcomer:

There were a bunch of news stories—there were a bunch of kids running around with bricks kind of jumping people and hitting them in the face with bricks. And it’s awful, it’s terrible, but they (news media) sensationalized it so much that it made me afraid to go to those neighborhoods. I ended up living in that general area for four or five years, felt perfectly safe, didn’t see anyone hit with a brick.

However, being skeptical of news media does not mean that these participants did not accumulate this awareness of crime and risk in these neighborhoods as a result of storytelling in news media. Jessica did avoid these neighborhoods before living there. She also mentioned that when she first started living in the city, news reports of crimes did result in her avoiding certain areas in the city. In five different interviews, I heard the participants mentioning the same news story of librarians in Kensington—a neighborhood known for its drug problems—being trained to use Narcan to revive overdosed drug users. This news was reported by *The Philadelphia Inquirer* (Newall, 2017) while this research was being conducted.

3.2.5.3 Embodied Experience

It was discussed in the previous section that embodied experience in the city was considered to be rich and truthful. As seen in the findings about news media, it was also important for creating a sense of safety and crime in the city. Consistent with the findings that city residents perceive the embodied, material experience in the city to be rich and truthful, twenty-eight participants suggested that personal experience played an important role in shaping their understanding of crime and safety in the city. The “vibe” they felt was often a visual one. Participants reported various visual signs they relied on to evaluate the level of safety in an area. For example, not seeing people on the street could be interpreted as a sign of danger.

[Jessica, 38-yo white female, 14 years in Philadelphia]: If you go to an area and there’s not many people walking around but they’re driving, that would imply that many people think it’s not safe to walk around. So visually, those are things that I would look out for.

[Chad, 27-yo white male, 1 year in Philadelphia]: If you go to an area and there's not many people walking around but they're driving, that would imply that many people think it's not safe to walk around.

[Lindsey, 46-yo African American female, 22 years in Philadelphia]: If I notice that there are times when I'm typically there and it's too—there aren't enough people around at a certain hour, I'll avoid it.

On the other hand, seeing people on the streets engaged in suspicious activities can raise a red flag. For example, Nick (21-yo African American male, 11 years in Philadelphia) mentioned “a lot of people out in T-shirts, just basic, dirty clothing” is an alarming sign for him; Natalie (41-yo African American female, 2 months in Philadelphia) mentioned “A lot of men standing around with nothing to do.” to be signaling risks. Chris (32-yo African American male, 1 year in Philadelphia) mentioned:

It could be like little streets that I would walk by and I saw, typically, several homeless people outside. Not necessarily it wouldn't be safe, but it is the whole idea where the areas not protected to 100%. So I wouldn't basically travel there at night alone.

A few other participants mentioned that police presence was a sign of safety, but others mentioned armed security guards in supermarkets were signs of crime in the neighborhood.

The most frequently mentioned signifier of an unsafe area was the built environment. Specifically, signs of neglect, “dilapidated” buildings, “overgrown grass”, and “broken windows” were often brought up in interviews, because “people could be hiding drugs or participating in illegal activities” there (Ben, 24-yo white male, 5 months in Philadelphia). Participants often mentioned how the buildings and streets themselves gave off important information about the area:

[Sharon, 70-yo white female, 7 years in Philadelphia]: Well, I would say this neighborhood (Fishtown/Northern Liberties) where I went and I looked and then I decided there were still some abandoned factories, and it looked a little shaky for a single woman to come late at night. I don't think I've gone back there very much.

[Lois B., 58-yo white female, 30 years in Philadelphia]: Supermarkets are hard to find. A lot of junk food, fast food places. . . . And just unclean, you don't have the little green machines going around sweeping up the cigarette butts on North Broad Street. There's nobody cleaning. it's forsaken. Boarded up buildings. Those awful metal grates over storefronts.

[Chad, 27-yo white male, 1 year in Philadelphia]: So there are parts of the northern area where it's not as developed. There are more kind of run-down things. And then when I go there for events like concerts and stuff, it has those facilities are in places where the property is cheaper because they need larger buildings and so the adjacent structures are all kind of uninhabited, dilapidated. So that in my mind corresponds with (un)safety. . . . poor quality, broken windows, decay, obvious signs of violence, or signs of previous accidents.

Apart from visual signs of the crime or safety, participants also mentioned other experiences such as being robbed or hearing gunshots in traditionally "safe" neighborhoods could alter a person's perception of safety. On the other hand, never encountering robbery or assault could make a person perceive a "bad neighborhood" as relatively safe. Some participants reported that they had "never had any issue" in certain neighborhoods, which contributed to their perception that these neighborhoods are not as unsafe as they are commonly believed to be. Additionally, two African American participants (Paul F., 31-yo, 30 years in Philadelphia and Annie R., 32-yo, 10 years in Philadelphia) who had lived in both high-crime and low-crime neighborhoods told me stories of interacting with police and other emergency services in respective neighborhoods:

Paul: I lived here in this section (North Philadelphia). And (if) I call the police or ambulance, I'm going to have anywhere from a 10 to 20 minute wait. Here (gentrifying South Philadelphia neighborhood), I've never waited—because my brother's asthmatic—so there's been times that I've had to call the ambulance. I've never waited more than five minutes.

Annie: In North Philly, I had—me and my baby father, we was living in North Philly right by Lehigh. And I'm sitting here like—the music was so—it was like, "Boom, boom, boom, boom." And it was the house right next door. And this lady was just drinking and doing all sorts of stuff. . . . I had called the

police because she threatened me. One police didn't come for like an hour and 45 minutes later. I'm like, "What the hell?" And when they came, everything stopped. I'm like, "Y'all come after the fact?" And then now when I'm down here (in Center City)—one time, I had called the police on one of the staff members I had where we live at. They came in 5 to 10 minutes flat. I'm like, "Wait a minute. Where you come from [laughter]?". . . . And one time I had to make a police report because of what DHS did. . . . They almost did 15 minutes flat, like right there in there. I'm like, "Y'all don't do this in North Philly [laughter]—" And the lady cop started cracking up. Down here, they're just so sweet, and I—when I talk to people, they just wonderful.

This might beg the question of why a city resident would initially visit an allegedly "sketchy" neighborhood, which would allow them to perceive a "vibe" regarding neighborhood safety. As mentioned earlier, there were various types of reasons for a city resident to venture into unfamiliar territory in the city. In relation to high-crime areas, the answers were similar. Participants mainly mentioned three types of reasons: work/school, visiting local ties, and leisure activities. Work was a strong pull to underserved neighborhoods. For example, Eric (73-yo white male, 1 year in Philadelphia but lived here decades ago) used to work as an insurance adjuster, and this job took him to different neighborhoods in the city. Similarly, other types of jobs, e.g., social work, education, or medicine could provide in-depth interaction with local residents and more profound exposure to local issues. For example, these participants told me:

[Craig, 42-yo African American male, born in Philadelphia]: I traveled as a home visitor working for a team of social workers. And I had the chance to explore parts of the city that I hadn't known of up close. . . . and we would learn that some areas had more challenges than other areas. So, going to the neighborhood directly was a way for me to learn, but also hearing people discuss neighborhoods they want to move out of. That was a good way for me to learn that maybe the neighborhood wasn't that safe.

[Chad, 27-yo white male, 1 year in Philadelphia, medical student]: . . . the patient population that I take care of and the issues that they deal with on a day-to-day basis. So kind of the stories I've heard from people who live here which is a large part of the people that I take care of.

A few participants recalled the experience of travelling through poor neighborhoods,

on foot, by car, or on a bicycle. Such travelling was not always planned. One participant, Angelo (30-yo white male, 2 years in Philadelphia) told me stories of following GPS navigation into North Philadelphia neighborhoods and “We decided to not stop at the reds, because there were like... people selling crack on the corners.” Another participant, Jessica (38-yo, 14 years in Philadelphia) told me her story of missing her stop on the subway and walking back home through a sketchy neighborhood (in daylight). Other travelling was planned, such as commuting by bicycling or by bus.

Overall, most participants, even those living in safe neighborhoods, still travelled to different places in the city, especially for work and school. Although leisure activities usually do not lead to physical visits to poor neighborhoods, some gentrifying neighborhoods (such as Fishtown and Northern Liberties) do offer many resources that some city residents might enjoy. However, as previously mentioned, at least in Philadelphia, city residents’ spatial mobility pattern still gravitates toward the downtown core. This means that, although city residents who live near downtown could have occasional exposure to underdeveloped areas in the city, this exposure might merely create a sense of spectacle, instead of meaningful interaction with local communities.

3.2.5.4 Local Ties

Local social ties also influence the city residents’ perception of safety in the city. This influence comes in two forms: word-of-mouth information exchanged through a local network and the awareness of alarming events that are believed to have happened to local ties. Participants mentioned being informed by friends, relatives, or coworkers who were local residents about where is safe and where is not. Such as “don’t go beyond 52nd Street, because it’s all bad neighborhoods,” (Habib, 30-yo South Asian male, 1 year in Philadelphia) or “Don’t move to West Philly. Don’t move to North Philly, it’s really dangerous.” (Brian, 39-yo white male, 7 years in Philadelphia). Participants mentioned that such information is trustworthy, as they “have experience”. Crime that has happened to network ties was said to have a great impact on the participants. Some participants

mentioned knowing people that reported being robbed in a certain area. Such stories reinforced their idea of unsafe areas or changing their perception of previously-thought-to-be-safe areas. Other times, these stories could be much more serious:

Aaron (24-yo white male, 6 years in Philadelphia): I work in probably the most unsafe area. There was a shooting every day for two weeks at one point. . . . I'm an advisor at a school (in North Philadelphia) and I had kids getting killed this year in gun violence. So I mean, I know for a fact this is not a safe neighborhood.

Todd (50-yo African American male, born in Philadelphia; school teacher): I had kids in my class with bracelets on their ankles from the police, from house arrest, and everything. I've actually had to go to court a couple of times. Those kids who did some bad things. I've seen a lot. I've seen kids with their parents that have been murdered. I have kids that they couldn't do their homework until their parents got the drugs off the table. All kinds of stuff. Got parents that are prostitutes. Parents that some of them are single parents, some of them are dancers in bars, and all. Everything.

The opposite happened, as well. Jessica (38-yo white female, 14 years in Philadelphia) told me that when she worked in West Philadelphia as a social worker. She was initially scared, but she became less concerned about her safety, after building rapport with local residents:

I felt out of place. I might have been one of the only or the only person of my race walking around in that neighborhood, but I got used to it because I built a relationship with the clients and I got more comfortable. And I probably, because of that, am more familiar with neighborhoods that I don't go to a lot than other people because I had to navigate. I had to drive through and find these clients' houses.

Having local social support is a crucial factor, as well. Lily (23-yo Asian female, born in Philadelphia), who grew up near high-crime neighborhoods told me that:

In Kensington—North Philly being a rougher area—I know my neighbors. I know if I go a block down this way then I would run into a store that I knew. If I ever needed anything, at 9 PM at night walking around, I knew the closest place to go to or knew people in the area and people knew me. I wouldn't do that in South Philly because I just don't know the area, I don't know the resources available.

3.2.5.5 Crime Alerts and Crime Maps

Lastly, digital media and communication technologies has afforded more extensive, more timely awareness of crime and safety in the city. Mainly, two types of digital communicative resources were mentioned by participants: pushed crime alerts and online crime databases (often in the form of crime maps). Crime alerts were not mentioned by many participants. Participants who got crime alerts were either those who were affiliated with local universities or live in a neighborhood where residents had a community listserv. Because these crime alerts were typically about incidents that took place in adjacent areas, some participants did mention that they would be more careful or avoid certain areas.

Online crime maps, on the other hand, provide access to crime data in an interactive, extensive, and exploratory way. A total of eight participants mentioned using online crime maps. Three sources were mentioned, Philadelphia Police Department, Philly.com (local news media), and SpotCrime.com. These crime maps are a means of accessing quantified, personalized data. Participants mentioned acquiring specific crime data, such as types of crime:

Lindsey (46-yo African American female, 22 years in Philadelphia): In terms of where I live, I'm always interested in if crimes with handguns are going up. And that might affect whether or not—because I have a permit to carry—that might affect whether or not I go out with my gun. As opposed to just having it at home. The other thing is I might not sometimes drive my car if I'm going north if I've seen there's been a lot of break-ins taking place. I might skip my car and do Uber.

or locations:

Habib (30-yo South Asian male, 1 year in Philadelphia): My first landlord told me to avoid these places, but I wasn't satisfied with that information. So I went up, and I looked online, and there are different maps that are designed by the input of crime data. And that gives you a topographical view of the city, showing the red and green zones indicating where there has been more crime versus less crime. So I took my knowledge from word of mouth and then converted it to actually fact-based knowledge.

Kevin (52-yo white male, 10 years in Philadelphia): When I was looking for housing—my first house in Fairmount. Philadelphia Police Department has a website, and they will list crimes that occur. And you just pick the neighborhood and you can look it up that way and it didn't seem—anything that might have been—and in Fishtown as well, the biggest crimes were usually car break-ins or something. Not muggings, or shootings, or rapes, or anything of that sort.

3.3 Conclusion

In this chapter, I reported findings from the interviews about the overall socio-spatial practices of city residents'. I first analyzed the sketch maps created by the participants. By analyzing the semantic relationships between different map elements, I found that participants' understanding of the city space was consistent and, to some extent, constrained by the city's physical built environment. The strong concentration of map elements in Center City (downtown core) shows the strong pull of the downtown cosmopolitan canopies ([Anderson, 2011](#)). In addition, much of the peripheral space in the city was not highlighted by many participants. These findings, I argue, do not dismiss much of CIT's contribution to urban communication. The findings should not be over-generalized and interpreted as an implication of urban communication away from local communities (neighborhoods). Different urban built environments may impose different influence on city residents' awareness of spatial resources.

Additionally, I discussed the source of these spatial constraints, or more precisely, time-space constraints. City residents face various space-time constraints in their daily lives. I found that their footprints in the city were limited not due to the boundaries of neighborhoods but the boundaries of their everyday lives in time and space. Apart from living in a place, city residents visit different places in the city due to jobs, social networks, and intentional wandering. On the other hand, not setting foot in a part of the city is usually associated with lack of activity in the area. This suggests that, for contemporary city residents' spatial mobility, what Hägerstrand identified as capacity constraints may not be the most restricting factor. Rather, coupling constraints and authority constraints

may play a more important role in the awareness and use of city space and places.

Second, I examined four types of communicative resources through which the participants built up their sense of place. It was found that the embodied physical experience is intrinsic to urban communication. The “vibe” that the participants sensed from being in a place was described as an internal feeling, but at the same time, such feeling was deeply entangled with the brick-and-mortar built environment or the social activities in a place. The identity of a place is a dynamic one, even for the same individual. It emerges from socio-spatial practices that involve physically being in a place, network influence, media narrative, and the use of personal media technologies.

Third, perhaps more importantly, no single communicative resources alone shaped the participants’ understanding of any place in the city. Through examining the participants’ interpretation of safety in the city, it was revealed that the idea of “safe” neighborhoods is fluid, in which the embodied experience in the neighborhood, network storytelling, news media, and personalized digital information are often entangled together and co-constitute the sense of security or danger in a neighborhood. Further, it was found that what determines the safeness of a neighborhood can often be situational, in that the varied configuration of time, locale, storytelling, and personal experience could result in a varied perception of crime and safety in the same neighborhood, even for the same individual.

Overall, the above findings offer concrete evidence for us to question the extent to which the conventional, media-centric, representational view on place identity in urban communication could explain city residents’ perception of crime, poverty, and activities, among other information in the city. Media is an important part of everyday life in any contemporary society. However, at the same time, media are not everyday life itself. Ignoring the day-to-day experiences and socio-spatial practices could unavoidably lead communication/media studies scholars to exaggerate the role of media and media technologies play in people’s perception of reality.

Chapter 4

Sociability in Urban Space

4.1 Introduction

As discussed in the previous chapter, network recommendations play an important role in city residents' understanding of urban space and places. With the prevalence of digitized information of local places, city residents now have access to opinions about local places from a wider range of people. For example, many platforms such as Yelp, Foursquare, or Google encourage ordinary users to contribute information or opinions about local places. As such, this chapter focuses on one specific issue related to social interaction and network recommendations of local places—how city residents perceive the wisdom of strangers in the digital era. Additionally, I will discuss the concept of “social interaction” in the context of user-generated digital information.

In a 2018 essay in *Contemporary Sociology*, [Hampton and Wellman \(2018\)](#) made an intriguing claim that “Before we hated smartphones, we hated cities.” (p.645) They pointed out that urbanization used to be associated with social isolation and the demise of communities, just as digital communication technologies are now believed to be the culprit of social isolation in today's societies. Though not explicitly stated in the essay, this comparison seems to suggest a parallel between the rapid urbanization in the 19th and 20th century and the popularization of digital communication technologies in the early 21st century. As previously discussed in Chapter 3, both Hampton and Wellman reject the notion that urbanization or digital communication technologies were responsible for social isolation and the alleged decline of communities ([Hampton, 2016](#); [Rainie & Wellman, 2012](#); [Wellman, 1979, 1999](#)). However, the moral panics they critiqued may not be completely

unjustified. Something *is* different. Neither cities nor social media destroyed people's social lives, but why does this popular belief exist? One of the similarities between the social changes accompanied urbanization and digital communication technologies is the increased stimuli from the exposure to other people with whom we have no personal connection. Often, these individuals' identities remain unknown after a brief interaction with them. As Hampton (2004) argued, "The descriptions of cyber-life as impersonal, superficial, and transitory are motivated by the same concern for a loss of densely knit, broadly supportive, place-based interactions as those that motivated earlier debates about urban industrial society."

4.1.1 The City as the World of Strangers

Encountering strangers in everyday life was a relatively recent phenomenon associated with the large scale urbanization in the 19th and 20th century (Lofland, 1973). In his writing, *The Metropolis and Mental Life*, George Simmel (1950) suggests that sophisticated metropolitan residents may exhibit reserve and indifference, partly due to the calculative nature of the money economy, and partly due to the over intensification of the environmental stimuli. Following Simmel, Louis Wirth (1938) argued that urban social life is characterized by "the superficiality, the anonymity, and the transitory character of urban-social relations." (p. 12) It should be noted that the meaning of "strangers" shifted from "outsiders" in the pre-modern era to individuals with whom we only have brief and fleeting contacts in modern societies (Giddens, 1990). Goffman (1966), observing the brief encounters of strangers in public places and found that modern urban strangers exhibit "civil inattention", wherein they briefly acknowledge each other and then look ahead and pass each other. For Giddens, the civil inattention is *trust* as "background noise"—carefully restrained and controlled social rhythms (Giddens, 1990). On the other hand, facing the issues in modern cities of distrust, indifference, and hostility towards strangers, Stanley Milgram (1970) pointed to one aspect of urban life—information overload. He argues that urban life, compared to the life in small towns and villages, is filled with diverse stimuli

of enormous quantity that exceeds people's cognitive capacity. As a result, urban residents may ignore low-priority stimuli. The indifference and reserve of city residents are often associated with urban anonymity. As such, although taken for granted in today's cities, researchers at the time were interested in understanding how city residents use various social cues to categorize strangers that they encounter. For example, [Form and Stone \(1957\)](#) found that urban residents often use social cues, such as clothing to infer the social category to which any stranger could belong. Lyn Lofland's [\(1973\)](#) argue that in modern cities, city residents often learn about the *spatial order* of a city and rely on the places people visit to infer people's social standing. This literature seems to depict a pessimistic view of the atomized social lives of urban dwellers, but at the same time, it has made other researchers realize that city residents may have strong social support networks in this world of strangers ([Fischer, 1976](#); [Franck, 1980](#); [Wellman, 1979](#)). Often time, city residents learn to navigate this contemporary life by learning how to reconfigure the public space and their relationships with strangers. For example, [Lofland \(1973\)](#) found that city residents have different ways to create the sense of familiarity in a large city, such as the parochialization of public places or even travelling to unfamiliar areas with friends. [Jacobs \(1992\)](#) found that city residents could maintain a subtle trusting but distant relationship with local store owners, creating a sense of social support while maintaining their privacy in the city.

4.1.2 The Internet as the World of Strangers

Not unlike the city, the Internet exposes people to vast amount of information as well as other people who are, in many cases, unidentifiable. In response, Internet users may similarly experience a depersonalization effect. As such, CMC researchers have also shown interest in problems of information overload and depersonalization, but often in separate bodies of literature.

Information overload has been a subject of academic investigation long before the Internet was used for everyday life purposes. Early research in psychology looked at

information or sensory overload caused by urbanization, population density, increased noise, mass media, information technologies, and increased workload (Lipowski, 1975). Milgram (1970)'s work is often cited as one of the early psychological writings on information overload. With the advent of digital communication technologies over time, information overload has become a more salient issue. Similar to the indifference and blasé attitude that urban dwellers exhibit when experiencing information overload, researchers in the digital information and communication technology era often found that information overload would result in being highly selective and ignoring a large amount of information (e.g., Bawden, Holtham, & Courtney, 1999; Beaudoin, 2008; Eppler & Mengis, 2004; Kwon, Kim, Duket, Catalán, & Yi, 2015; ?).

Anonymity is another concept that has received much attention in the CMC literature. Anonymity in communication can be defined as “the degree to which a communicator perceives the message source is unknown and unspecified” (Anonymous, 1998). If anonymity in the city is a result of the size of its population, the attention given to anonymity in CMC is because identity-masking is seen as, according to popular belief, to be more easily done in online communication. However, the consequences of anonymity in the city life and in CMC may share some similarities. One of the earliest psychological theories on anonymity is Zimbardo (1969)'s *deindividuation theory*. Zimbardo defines anonymity as the inability to single out an individual (from a crowd). Consequently, the individual cannot be evaluated, criticized, judged, or punished. This later became the basis of the *Social Identity model of Deindividuation Effects (SIDE)* (Lea, Spears, & de Groot, 2001; Reicher, Spears, & Postmes, 1995; Spears & Lea, 1992). SIDE theorists argue that visual anonymity in CMC can result in users identifying with social groups or categories rather than with individuals. This effect is called “depersonalization” rather than deindividuation (Spears, Postmes, Lea, & Wolbert, 2002), as the latter is often associated with anti-social behaviors. Additionally, SIDE theory rejects the idea that depersonalization effect naturally occurs when an individual blends in a crowd. Rather, the lack of visual cues in CMC may strengthen the person's social identity within a social group or category. Most of the

early research studies using the SIDE framework were conducted in group settings, but some more recent studies have looked at the SIDE effect on social media such as Facebook and YouTube (Halpern & Gibbs, 2013; Walther, DeAndrea, Kim, & Anthony, 2010).

As previously discussed, in the urban research literature, the depersonalization effect was often viewed as a result of information or sensory overload. City residents exhibit indifference towards strangers that they encounter, due to the overexposure of many stimuli in the surroundings. The depersonalization effect in the CMC literature, however, is viewed as a function of limited social cues transmitted through communication technologies. This seems to suggest that the depersonalization effect in these two contexts are not comparable. However, I argue that it has been long ignored in the CMC literature that anonymity could result from the inability to verify other users' identities due to information overload. On the other hand, using alternative social cues to estimate the identities of urban strangers is not something unique to CMC, city residents have been doing so for a long time. Findings from Lofland (1973)'s research, for example, show that city residents would use alternative social cues such as different places that people choose to visit as a signifier for urban strangers' social identities. And the in-group versus out-group categorization was also exhibited through city residents' behaviors of privatizing public places (such as people from the same social groups habitually occupying a public place). These effects are similar to, if not the same as what researchers have observed in CMC. Additionally, it should be pointed out that much of the early CMC research was conducted in organizational settings. SIDE theory, for example, was based on findings from studies of group-based communication. In these contexts, participants of the studies were often exposed to a limited amount of information and had certain expectations of group identities and norms. Thus, the depersonalization effect caused by the lack of visual cues might be amplified. Or, in other words, the depersonalization effect caused by information overload may not have been properly observed. As such, I argue that, in the broader context, such as everyday life Internet use, the depersonalization effect in CMC may also be considered as the indifferent attitude towards information sources due to information overload.

4.1.3 Yelp Reviews and Online Urban Strangers

Online review platforms such as Yelp offer user-generated reviews that could help city residents to sift through a plethora of urban places, especially business establishments. Yelp (yelp.com) is a website founded in 2004 by two former PayPal employees, Jeremy Stoppelman and Russel Simmons. Its slogan is “To connect people with great local businesses”; and according to its own statistics, in the fourth quarter of 2018, Yelp had 69 million unique visitors through its mobile site and 62 million visitors through its desktop site. Additionally 33 million users used their mobile app. Restaurant reviews are the largest categories of reviews, which account for 19% of total reviewed businesses or places ([Yelp, Inc., 2019](#)).

Reviews on Yelp are contributed by individual users (often referred to as “Yelpers”). For each local business, Yelpers can offer both quantitative assessment (“stars”, ranging from one to five) and qualitative reviews, as well as uploading relevant pictures. Yelp claims that it does not change or reorder reviews written by Yelpers. On one hand, Yelp (along with other similar platforms) are considered to be a robust source of information about local businesses. For example, data from these platforms were used by researchers to identify urban entertainment centers ([Johansson, 2016](#)). On the other hand, [Zukin, Lindeman, and Hurson \(2015\)](#) found implicit racial biases in Yelp reviews of similar restaurants in different neighborhoods. This suggests that Yelp reviews need to be taken seriously by urban scholars. It is important to examine how users of Yelp and other similar platforms evaluate the merit of the reviews of local places. Reading online restaurant reviews may not only have an impact on a city resident’s interest in the restaurants themselves, but the impression of urban neighborhoods as well.

Previous research on Yelp or similar platforms has looked at both review contributors and readers. With no surprise, much of the research on review websites are situated in the marketing literature. These studies often focus on the persuasiveness of online reviews (sometimes called “electronic word-of-mouth”, or eWOM in this literature). This literature does not exclusively focus on Yelp or reviews of local businesses. Other types of review

content such as customer reviews on Amazon was extensively studied, as well. Nevertheless, this literature identifies some key constructs that are worth considering when examining users' interpretation of online reviews. In general, researchers have found several factors that could affect the persuasiveness of online reviews, such as message characteristics, quantity, sequence, and source characteristics of the reviews (see [Pentina, Bailey, & Zhang, 2015](#), for a comprehensive review).

In this body of literature, some research studies focused on not the content but the sources of information of online reviews. It was often found that perceived source credibility has an effect on the persuasiveness of the reviews or recommendations ([Li & Zhan, 2011](#); [Senecal & Nantel, 2004](#)). Within the field of communication studies, researchers were often interested in studying how readers of online reviews assess the authenticity of reviewers' identities with limited social cues such as reviewer profiles ([DeAndrea, Heide, Vendemia, & Vang, 2015](#); [shin Lim & Heide, 2014](#)). Other found that perceived similarity with the reviewer affects readers' attitudes towards the reviews ([Brown, Broderick, & Lee, 2007](#); [Pentina et al., 2015](#)). Most of these studies rely on experimental methods, where participants were shown individual reviews or recommendations (either mock or real), where the source characteristics had to be inferred from available social cues embedded in the messages. When studying how users read and evaluate the content others had created, the focus was mostly placed on reviewer identity (fraudulent reviews) and message characters of isolated reviews ([DeAndrea et al., 2015](#); [Luca & Zervas, 2016](#); [Pentina et al., 2015](#); [shin Lim & Heide, 2014](#)).

Additionally, communication/media studies researchers have noticed that when active users on place-based review or check-in platforms write reviews or check-in, their motivation are not simply utilitarian, but communicative and performative as well ([Cramer et al., 2011](#); [L. Evans, 2015](#); [Kuehn, 2016](#); [Rost et al., 2013](#); [Zukin et al., 2015](#)). On the other hand, the reception of such performativity received little scholarly attention. Yelp acknowledged

that most of its users only read reviews created by others and did not contribute any content (Yelp, Inc., 2011). This report is consistent with the unequal online participation observed elsewhere (Hampton, Goulet, Marlow, & Rainie, 2012; Nielsen, 2006). Qualitative investigation of how people interpret online reviews in everyday life situations is much needed.

4.1.4 Connecting Urban Research with CMC Research: Pseudonymous Strangers as a Lens for Investigation

The process of reading online reviews contributed by other users is not simply a process of information seeking and evaluation. The creators of the reviews construct their messages and the readers of the reviews decode the messages when reading the reviews. This is not too different from what is generally considered to be “social interaction” by communication scholars. In the context of the online reviews about urban places, many reviewers of local places are often local residents, as well. Therefore, I argue that reading Yelp reviews should be considered processes of micro-social-interactions with urban strangers on the screen.

In this chapter, I adopt a framework that views the process of reading online reviews as mediated, asynchronous interactions with numerous strangers, rather than an information seeking and assessment behavior. In doing so, I borrow the concept of *pseudonymous strangers* from Christian Licoppe (2016; 2017). Licoppe coined this term in his research on mobile locative media such as Foursquare. Pseudonymous Strangers refer to those locative application users “with whom one may never have interacted or talked about before, but who are not complete strangers either, for the locative application usually makes available some info about them, such as an electronic tag name, together with some elements of profile and prior history of use. ” (Licoppe, 2016, p. 108). This concept was developed specifically to address the possibilities of social interaction and serendipitous encounters in urban public spaces with the use of location-aware or proximity-sensitive applications

(such as Foursquare, Grindr, or location-aware mobile games). Licoppe's original use of this concept is in contrast to the anonymous strangers in urban public spaces, with whom one encounters in a face-to-face manner. In the broader sense, Licoppe's research opens the discussion of the new possibilities locative media have created for urban social interaction between strangers. This research was a direct response to [Goffman \(1966\)](#)'s observations of social interactions in public spaces, where strangers encounter each other without the anticipation of future interactions.

I believe that the concept of pseudonymous strangers has profound implications for urban communication beyond the location-based interactions, as Licoppe originally intended. What I would like to add to Licoppe's framework is the consideration of social interactions with acquaintances (known others, non-strangers) in one's personal network. As previously mentioned, the focus on social interactions with urban strangers derives from a research tradition in urban sociology/environmental psychology that views the contacts with strangers as one of the central themes of urban social lives ([Lofland, 1973](#); [Milgram, 1970](#); [Simmel, 1950](#); [Wirth, 1938](#)). However, other research studies have shown that intimate relationships play an important role in defining city residents' social lives ([Fischer, 1976](#); [Franck, 1980](#); [Wellman, 1979](#)), as well. The discussion of interactions and encounters with strangers, therefore, should be combined with the discussion of interactions and information exchange with network ties, as they are the Yin and Yang of contemporary urban life.

On one hand, as reported in the previous chapter, local social ties—acquaintances, close friends, family members are important sources of information about local places. On the other hand, Yelp (and other place-review platforms) affords new means of interaction with strangers that were not possible in the past. Traditionally, strangers whom one encounters in urban public spaces, in most cases, do not provide extensive informational support, other than occasionally pointing directions or limited recommendations. However, with the ubiquity of user-generated information about local places on platforms like Yelp, much of the information about local places could come from the pseudonymous

strangers on the screen. While a city resident reads online reviews about local places, he or she may engage in a series of micro-interactions with onscreen pseudonymous strangers. As Figure 4.1 shows, when users read Yelp reviews, they see not only the content of the review, but also the profiles of the reviewers, which include their names (or pseudonyms), profile pictures, locations, social connections, and past contribution to the platform. Users can also see the interactions between other users and the review content. Reading these reviews thus resembles listening to strangers offering their opinions about local places. As such, I argue that reading Yelp reviews about local places may be more than just read-

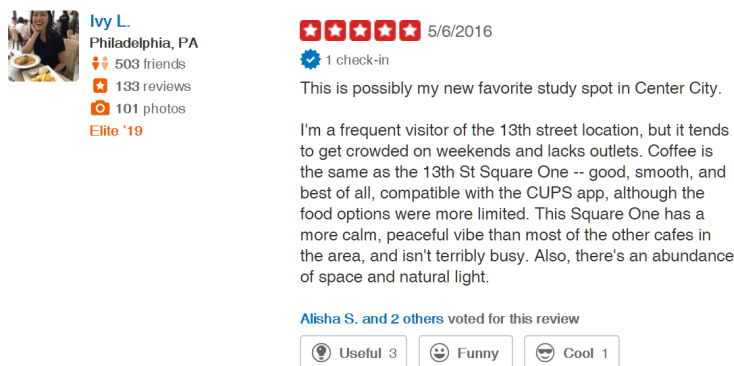


Figure 4.1: A screenshot of one user's review of a coffee shop on Yelp

ing and sorting digital information. City residents could be engaging in asynchronous social interactions with the review providers, as well.

Using this analytical framework, I look beyond the evaluation of authenticity and credibility of the reviews that derived from message and source characteristics. Instead, I examine the asynchronous micro-interactions with pseudonymous strangers that occur when users check reviews about local places. I ask the following research questions: (1) How do online strangers' reviews compare with word-of-mouth recommendations from personal networks? (2) How do city residents evaluate online strangers' reviews?

4.2 Findings

4.2.1 “It’s Life”: Why Information about Restaurants Matter

Recommendations and reviews of food and drink places matter, because food and drink matter in contemporary urban social lives. When talking about their experience in visiting different places in the city, participants often started to talk about restaurants and other food and drink places. Food and drink places were brought up by participants much more frequently than other types of recreational places in the city. Nearly all participants mentioned food and drink places at least once. Some participants talked more extensively about food in the city than others. By examining the coded themes from interview data, I found that food and drink related activities emerged as the single most important category among all recreational activities. Table 4.1 shows the frequencies of coded references to various activities in the city. Twenty-seven (60%) participants offered fifty-nine extensive remarks about food and drinks in the city. It should be noted that other participants mentioned food and drinks as well, but these mentions were casual and did not constitute meaningful remarks on food and drink.

Table 4.1: Frequencies of various activities mentioned by participants

	Frequency of mentions	Number of participants
Cultural activities	7	5
Shopping	7	7
Outdoor sports	6	5
Sightseeing	3	3
Food and drink	59	27
All others	21	22

There were two reasons why participants so frequently cited food and drink when talking about their activities in the city. Firstly, many participants see Philadelphia as a city with an abundance of good food. Participants sometimes called the city a “restaurant town” or “food town”. Some participants, such as Lois Z. (52-yo white female, 23-year

residency) even claimed that “(In) Philadelphia you can almost never get a bad meal. If you like to eat out, it’s almost impossible to—not impossible but nearly impossible to get a bad meal in Philly no matter where you go.” Although such claim was apparently an exaggeration, it does reflect the participants’ observation about the abundance of food and drink places in the city. Secondly, eating food is considered to be a more mundane, everyday life activity than any other activity away from home. When asked why food and drink are important in his life, Adam A. (33-yo white male, 20 years in Philadelphia) explained:

If you think about it, you can choose to go to a museum or not; you can choose to go work out or not, but you can’t really choose whether or not you want to eat. . . . The one thing that kind of unifies us—and I think unifies all cultures is that you kind of sit down for a meal, and everyone gets along, and you like the food, don’t like the food, you have an opinion about it. It’s something that everyone has to do, so I think the most consistent social activity is going out to eat. . . . In Philly, the food really stands out to me as something that you need to do every day, and that’s honestly one of the reasons why I live in Philly.

Some participants were more enthusiastic about food than others. They did not shy away from calling themselves “foodies”. Amy (40-yo white female, 2 years in Philadelphia) mentioned that she and her husband hired babysitters every Saturday night, so they could go out and explore different restaurants in the city. When Janet (62-yo African American female, born in Philadelphia) was asked how important restaurants were in her life. She responded with excitement, “I *love* it. I *love* it. Not only do I love it. But I’m also at the age where I was like right at the beginning of Philadelphia becoming a food town. . . . I’m a foodie. I love food”. Another participant, Paul F. (31-yo African American male, 30 years in Philadelphia) could not stop praising Philadelphia’s local specialty, *Cheesesteak*¹, “I’m from Philly, so cheesesteak is *life*. I mean, I don’t know if you ever had a fucking cheesesteak from Philadelphia. It’s life.”

Food and drink places are not just for food and drinks. They are also places for social

¹A cheesesteak is a sandwich made from thinly-sliced beef, quickly browned and melted cheese in a

gathering. They function as what Ray Oldenburg calls “third places” (Oldenburg, 1999; Oldenburg & Brissett, 1982), places outside of home and work places, where people gather and engage in meaningful social lives. Of course, Oldenburg’s ideal third places exist in local neighborhoods. But as previously discussed in Chapter 3, viewing from a community network perspective, people in a large city do not always associate with local ties in their neighborhoods. To maintain connections with non-local social ties, city residents need these food and drink places for social gathering outside of their homes. When Adam W. (24-yo white male, 2 years in Philadelphia) was asked why he talked a lot about coffee shops in the interview, he said, “That’s just a place where I’m going to sit down and talk with someone—interact.” Another participant, Lois Z. (52-yo white female, 23 years in Philadelphia) said:

And like I said, when I meet friends out, we don’t do much socializing in our homes, at least this generation I’m in. Myself and the majority of a lot of my friends who are left in the city, when we get together, we want to go out, to go out. It’s just fun to go out and socialize. So we kind of—we pay attention to what restaurants are happening in Philly.

For some newcomers, being a foodie may also be a way of familiarizing themselves with different places in the city. By going out to different food and drink places in the city, these newcomers were exposed to more places in the city that they would otherwise have no reason to visit. For example, as a first-year college student, Leah (19-yo, 1 year in Philadelphia) went to many different neighborhoods in the city, due to eating out. She remarked that food is a better way to motivate her to visit places, as it is an everyday life activity:

I think if it wasn’t for eating to eat somewhere new, or wanting a specific type of food, or wanting to try a place that someone told me about was really

long hoagie roll. This sandwich was first popularized in the early twentieth century in Italian neighborhoods in South Philadelphia. Additionally, according to Paul F., “You never order a cheesesteak if it says Philly cheesesteak, you never order a cheesesteak if it says that because it’s their perception of what a Philly cheesesteak is. And it’s not all the peppers and all that, that’s not a cheesesteak, and if it’s really a cheesesteak. That’s a tourist attraction. And when it just says cheesesteak, then that’s where you want to eat at.”

good, I probably wouldn't be in that area. I guess food's like a motivator. . . . I would probably go to shopping areas, or hair places, or nail places. But I think I go to those places less. I definitely spend more money on food than I spend on shopping, so although I might go to a clothes store, I think I would not go there with the same frequency.

4.2.2 Taste, Network Homophily, and Trust in Word-of-Mouth Recommendations

Knowing that many participants were enthusiastic about food in the city, I further probed and asked them about how they get to know different food and drink places. The majority of the participants (31 of 45) talked extensively about being influenced by recommendations from their local social ties. These local ties include neighbors, co-workers, close friends, relatives, or family members. Participants reported various levels of trust they had in these word-of-mouth recommendations.

4.2.2.1 Trust in Network Recommendations: A First Glance

When participants talked about getting recommendations from their personal network ties, they often expressed a certain level of trust in these recommendations, because these recommendations come from someone they personally know. For newcomers, recommendations from local network may carry additional importance, because the information providers were perceived to possess local knowledge that the newcomers may lack. Coworkers, neighbors, and classmates who are either long-term local residents or came to the city before a newcomer can often jump start the newcomer's knowledge about local places. Participants mentioned that they trusted this type of recommendation, for reasons such as these social ties being "insiders" or "local", therefore very helpful and insightful. For example, Sharon (70-yo white female, 7 years in Philadelphia) remembers how her neighbors provided a great amount of information about local food and drink places near her neighborhood. And another participant, Leah (19-yo white female, 1 year residency), who is a student at University of Pennsylvania claimed that she would not have known

many of the restaurants that she now likes, if it were not for some older students informing her about them. Some other participants explained that they trust network recommendations, because the recommenders must have good reasons. For example, Ral (19-yo South Asian male, 1-year residency) said the following:

If a friend's saying, "Hey, let's meet here", they must have either prior experience or they heard from word of mouth. So it's all interconnected. So, if someone says, "Let's meet here", generally speaking, I would just go. Joe Coffee (the location of the interview)—I've never heard of the location, but I knew that when you said "let's meet at Joe Coffee", it must be either a nice location to conduct the interview or being the process or maybe you like their coffee.

It seems that the recommenders' knowledge and prior experience could partially explain the trust placed on personal network recommendations. However, this does not explain why many non-newcomer participants claimed that they trusted their friends' recommendations. In fact, it may not even offer an adequate explanation as to why newcomers trust local network recommendations, especially when abundant information of local places is available through digital media.

4.2.2.2 Taste and Expertise

When examined closely, I found that when participants were talking about personal network recommendations, they often hinted at an important factor for trusting the source—taste. Participants were more likely to trust other people's recommendations, if they believed that the recommenders either had good taste for food (expertise), or shared similar taste with themselves. This means that they did not automatically trust network recommendations simply because it was from a known or friendly source. Angelo (30-yo white male from Europe, 2-year residency), a graduate student at Temple University, expressed his trust in recommendations from friends who was born and raised in Philadelphia and attended the same university:

(Long-term local residents) obviously an invaluable resource for us, because I

pick up the phone, I send the message to a friend, “Hey look, we really like on good American food. Do you know where to grab these stuff.” Usually they are very helpful. . . . You have the insiders giving you where the Philadelphians are going. So that’s helpful.

However, he quickly added that while he trusted these friends for recommending “good American food”, he did not trust them for other types of foods. He said, “We use that (local recommendations) for things that we know Americans would be experts on. So American delis, or good comfort food.” Sharon, who was quoted in the previous section saying that her neighbors offered valuable recommendations, also added that she was not always satisfied with the places which her neighbors recommended. Therefore, I found that not all network sources were trusted, when it comes to recommendations of local places.

Trusted taste (literal or figurative) is an important factor in evaluating the trustworthiness of the recommendations. Many participants offered two types of remarks when they talked about tastes, “trusting recommendation due to shared taste” and “not trusting recommendation due to mismatched taste.” Both remarks suggest the same logic—network, word-of-mouth recommendations are trustworthy only if the source has matching tastes. Participants claimed that they only trusted people “whose taste I respect” (Stephanie, 26-yo Asian female, 4 years in Philadelphia), “people who I think I have common interests with, so they would think similar things to me about it.” (Lisa, 34-yo white female, 10 years in Philadelphia), or “friends whose palate I understand” (Lindsey, 46-yo African American female, 22 years in Philadelphia). As Lindsey explained:

I mean, I know that we tend to like and dislike some of the same things. So I can use—I can do that calibration thingy. She likes it, then I’m probably going to like it. . . . This is about the palate. My friends are different from me, but are like me enough in terms of our standards for restaurants, our standards for craft beers. I just trust them. Our palates are similar.

This talk of matching tastes carried a connotation that the participant’s taste in food or

cultural products was at least different from that of the mass, if not superior. Some participants were aware of this connotation and carefully stated that they did not wish to be perceived as being “snobby(ish)”, while complaining about the lack of people with matching tastes in their personal networks. For example, Lauren (59-yo, 30 years in Philadelphia) said:

You got to always keep in mind the person who’s giving you the recommendation. If they don’t have good taste—if they don’t have high quality taste, then they’re going to recommend a mediocre type of place for you. . . . Well I mean, I’m not trying to sound snobby. Don’t get me wrong, but I have a couple of nice neighbors. They’re nice people, but they don’t have good taste, all right? So if they recommend something, I’ll keep that in mind as a back up for one night when something else doesn’t work out.

Some participants’ remarks were more subtle. For example, Charlie (52-yo African American male, 5 years in Philadelphia) mentioned that he “hardly eat at McDonald’s or Wendy’s.” and that he likes to explore “cultural foods”. He then told me a lengthy story of meeting a friend in New York. He said that he had spent a great deal of time finding a great restaurant and made the reservation, but the friend did not want to go there due to the restaurant being in a distance. They ended up chatting at a generic coffee shop and did not even order food there. Charlie told me that he was very disappointed with this friend.

Sharing similar tastes or “palates” does not simply mean sharing the same interest in the same type of food. Expertise is an additional factor in discriminating network recommendations. For example:

[Paul F., 31-yo African American male, 30 years in Philadelphia] I like sushi. I love trying new sushi. And my friend texted me. He’s like, “Dude, this is *the* place. This is the place I’ve been telling you about. It’s such-and-such. You should go.” But see, he’s like—he hasn’t been eating sushi for long. So, to me, I’m like, “Really, guy? Are you sure this is the one?” Because I’m looking for the best place to eat sushi, which you can’t—you can’t trust everybody with sushi, you know what I mean?

[Aaron, 24-yo white male, 6 years in Philadelphia] It’s more professional word of mouth. So like when I bartended, I asked all the bartenders what looked

good. Or like if I really enjoyed a restaurant, I ask someone that worked at the restaurant what other restaurants they like. It's just not like a normal person. Or like a friend of mine who's opinion I actually know and trust, then I'll ask them. But it's not just like a random word-of-mouth. I don't necessarily trust a random persons.

Of course, not all participants cared about other people's tastes. Among the thirty-one participants who extensively talked about food and drink places, sixteen of them mentioned that they cared about recommenders' tastes in food.

4.2.2.3 Network Homophily

I noticed that, when participants were talking about getting recommendations from a neighbor, they usually did not show unconditioned trust in them. Often, they talked about either using online sources to verify the quality of the recommendations, or trying out the recommended restaurants but getting mixed results. On the other hand, when participants talked about getting recommendations from friends, they often expressed trust in their friends' tastes. This trust in their friends' tastes appeared to be associated with *homophily* in the personal networks. Homophily refers to “the principle that a contact between similar people occurs at a higher rate than among dissimilar people.” (McPherson, Smith-Lovin, & Cook, 2001, p.416). Homophily could occur between people who share the same race, gender, socioeconomic status, education, among other dimensions. Previous research shows that shared (cultural) tastes is associated with social tie formation (Lewis, Kaufman, Gonzalez, Wimmer, & Christakis, 2008; Lizardo, 2006). When participants mentioned that they trust their friends' taste or “palate”, it may have been due to parts of their personal network being homophilous to begin with. That is to say, it might not be that the participants trust their friends' taste because of their friendship, but that they were close to people who shared similar socioeconomic background, behaviors, and taste. Of course, it does not mean that all or most of the participants personal network alters share the same taste in food or cultural activities, but they bonded with people who did. Many participants had mentioned that they shared similar tastes with their friends.

Many participants believed that their friends' tastes were trustworthy, not due to expertise, but due to similarity, "because of course my friends go to the types of things I like." (Paul F.) Lily (23-yo Asian female, born in Philadelphia) mentioned that she would trust friends' recommendations over thousands of Yelp reviews, because they shared similar tastes:

I trust my friends and their opinions, because we have similar taste. It's like if I go to a lot of restaurants with these friends, then we would have similar taste in restaurants. So I would say it would take one review from a really good friend of mine who usually likes good food for me to go try a place. And if I were to equvalate [sic] that to Yelp (reviews), it would need to have like 300—if you see a restaurant that has like three reviews and they're all like five stars, then you're like, "Ah, but is it really that good?" It's almost like, "Yeah, this place has four and a half stars, and there's 7,000 people who've reviewed it." Then you trust it, right? As opposed to your one really good friend who you know likes good food and is honest.

For those participants who partake in niche cultural activities, network homophily may have a more profound effect on their understanding and use of city space. One example is Stephanie (26-yo Asian female, 4 years in Philadelphia), who is an artist. She mentioned that:

(My network) It's just mostly artists, musicians, and activists to a lesser extent. But most of the people I know are not really part of the museum scene. They're more like galleries scene and actual artists. And like I said, I'm friends with a ton of people who do music organizing. People who organize the shows or people who actually do music. So yeah, definitely my interests or the things I do are going to be very different from someone who's a scientist or someone who's local network is mostly economics majors.

Another outcome of having homophilous social ties who share similar tastes in food and other social activities is to exchange information about shared interest:

[Jessica, 38-yo white female, 14 years in Philadelphia] So, I'm someone who loves both cooking but also going out to eat. My boyfriend is, too. A lot of my friends are the same way, so we kind of keep each other posted about new restaurants that we've tried and stuff like that.

4.2.3 “I take it with a grain of salt”: Evaluating user-generated Online Reviews

Most participants said that they check online reviews of local places, especially food and drink places, on Yelp, Google, or other platforms. Previous research often looked the extent to which people view online reviews as credible, but largely ignored the process of evaluation. Additionally, there was the assumption that, due to the anonymity afforded by these review platforms, the determining factor of perceiving reviews to be trustworthy or credible was the identity of the reviewers. Findings from this research offer another perspective. Most participants in this research reported low levels of trust in Yelp reviews in general, but they still occasionally used Yelp or other user-generated reviews—but with close examination.

First of all, a few participants did express the concerns that fake (paid) reviews were an issue on Yelp. Two participants, Janet (62-yo African American female, born in Philadelphia) and Mark (58-yo white male, 10 months in Philadelphia), both mentioned that they were aware of paid promotions or removal of negative reviews due to personal experience. Janet knew a friend who paid a third-party service to “clean up your online presence.” Mark personally had previously been commissioned to organize fake reviews on Yelp. The opposite occurred, as well. For example, Lindsey (46-yo African American female, 22 years in Philadelphia) said she took Yelp reviews seriously (although not necessarily trusted them), because she had personally written reviews on Yelp. Overall, paid or fake reviews, although known to some participants, were not a big concern for most participants.

The key finding is that the mediated interaction between the readers of the reviews and the reviewers, rather than the direct interaction between the readers and the content, plays an important role in participants’ judgment of the reviews. I found that, when participants were talking about their evaluation of the reviews, they were often talking about the reviewers behind them. To be more precise, they were talking about the evaluation

of the *reviewing* process, which involved the expertise of the reviewers, their (lack of) relationships with the participants, the context in which the reviews took place, and the quasi-statistical sense of the mass' opinions.

4.2.3.1 Distrusting the Taste and Expertise of Strangers

An overwhelming concern about Yelp reviews was that the participants reported viewing the reviewers (Yelpers) as strangers. Janet, who was quoted earlier saying that she distrusted Yelp because of her friend's negative experience, added that:

Remember we talked about Yelp, and I said I don't trust Yelp? Yelp is word-of-mouth, but these are strangers. You see the difference coming from a stranger than someone you know? And so the trustworthiness of it depends.

Many participants took into consideration that these reviewers were often strangers with whom they had no meaningful relationship. In participants' remarks about these online strangers, I found that they were not too concerned about the anonymity of the reviewers, but rather that they did not know about these people in person. The issue was not that these pseudonymous strangers were faceless but that they might be clueless. In a sense, these reviewers were just like any stranger one could encounter on the street, who in most cases might not share similar tastes. Paul H. (68-yo white male, 2 years in Philadelphia) compared Yelp reviews to food blogs or magazines:

I think that I put Yelp and similar things at the bottom of the list, because you can read the reviews, but you don't know who they are. You have no context for who those reviewers are. And it doesn't matter if something has five stars on Yelp if all the reviews are coming from people that are pinheads. So a magazine like that, or a food blog, or something at least gives you a bigger context, and you expect some level of continuity. And so once you interpret where they're coming from, then you can sort of decide how credible they are or how closely they match your taste or something. Where something like Yelp—it's impossible to have a context, I think.

Paul's remarks show that treating Yelp reviewers as strangers is associated with distrust

in the strangers' taste and expertise. Previously, I discussed the finding that many participants trusted opinions of people in their personal network, only if their tastes match. I found that similar judgement was exhibited in assessing user-generated reviews, as well. Participants who said similar or matching taste was important also questioned the expertise of Yelp reviewers. To these participants, these strangers on the screen may not necessarily possess the expertise or taste that could yield trustworthy reviews. For example, Angelo, the Italian graduate student who said he only trusted American friends for American food but not other ethnic food, had this to say about Yelp reviews:

It's a little bit of a snobbish thing. We really don't trust the mass, because we had a lot of bad experience with that. "OH! IT'S AMAZING! IT'S THE BEST ITALIAN FOOD!" You go there and you're like "Really? It's not Italian. It's crap. And I don't know why you like this kind of stuff". . . . So if we want to find a good Tex-Mex here. We don't go with the stars. Because the stars is like the average Philadelphian—what the average Philadelphians think of Mexican food. And that's not my wife thinks of Mexican food, because an average Philadelphian didn't live in Mexico for two and half year. The same is applicable for sushi and all the other stuff—Chinese food, like obviously American Chinese food is not really Chinese food. . . . So, we are not experts, but we know that we don't trust the average Americans on the thing.

Another participant, Eric (73-yo white male, 1 year in Philadelphia) said:

Lots of the things seem to be written by people who don't share the same ideas about food as we do. . . . You have to read the reviews, because there are a lot people obviously don't get it. They're misunderstanding what a given restaurant is doing.

Aaron (24-yo white male, 6 years in Philadelphia), who was previously quoted saying he preferred expert recommendations over friends' recommendations said that he believed Yelp reviewers were not professional enough to be trusted:

Not to sound douchey, but I don't think that the average person can review something objectively. It's not their job, it has a lot to do with how they're feeling that day. They might not know what they're getting into. . . . I actually actively distrust Yelp because they often rate things badly for no real reason. Like one of my favorite places I worked was Blarney Stone and it's like a dive

bar. But you know if you're going there it's a dive bar. People go and they rate it like, "Oh, all they have is greasy food and cheap beer." But like that's why you go there. You shouldn't be rating poorly for exactly what it's supposed to be. So I don't really trust Yelp so much.

As shown in Table 4.2 and 4.3, there were more participants who mentioned getting network recommendations. And they also said to scrutinize or completely distrust Yelp reviews at the same time, while there was an even split between those participants who believed taste was important and those who did not. However, neither of the two participants who said they trusted Yelp reviews talked about taste.

Table 4.2: Crosstab of Attitude towards Yelp reviews (columns) and taste

	Trust	Scrutinize	Distrust	Did not mention
Taste is important	0	9	3	4
Did not mention taste	2	9	2	17

Table 4.3: Crosstab of Attitude towards Yelp reviews (columns) and Word-of-mouth (WoM) recommendations

	Trust	Scrutinize	Distrust	Did not mention
WoM is important	1	4	13	9
Did not mention WoM	1	1	5	12

4.2.3.2 Reading the Mediated Strangers' Minds

Although most participants questioned the trustworthiness of user-generated reviews, only a few of them completely rejected using these review sites. Most participants said that they used online reviews for local places to some extent. However, they emphasized the importance of close-up examination of these reviews. Across different interviews, a phrase that I kept hearing was, "I take it with a grain of salt." The consensus among the participants was that user-generated reviews cannot be unconditionally trusted or dismissed.

Consistent with existing literature, factors such as volume, valence, ratio of positive and negative reviews were often mentioned by the participants. The volume of the reviews was the most frequently mentioned factor. Chad (27-yo white male, 1-year residency) explained that:

So if it says 300 reviews 4.5 stars, I'd be like, "That's pretty good." I don't go into much detail beyond that but if it's 12 reviews 5 stars than I trust it less. And so pretty much as the number of individual reviews goes up and it stays above 4 stars then it passes my litmus test.

That the users take into consideration the volume of reviews is not a new finding at all. However, "I take it with a grain of salt" means more than the simple measures of review sample size or positive/negative ratio. In other words, the quantified measures such as volumes of reviews alone are not sufficient for judging the trustworthiness of the reviews. Qualitative interpretation of the reviews turns out to be a key factor, as well. The qualitative interpretation of the reviews was more than the examining the valence of the reviews. I found that the participants did not simply read *what* the reviewer said, but they also were trying to understand *why* the reviews were written. I call this behavior "quasi-thick-description²." Participants explained that they attempted to evaluate the usefulness of individual reviews by dissecting and analyzing the meaning of the reviews and the contexts and situations in which the reviews were produced. In other words, this quasi-thick-description is a sense-making process where the participants interpret the "data", which are the content of the reviews, based on their prior experience and their understanding of human behavior and societal norms. However, perhaps a more important finding was that the participants often treat each individual reviewer as a real person who was at the place they reviewed, rather than simply a source of information. For example, Maggie (67-yo white female, 1 year in Philadelphia) explained:

Well, then you start reading the reviews. And you will discover that often the people who didn't like it didn't know what they were going to; and it

²This is of course my borrowing from both Geertz (1973)'s *thick description* and Noelle-Neumann (1974)'s *quasi-statistical sense*.

didn't live up to their expectations, because they thought they were getting something completely different. Or, you'll discover that the people who really loved it loved it for reasons that you would not. So it can be helpful if you're willing to use it, and spend some time, and be discriminating. But if you just look at the stars, and say, "Okay, it's great," you're making a big mistake, because 50% of the time, that's not going to be helpful at all.

Participants often mentioned how they would scrutinize negative reviews, as they may provide more information. Some participants believed that occasional negative reviews should be ignored, based on their understanding of the contexts in which the negative reviews were produced. They claimed that bad reviews might not reflect the quality of the food or service but the situational characters of the reviewers themselves. Some participants considered negative reviews to be invalid, due to their belief that these reviewers were often posted out of anger and frustration. For example, Kevin (52-yo white male, 10 years in Philadelphia) said, "One star (review) is usually someone's angry about poor service. Yeah. They had a bad day". Other participants also noticed that:

[Joe, 29-yo white male, 2 years in Philadelphia] I generally don't find the people who are leaving reviews to be that helpful. People who leave bad reviews, it's usually like they had to wait in line to get a table. I don't find them particularly helpful.

[Amy, 40-yo white female, 2 years in Philadelphia] You kind of have to take them with a grain of salt, and not just—oh—somebody might be in a bad mood or angry, and so people tend to post either when they're really excited or really angry. I may not agree with them on certain things.

[Jessica, 38-yo white female, 14 years in Philadelphia] You have to take it with a grain of salt, because people are going to—people with really negative things to say are going to say them. You're going to be motivated to leave a really bad review if something really, really bad happened. And less so when it's just either a somewhat positive or a somewhat—a neutral experience.

Some participants offered more detailed remarks about their views on negative reviews. They explained the thought process of their trying to picture the specific situations the reviewers were in when they posted the reviews:

[Lois Z., 52-yo white female, 23 years in Philadelphia] If I'm going to look up a place and every single review is bad, then I'm like, "Well, that's not so good. What's up with that? There's something weird going on." Is it only the people that bother to review a place are pissed off customers? I think there's a thing where people enjoy ranting on things more than the positive aspect of things because you what know? Because you think more immediately, "God, I'm so pissed off at this place. I got to write about it." Whereas you can get it off your chest.

[Nick, 21-yo African American male, 11 years in Philadelphia] It's just different things happen on different days, and if that person—whatever happens—a customer gets upset. Usually, a place is pretty nice, but that one day, they were just off, and that customer writes a mean review. That doesn't mean that the places sucks. It just meant that at that moment, that one person had a bad experience.

On the other hand, some participants viewed the negative reviews from a different perspective and claimed that they took these reviews more seriously. However, it does not mean that they would unconditionally take every single negative review seriously. Additionally, their views on negative reviews were based on how these reviews were personally relatable to them. For example:

Gina (67-yo white female, 38 years in Philadelphia): I looked at the reviews for *Misconduct Tavern*. I thought that would be nice, but then when I read the reviews, people said "oh, the waitress didn't pay any attention to us", "The food came back cold. We had to wait". I went "nah-uh". This is not gonna work.

Lois B. (58-yo white female, 30 years in Philadelphia): Well, you have to weigh each review with a grain of salt and try to figure out what angle they're coming from. If they're a really good reviewer, they'll tell you exactly what the problem was they had with it and why and see if that relates to you.

Although the participants may have different views on how negative reviews should be treated, these opinions were all based on their interpretation of the characters of the reviewers and the situations the reviewers were facing at the time. This could mean that the value of the reviews may be contingent on both the interpretation of the reviews and

the relevancy of the situations to the readers. The remarks from one participant, Natalie (41-yo African American, 2 months in Philadelphia) is a great example of this contingency:

I like to read the bad stars to see if the review is based on something that the restaurant did or some idiot thing that the customer had done—They have that kind of like, “Well, I wanted to have water in a beer mug and the didn’t want to give it to me because blah, blah, blah.” I would be like, “Well, I know why they wouldn’t give it to you in a beer glass vs another glass because they probably had a limited number of glasses.” So that’s not entirely the fault of the restaurant. But I do look for things like, “Their food made me sick.” I look for that. And, “Their bathrooms were terrible.” Or I look for like, “So and so was rude to me,” or that kind of thing. But they will often put why that person was rude. So if they go through the whole process why this was such a terrible experience, then I can tell that they were having the truth—or they were telling the truth. But if they were just like, “The food sucked,” that could be a disgruntled employee, that could be a troll from another restaurant coming in.

Therefore, the most important finding was not whether the participants take negative reviews seriously, but the fact that they “took it with a grain of salt” and tried to make sense of the situation in which the reviewing process took place and the reviewers as onscreen strangers that they encountered.

4.3 Conclusion

In modern societies, dealing with diverse strangers is an important part of city residents’ mundane, everyday life. In industrial-urban societies, city residents began to learn to co-exist with strangers. Information overload created the blasé, indifferent residents of modern cities. With the ubiquitous exposure to user-generated contents, contemporary city residents have learned to cope with the encounters with online pseudonymous strangers.

In this chapter, I first established that food and drink places are important in contemporary city residents’ everyday lives. Getting credible information about these places does not seem to be a trivial matter. I then discussed how city residents view recommendations from their personal networks. I found that network recommendations play an important

role in people's awareness of local food and drink places. It was further found that not all network information sources were equally trusted; Shared tastes or perceived expertise are important factors for trust to be established. Additionally, network composition was found to be associated with similar tastes in food. This finding is consistent with previous research on the conversion between social capital (network connections) and cultural tastes (DiMaggio, 1987; Erickson, 1996; Lizardo, 2006). I should point out that, with the sophistication of the food and beverage industry in contemporary American cities, the "taste" in food that participants reported should be considered as a type of cultural taste, instead of the personal preferences in flavors of food.

In terms of online reviews, I found that most participants had much more nuanced answers than "trust" or "do not trust" online reviews of local food places. The finding that the participants "take it with a grain of salt" is consistent with the existing literature on online reviews situated in marketing communication research. However, my additional findings unveiled a different aspect of user-generated online information. Existing research on this matter often consider the assessment of user-generated reviews as a one-way information acquiring process, wherein the "what" (the messages and the quantity of messages) and the "who" (source characters) in online reviews are treated as being embedded in the messages alone. However, my analysis shows that reading online reviews is a dynamic, constitutive process, wherein the reader of the reviews engage in short, brief, asynchronous interactions with pseudonymous strangers on the screen. Although there is no mutual awareness between the reader and the pseudonymous strangers who provided the reviews, the reader actively interprets the actions that took place behind the curtain. This is very similar to the *parasocial interaction* in mass communication research, wherein audience members imagine interaction with onscreen personas (Horton & Wohl, 1956).

Findings in this chapter suggest that the mundane, everyday life use of social media platforms enabled new forms of social interaction and communication with urban strangers. However, a potential challenge to this view may come from traditional CMC

research, where mutual awareness has been the assumed criterion for social interactions. In Licoppe's original conception of pseudonymous strangers, fostering mutual awareness is one of the key affordances of locative media, wherein urban strangers could "meet" and be aware of each other while their offline identities remain unknown. When there is a lack of such mutual awareness, researchers in other fields such as mass communication or information science often take over. My findings suggest that social interaction with pseudonymous strangers (without mutual awareness) could be promising interdisciplinary field of inquiry for future research. Is mutual awareness a necessary precondition for social interaction? Are we using yesterday's terminology to interpret today's phenomena? These are the questions that I propose to be taken more seriously in CMC research.

Chapter 5

Mobility in Urban Space

5.1 Introduction

In the preceding chapters, I have mainly discussed findings from the semi-structured interviews, focusing on the “zoomed-out” view of the informational and spatial practices of city residents. The self-reported data offered a broad view of the participants’ own accounts of the role of digital media technologies in their understanding of the urban space and places. As a part of the research design, a subset of the participants took part in the field inquiry, through which I was able to directly observe the situated (informational and spatial) practices in the field. Findings in this chapter address the research question: “How are mobile locative apps integrated into the spatial practices of city residents while they are moving through streets in the city? ”

Additionally, the discussion of the findings will focus on the issue of diverse chance encounters in the urban space. Previously, scholars have argued that algorithms embedded in mobile apps will provide optimized routes and local information, which might reduce chance encounters and urban serendipity (Foth, 2016; Zuckerman, 2011). As a response to this call for promoting “getting lost” in the city, some experimental projects, such as Serendipitor, Likeways, or GetLostBot (Kirman, 2012), have been designed to facilitate purposeless wandering in urban environments to increase serendipitous encounters in urban areas. As such, findings reported in this chapter will address an additional research question: “What is the relationship between the use of mobile locative apps and urban serendipity?”

5.2 Overview of the Field Data

As previously described in Chapter 2, twenty-three individuals participated in this study between September 2016 and September 2017. In this study, the participants completed an exploratory walk (henceforth “the walk”) in the Rittenhouse Square area. They were additionally instructed to visit two designated locations (henceforth “destinations”), a small take-out restaurant and a T-Mobile cellphone service store. During this walk, their eye-gazes were recorded with METs. Their cellphone screen activities were also captured and recorded. However, the participants were given the instruction that using the cellphone during the walk was not a necessary requirement. They spoke their thinking process out loud during the walk (“think-aloud” method). Additionally, they reviewed the recorded eye-tracking video data and provided comments on it. Please refer to Chapter 2 for the details of the research design.

Due to the complexity of this outdoor study, there has been significant data loss in some of these cases. Data loss was usually a result of equipment overheating (especially on hotter days), eye-tracking program failure, phone-recording failure (due to either loosened cable connections or laptops overheating), or voice recording failure. As such, some cases were excluded if no meaningful observation could be made from triangulation across different data sources. Six sessions were excluded, based on the following criteria: (1) Smartphone screen recording should be available; (2) If the screen recording was damaged, the smartphone screen should be at least partially visible in the eye-tracking video, and there should be sufficient verbal information from the participant to make sense of what he or she was doing with the phone. With these criteria, seventeen cases were preserved and reported in this chapter. Table 5.1 shows this subset of research participants, including five Asians, seven Black or African Americans, and five Caucasians. Of the seventeen participants, nine were female. The youngest participant was nineteen years old, and the oldest was fifty. The average age was 32.8 years old ($SD = 9.95$). It should be noted that most of the African American participants (five out of six) had only high school

degrees, while most other participants had advanced degrees. As this is exploratory research, the exclusion of these cases does not pose a threat to the validity of the research. Additionally, the richness of the data yielded from each case allows sufficient triangulation between and within the cases to ensure the robustness of the analysis.

Table 5.1: Profile of participants (n=17, listed by the date of study)

PARTICIPANT	GENDER	RACE/ETHNICITY	AGE	OCCUPATION	Education
Dan L.	M	East Asian	36	Engineer	Grad school
Chad V.	M	Caucasian	27	Resident Physician	Grad school
Chris B.	M	African American	23	Labor	High school
Matt M.	M	African American	36	Labor	High school
Leah B.	F	Caucasian	19	College Student	Some college
Stephanie K.	F	East Asian	26	Artist	College
Lily N.	F	East Asian	23	Graduate Student	Some graduate
Todd T.	M	African American	50	Primary school teacher	Grad school
Ral R.	M	South Asian	19	College Student	Some college
Brian P.	M	Caucasian	39	Music teacher	Grad school
Ashley L.	F	Caucasian	41	College Professor	Grad school
Lisa S.	F	Caucasian	34	Human service	Grad school
Kelly D.	F	East Asian	44	Bio researcher	Grad school
Nick M.	M	African American	21	Self-employed Contractor	High school
Lindsey B.	F	African American	46	Librarian	Grad school
Annie R.	F	African American	32	Home Health Aid	High school
Natalie Y.	F	African American	41	Dancer	High school

Participants in the walking study were instructed to walk freely around the area as if they had recently moved into a house or apartment not far from the park. Additionally, they were instructed to visit two places near the park, a T-Mobile store at 1737 Chestnut Street and A Chinese restaurant called *Szechuan Hunan Chinese Restaurant* at 274 South 20th Street. The two designated destinations gave the participants a clear goal, which was useful for the purpose of this study. Some participants focused on visiting only the two destinations, whereas others explored the area beyond the task of finding the two places. Figure 5.1 shows a map of aggregated walking routes from all seventeen sessions. All seventeen participants' routes were stacked together. It can be seen in this figure that most participants walked within an approximately two-block radius from the park, while

a few participants walked to further locations.

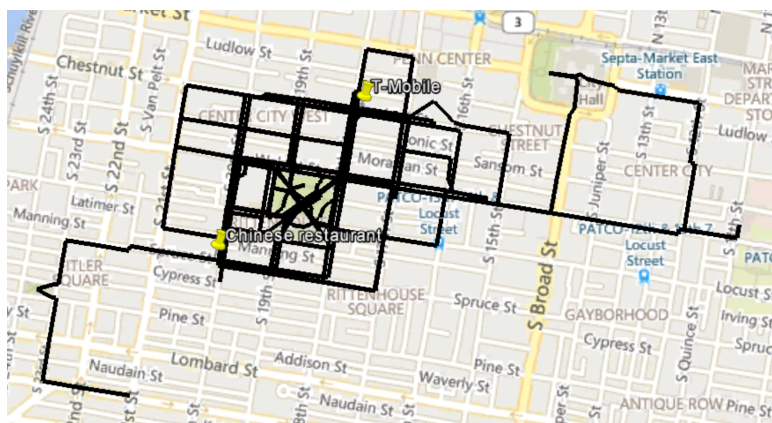


Figure 5.1: Aggregated walking routes from the 17 research sessions.

Participants were not instructed to stay outdoors during the walk. Some participants entered shops and restaurants. Other participants sat down on park benches to take a rest. It appears that participants who completed the study on colder days¹ were more likely to enter shops during the walk. However, this may not mean that they entered the shops due to the weather, as these participants, in fact, walked for a longer time than most participants. Holiday shopping season seems to be a plausible explanation. Many stores had promotional posters in their windows, and the participants all reported in the post-walk interviews that they showed interest in them. One participant (Matt M.), for example, entered many hotels along his route, because his relatives were coming to Philadelphia for Christmas. And he wanted to use this opportunity to find a hotel for them. On the other hand, participants who completed the study on warmer days entered stores and restaurants as well. For example, Chad ordered a salad from *sweetgreen* on Chestnut Street; Todd purchased snacks at a 7-Eleven convenience store; and Nick bought a pack of cigarettes from a smoke shop². Other participants entered different shops and boutiques for browsing. The frequency of visits to local businesses is a strong indicator of the validity of this study. This research design was able to mimic a realistic exploratory walk. In the

¹November and December of 2016, including Matt L. (excluded case), Charlie C. (excluded case), Matt M., and Leah B. It should be noted that even on December 4, 2016 (Leah), the average temperature was 49 °F with wind speed of 7 mph (NW). None of the participants completed the study in extreme weather.

post-walk interviews, all participants reported that they were no longer aware of the eye-tracking device after just a few minutes. Due to the slim body of the eye-trackers and the participants wearing a visor over the eye-trackers, other co-located people, such as passers-by and store staff rarely paid attention to them. Throughout the entirety of the field research, there had been only three instances where others noticed and asked about the equipment.

5.2.1 Cellphone Use

During this study, all seventeen participants used their smartphones for a variety of activities. Table 5.2 provides a brief summary of the activities participants performed on their phones. It should be noted that the addresses of the two locations were sent to the participants via two separate text messages. Therefore, if a participant used the phone only to look up the addresses a single time, he or she would not be considered to have used his or her phone. Only one participant (Annie) used her phone solely to confirm the addresses (but for multiple times). All other participants used other apps as well. The phone was most prevalently used for mobile maps (Google Maps or Apple Maps), which helped locate the two destinations. Thirteen participants used mapping apps at least once. Stephanie's Google Maps app crashed for an unknown reason, when she tried to launch it. She then decided to give up using the mapping entirely. Despite the prevalent use of mapping apps, only four participants used turn-by-turn navigation on their phones.

Apart from using a cellphone to complete the wayfinding subtask (visiting the two destinations), ten participants used their phones for many other purposes. Before examining those uses, it should be noted that participants did not engage in extensive interpersonal communication on their mobile phones while being observed. The obvious reason was that some participants withheld interpersonal communication (such as placing phone

²The smoke shop owner was very alert to the eye-trackers. He confronted us with a slightly hostile attitude, but nothing bad happened, especially after I explained our intention. That was the only instance of expressed hostility toward our video recording.

Table 5.2: Summary of the use of cellphones during this study

	Used phone	Maps	Navi- gation	Searching for places	Other use of cellphone	Walking while using phone	Stop walking while using phone
Annie R.	Yes	No	-	No	-	Yes	No
Ashley L.	Yes	Yes	No	No	Take phone call	Yes	No
Brian P.	Yes	Yes	No	Yes	Pokémon Go	Yes	Yes
					Taking photos		
					Taking notes		
					Check text messages		
Chad V.	Yes	Yes	No	Yes	Google search	Yes	No
Chris B.	Yes	Yes	Yes	No	Texting	Yes	No
Dan L.	Yes	Yes	No	Yes	-	Yes	No
Kelly D.	Yes	Yes	No	Yes	-	No	Yes
Leah B.	Yes	Yes	Yes	No	-	Yes	Yes
Lily N.	Yes	Yes	No	No	-	Yes	No
Lindsey B.	Yes	No	-	Yes	-	Yes	No
Lisa S.	Yes	Yes	No	No	-	Yes	No
Matt M.	Yes	Yes	Yes	No	Google search	Yes	No
Natalie Y.	Yes	Yes	No	No	-	No	Yes
Nick M.	Yes	No	-	No	Texting	Yes	No
Ral R.	Yes	Yes	No	Yes	Taking notes	Yes	Yes
					Taking pictures		
					Checking messages		
					Google search		
Stephanie K.	Yes	No*	-	No	Taking pictures	Yes	No
					Google search		
Todd T.	Yes	Yes	Yes	No	Texting	Yes	No
Total (17)	17	13	4	6	8 participants: Google search (4) Taking photos (3) Texting (4) Phone call (1) Taking notes (2) Play Pokémon Go (1)	15	5

calls or sending/checking text messages) due to concerns for privacy. Some participants (e.g., Leah) told me that they were somewhat reluctant to open text messages because of the screen capture, even though they were given a thorough explanation of confidentiality and the rigorous subject protection afforded under an IRB-approved research study, before they signed the consent. Another reason for the lack of interpersonal communication might be that the participants did not receive many messages (text messages, Facebook messages, or WhatsApp messages, etc.) to begin with. Some (six) participants, however, did send or view text messages, or took a phone call.

Six participants used their phones for what I call locative purposes. This refers to

behaviors such as searching for information about a place nearby, using mapping apps or Yelp. There were other uses of cellphones during the walks as well, such as: taking pictures (of signage, architecture, posters, etc.), Google searches (for information not related to places.), and writing notes using note-taking apps. One participant (Brian) even played the mobile game Pokémon Go ³ for a while. Another participant, Dan, asked if he could play Pokémon Go, but did not do so during the study.

It is a popular belief that many people have developed the habit of using their phones while walking on the streets, causing danger to themselves and others. I found that most participants (fifteen of seventeen) were, in fact, doing this. There were some participants (five of seventeen) who temporarily stopped walking and even stepped aside when they used their phones on the street. Note that the two numbers do not add up to seventeen, because some participants had done both.

5.3 Looking from 3,000 feet above: Digital wayfinding and exposure to diverse streets

To examine the relationship between smartphone use and chance encounters, I looked at participants' wayfinding behaviors during the walks and their use of mobile maps. I focus on why, how, and how long the participants used mobile maps and navigation. Additionally, I looked at whether automated wayfinding was associated with reduced chance encounters.

³Pokémon Go is a popular location-based mobile game. The game maps the physical environments such as streets into the game. The players are supposed to walk around in physical space to trigger in-game events.

5.3.1 Wayfinding and Navigation Choices

Participants in this research were allowed to freely choose their routes, as long as they visited the two destinations before completing the walk. As such, comparing their wayfinding behavior can be challenging. However, because the participants were instructed to visit both destinations, most participants (fifteen out of seventeen) had walked directly between the Chinese restaurant and the T-Mobile store without any intentional detour. Within this subset of participants, eight of them had walked from the Chinese restaurant to the T-Mobile store (which means they went to the restaurant first) and seven from the T-Mobile Store to the Chinese restaurant. This has created an opportunity to triangulate participants' wayfinding behaviors, with several factors being controlled for. Figure 5.2 shows an aggregated map of this subset of routes. The red lines represent routes from the T-mobile store to the Chinese restaurant. And the blue lines represent routes from the restaurant to the T-Mobile store.

After comparing these route segments, two movement patterns emerged. One is an L-shaped route, and the other is a diagonal route that cuts through the park. The L-shaped route is exactly what it sounds like. The participants in general turned once at one key intersection, generating a route that looks like the letter “L” on the map. For example, to get to the Chinese restaurant from the T-Mobile store, Lily (as shown in Figure 5.3a on page 153) walked on Chestnut Street for two blocks, and turned left at the intersection of Chestnut Street and South 20th Street, and then walked along 20th street to the destination. Nine participants adopted this strategy. Although there were different variations of this strategy, the general characteristics of this type of route is that the participant made very few turns along the route. The other major wayfinding strategy was the diagonal route, which cut through the park. Figure 5.3b shows an example of the diagonal routes, as done by Leah. The diagonal routes followed the paths in the park⁴.

The L-shaped routes and the diagonal routes each have their own advantages. The

⁴For a close-up look of the paths in the park, please refer to Figure 2.6 on page 49

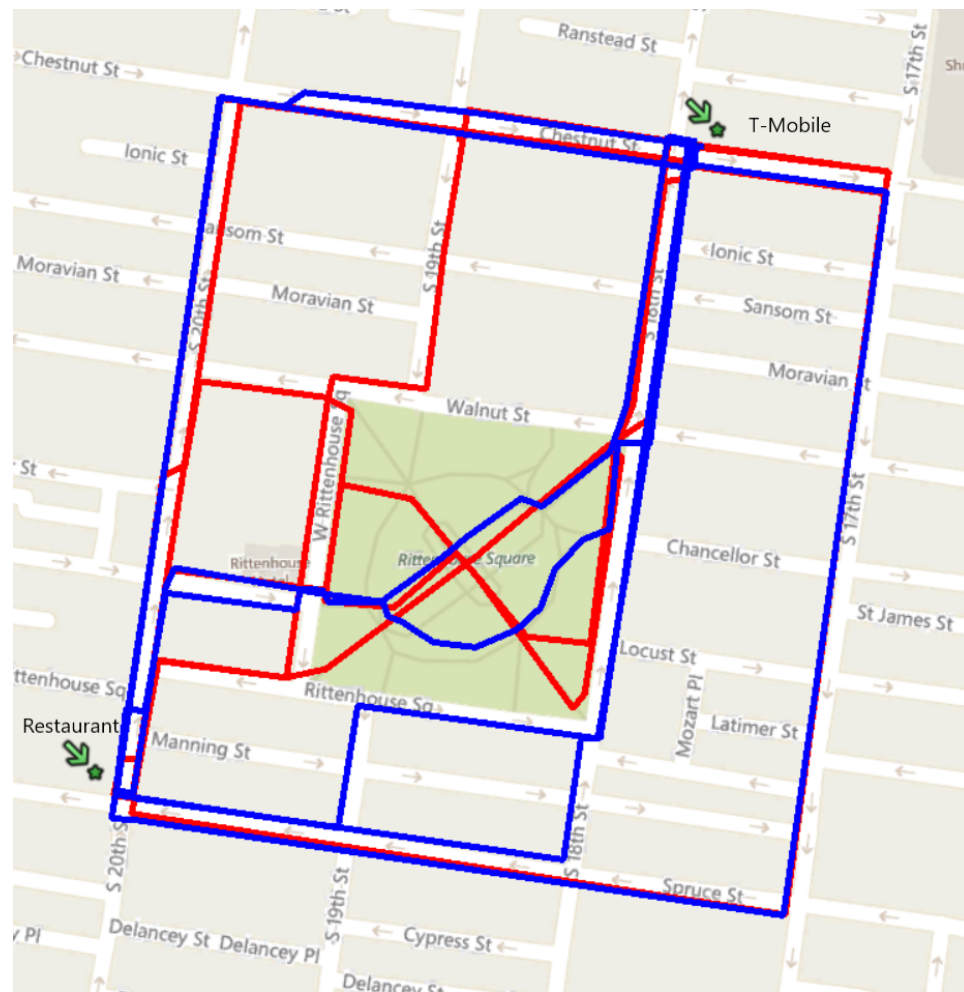
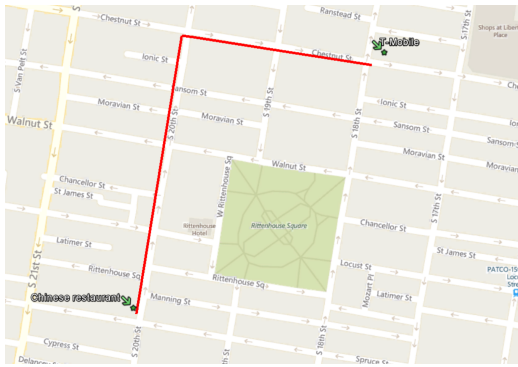
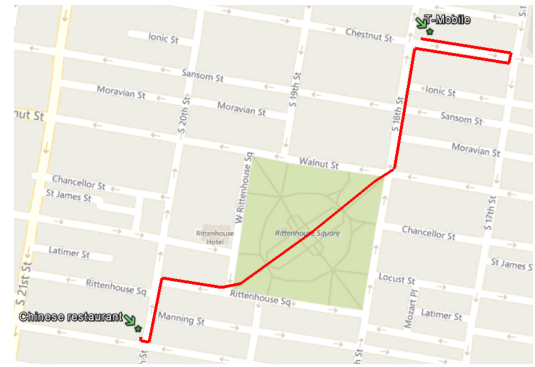


Figure 5.2: Aggregated map of route segments between T-Mobile and the Chinese restaurant. Red lines represent routes to the Chinese restaurant; Blue lines represent routes to the T-Mobile store.

L-shaped routes are easier for the human mind to process. As shown in Table 5.3, on average, the L-shaped route takers made approximately 1.4 turns to reach their destinations. The diagonal route takers made approximately 4.4 turns. This suggests that the participants who took the diagonal routes might have done so with more effort than the L-shaped route takers. Examining the layout of the Rittenhouse Square Park (as can be seen in Figure 2.6 on page 49), it can be found that the park is symmetrically fragmented and divided by the many paths that run through it. Additionally, the park has many tall trees, the canopies of which prevented the participants from easily telling the direction in which they are heading. However, when done “correctly,” this type of route should be the



(a) The L-Shaped route, from T-Mobile (top-right point) to the Chinese restaurant (bottom-left point), generated from Lily's walk



(b) The diagonal route, from T-Mobile to the Chinese restaurant, generated from Leah's walk

Figure 5.3: Two typical route choices

quickest one from one place to another. In fact, this route is what Google Maps suggests by default, because the distance of the routes cutting through the park are approximately 100 meters shorter than the alternative routes (Figure 5.4). Like many other mapping apps and navigation apps, Google Maps uses Dijkstra's Algorithm (Dijkstra, 1959) to find the shortest path between two points of a weight graph of the street network (Lanning, Harrell, & Wang, 2014). In other words, it attempts to yield the shortest route possible on streets and paths it recognizes.

Table 5.3: Summary of wayfinding strategies

Route pattern	Frequency	Average turning points	Explanation
L-shaped	9	1.44	Grid (9)
Diagonal	5	4.4	Mobile navigation (2) Construction (1) Exploration (1) Walking a dog (1)
Zigzag	1	5	Traffic light

These differences may seem trivial, but they open a window for understanding how pedestrian navigation (especially the wayfinding strategies) works in Center City Philadelphia. In an oversimplified sense, the L-shaped routes could be considered to be optimal

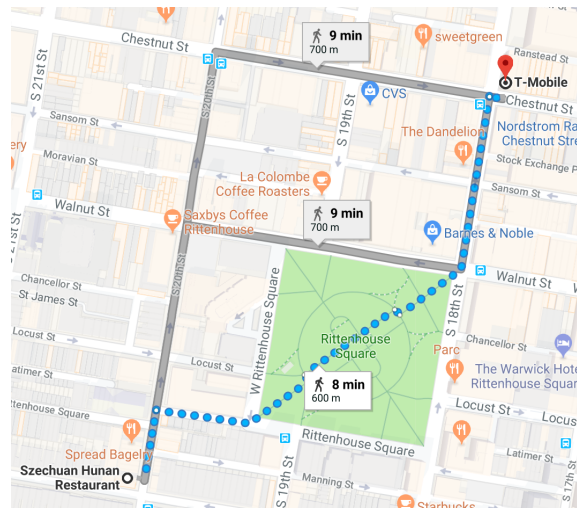


Figure 5.4: Routes as suggested by Google Maps

routes (fewer turns) to the human mind, whereas the diagonal routes could be considered optimal routes to an algorithm (shorter distance). By comparing the rationale behind the route choices in this case, it is possible to understand how a mobile algorithm may or may not affect serendipitous encounters in an urban environment.

The rationale behind the L-shaped routes is indeed simple. Without checking the directions on any mapping app, the L-shaped routes are the most intuitive to local residents who understand the street grid in Center City. The participants need only to focus on steps such as “walking on one street for N blocks” → “turn left/right” → “keep walking until I find X.” This can be deduced from the post-walk interviews and the think-aloud verbal data.

Example 1: After arriving at the Chinese restaurant, Todd checked his phone for the location of the T-Mobile store. He did not search for the location in any mapping app. He explained in the interview: “... Just the address (of the T-Mobile store), the number. The higher the number, it’s at the end, the lower the number, it’s at the beginning of the block... so I said, ‘Forget it. I’m right at the corner. I’m just gonna walk all the way over to 17th and walk up.’” (He eventually walked on 18th Street, instead of 17th).

Example 2: After arriving at the T-Mobile store, Lily checked her phone for the location of the Chinese restaurant. She quickly took a glance at the text message containing the address, and said, “So I know 20th is going west on Chestnut. So, I’m going to walk that way while I put the address in again...”

She opened Google Maps app on her phone, and typed in “274 s 20th street” to search for the place. The map moved to the Chinese restaurant. She then zoomed in on the map and examined the location of the restaurant and said, “So we’re heading to... on 20th right before Spruce, So, we’re going down to 20th then...” She eventually walked west to 20th Street, turned south (left), and kept walking on 20th Street until she found the Chinese restaurant. (Lily’s route can be seen in Figure 5.3a.)

If the L-shaped route is indeed more intuitive to the human mind, why did the other participants take the diagonal route? Several explanations emerged after close examinations of the cases. First, there is a connection between using mobile navigation and choosing the diagonal route. All three participants who used mobile navigation on their way to the Chinese restaurant (Leah, Matt, and Chris) chose the route that cuts through the park. For example, Leah (Figure 5.3b) not only turned on mobile navigation using the Google Maps app, but also enabled voice navigation. When she was walking on 18th Street towards the park, she checked the navigation directions on her phone from time to time. When she saw the park appear on the screen, she said, “On my map, I see I have to go through Rittenhouse Square.” After about one minute, she arrived at the corner of the park, and said, “okay... looks like I’m going to walk straight through... Rittenhouse...” By frequently checking the navigation on her phone, Leah strictly followed the route the navigation app suggested. Two other navigation users acted in a similar way. Other participants who took diagonal routes had different reasons. It appears that the decisions involved many contingent factors. For example, when Ashley walked north on 20th Street, from the Chinese restaurant to the T-Mobile store, she suddenly made a right turn at the intersection of Locust Street/20th Street and headed towards the park (see Figure 5.5). The rationale behind this turn was that the sidewalk was blocked due to construction that prevented her from continuing walking on 20th Street. Others chose to go through the park simply for a more pleasant experience (Lindsey and Natalie, who both completed the walk on warm, summer days). In addition, Natalie was walking with a dog during the research session, so she preferred to walk through the park “in case he (the dog) goes to the bathroom.” It should be noted that among the diagonal route takers, the mobile navigation

users (Leah, Chris, and Matt) all completed the study in colder months (late November and early December), whereas the other three participants, Ashley, Lindsey, and Natalie participated in the study in much more pleasant weather in July and September. On warm days, the park was usually filled with people sitting, walking, and engaging in diverse activities, but on cold days, there was very few people in the park. Therefore, on one hand, an argument could be made that the warm weather was the reason for some participants to choose to walk through the park, it could also be argued that mobile navigation clearly influenced the other participants.

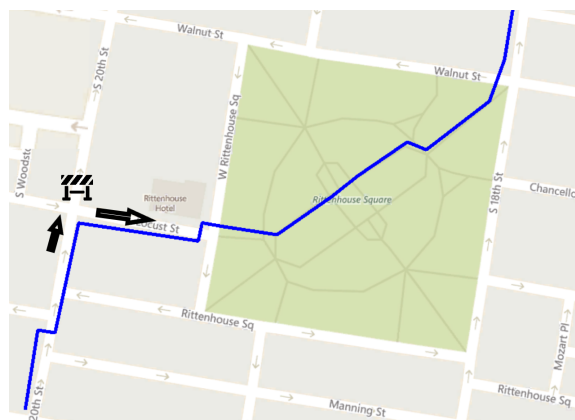


Figure 5.5: Ashley making a right turn due to roadwork blocking the sidewalk

5.3.2 Mobile Maps

As shown in Table 5.2, thirteen participants used mobile maps during the walks. This may seem to suggest a heavy reliance on mobile maps. However, a closer, qualitative examination suggests otherwise. Four participants did not rely on mapping apps at all to complete the study. They simply relied on the address provided to them to find the two locations. The majority of the participants who used mobile maps also used their survey knowledge of local streets and contextual cues from the surroundings. Below is an in-depth analysis of the two different ways of using mobile maps/navigation during the walks.

5.3.2.1 The turn-by-turn navigators

Four participants (Chris, Matt, Leah, and Todd) activated turn-by-turn navigation in the mobile maps during the walks, when walking towards at least one of the two destinations. They strictly followed the route as the mobile maps instructed. A common behavior of the turn-by-turn navigators was the frequent and extensive checking of the navigation app while walking in the street. Participants frequently checked their phones to ensure that they were on the right path. Table 5.4 shows the frequencies and duration of checking the mobile phone for navigation. The total time duration of a navigation episode was defined as ranging from when the participant first opened the mapping/navigation app to when he or she arrived at the destination. The participant's looking down at the navigation app without focusing his or her gaze on the road or the surroundings (this includes using his or her peripheral vision to quickly scan the surroundings) was counted as looking at the navigation app once. During these segments, Chris checked navigation forty-one times, Leah sixteen times, and Todd ten times. Chris spent a total of four minutes and forty-three seconds (34.43% of the segment) checking the navigation app on his phone, Leah spent two minutes and twenty-four seconds (23.53% of the segment), Todd spent three minutes and nine seconds (41.09% of his segment), and Matt spent three minutes and nine seconds (41.09% of total time). Figure 5.6 shows a more intuitive chart, which illustrates the distribution of the mobile phone use throughout the four segments. It should be noted that Todd's segment began from within Rittenhouse Square and is thus shorter than the other two. From the chart, it is evident that when approaching the destination, the participants became less reliant on the navigation app. Before that time, the use of a mobile navigation app was sporadic, frequent, and extensive. The frequent checking of a mobile navigation app occupied a large portion of these participants' time during the walk.

5.3.2.2 The location-checkers

Many participants used mobile maps (Google Maps or Apple Maps) only to locate their destinations on the map, without searching for routes or turning on the navigation on

Table 5.4: Duration of checking navigation app during for finding the Chinese restaurant

	Frequency	Maximum Duration	Mean Duration (SD)	Total Duration	% of total time
Chris	41 times	39"	7" (7)	4'43"	34.43%
Leah	37 times	32"	8" (8)	5'07"	21.30%
Todd	16 times	46"	10" (11)	2'24"	23.53%
Matt	10 times	1'13"	21" (23)	3'09"	41.09%

Note: Total time of navigation use = from when the participant first activated navigation app to when he or she arrived at the destination.

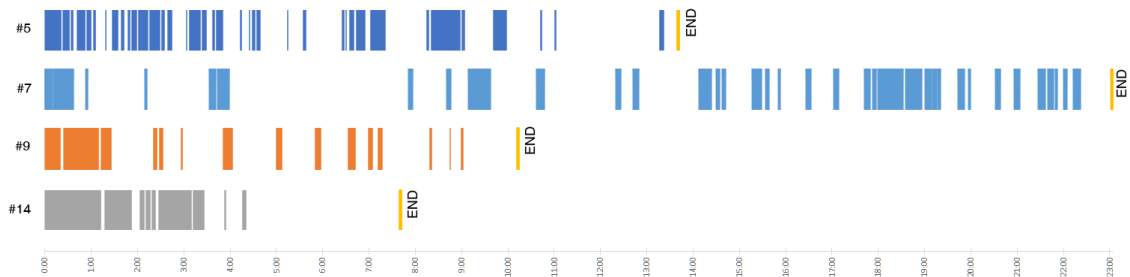


Figure 5.6: Attention allocation of three navigation users. From top to bottom: Chris(#5), Matt (#7), Leah(#9), and Todd (#14), colored blocks indicate looking at mobile navigation. The text “end” marks the end of each participant’s segment, as they are of different length.

their mobile phones. These participants were the majority (nine participants) in this study.

Unlike the turn-by-turn navigators, the location-checkers did not frequently check the mobile maps when they were walking towards the destinations, although they might have used their phones for other purposes. Commonly, the location-checkers checked the mapping app once when they were planning the route and rarely used the mapping apps again until they had reached or were approaching the destination.

Usually, the location-checkers checked the mapping app once when they were planning the route and rarely used the mapping apps again until they had reached or were approaching the destination. Occasionally, some participants would quickly check the map to ensure that they were on the right path. For example, when Ashley was planning to walk to the Chinese restaurant, she searched for the place on Google Maps (Figure 5.7). She then said, “Oh, so it’s next to Spruce (Street)... Got it.” With this information in mind, she put the phone away and started walking along Walnut Street and then, turned left at

South 20th Street to get to the destination. In this instance, she could see both her current location (indicated by the blue dot) and the Chinese restaurant (indicated by the red drop pin) on the same screen. This may seem to suggest that the reason she did not search for a route or use navigation is that she was already near the destination. This was not true. When the same participant attempted to locate the T-Mobile store. She checked the text message containing the addresses and said:

So, the other location is T-Mobile... on 1737 Chestnut... Oh, okay! Huh... I'm trying to picture where that is... Alright... well, I guess I could just look it up, which is probably what I would do.

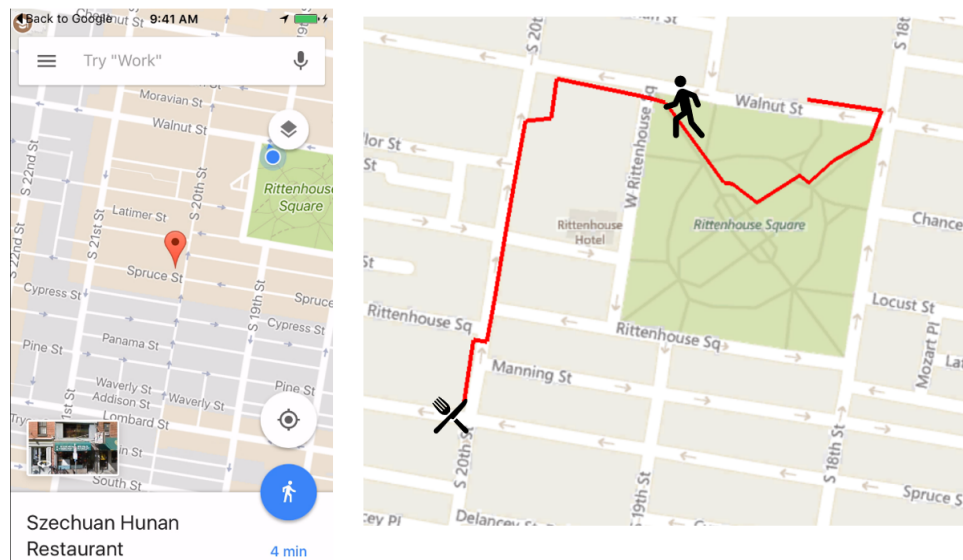


Figure 5.7: Ashley searched for the Chinese restaurant in Google Maps (left). And the route she took to visit the Chinese restaurant is shown on the right. The stick-figure person icon indicates the location where she performed the search.

She then tapped on the address in the text message, which opens Apple Maps on an iPhone (Figure 5.8). This time, her current location could not be seen on the screen. She immediately knew how to get to the T-Mobile store. She said “I think it’s near... Ok. I know where that area is. *Sweetgreen, Mid-town* ... Ok. I think I’ll walk this way.” She then started walking and did not use her phone again.

Although some participants needed to use the mapping app only to locate the two destinations, other “location-checkers” examined the map more closely and attempted to

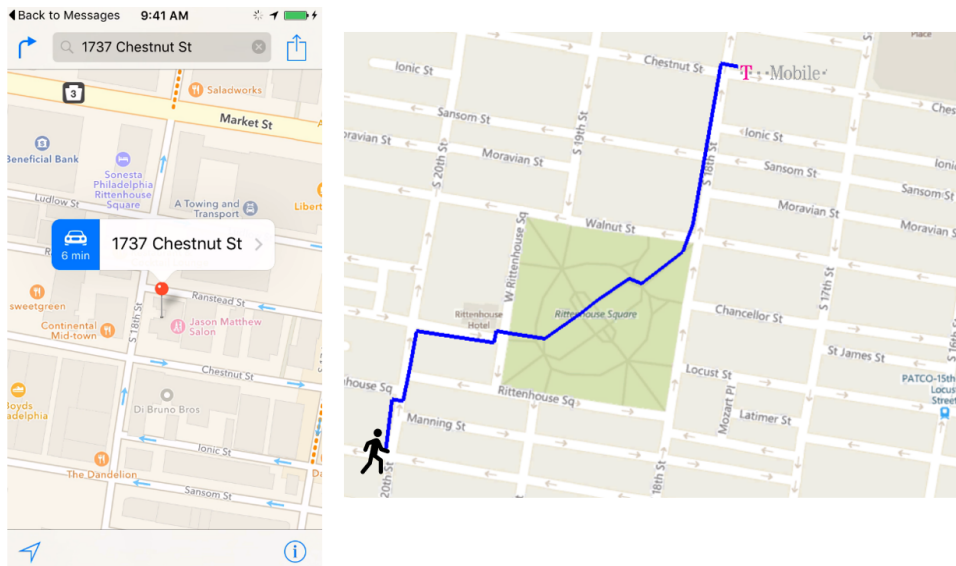


Figure 5.8: Ashley searched for the T-Mobile store in Apple Maps (left). Her actual route to the store is on the right. The stick-figure person icon indicates the location where she performed the search.

plan their route by looking at the map. Participants zoomed in and out of the map and panned the map around, trying to get a better sense of the route to the destination. In terms of what information can be obtained by examining the maps, one participant, Kim said, “Just approximately how many blocks away (from the destination). And I always look for places that I recognize.”

5.3.2.3 Survey Knowledge of local Streets

Overall, most participants, to various extents, relied on their mental maps of the street grids to reach at least one of the destinations. Four participants never used mobile maps. Nine were “location checkers”. Only one participant (Chris) relied fully on turn-by-turn navigation to reach both destinations. Other participants who did use the navigation apps relied more on mobile navigation for the Chinese restaurant than for the T-Mobile store. An explanation is that participants had a better sense of the approximate location of the T-Mobile store, but not the Chinese restaurant. Leah explained:

So, for T-Mobile, I think I would have been able to find it, since it was on Chestnut, and we started on Walnut in the Rittenhouse Square area. But I

think it would have taken me longer to find the Chinese take-out restaurant because it was on South 20th. So, I knew that was around 20th Street, but I wasn't exactly sure what side it was on.

Participant Lisa can be heard saying the following during the walk:

The T-Mobile store, at 1737 Chestnut Street. 1737 Chestnut actually sounds like 18th (Street) and Chestnut, because the higher numbers are always at the end of the street. And I think 37 being an odd number... gonna be on the north side of the street.

Like many North American cities, Philadelphia's Center City area has a strictly rectilinear street grid. Many participants, not only the ones in this walking study, but also those in interviews, reported an awareness of the street grid. Many mentioned how the "number-streets and the tree-streets"⁵ system makes navigation in Center City much easier.

The ease of use of the street grid not only was reflected in participants' route choices during this study, but also often was brought up by participants during the cognitive-map assisted interviews. Participants often made remarks on how easy it is to orient oneself in Center City. As one participant, Angelo said, "I don't know if you can get lost in Philly, frankly." Many participants mentioned that the street grid "makes sense", as:

[Maggie, 67-yo white female, 1-year residency] I like the street grid in Philadelphia. I find it, especially where it's accurate, which is generally center city, south Philly, and some of north Philly, to be extremely helpful. Because when you hit 23rd Street, you know you are 23 blocks west of the Delaware River. It helps a lot.

It should be noted that the take-away message here is not that "local people using local knowledge". Rather, it should be that the strictly designed street grid provides the material foundation of a mental map that is highly imageable or legible (Lynch, 1960).

⁵East-west streets are usually named after trees in Center City, such as Chestnut, Walnut, Spruce, etc. The tree street names extend across the Schuylkill River to West Philadelphia. North-south streets are numbered streets, from Front Street (the eastern-most, by the Delaware River), 2nd Street, 3rd Street, up to 90th Street.

And such mental map of the street grid is often accompanied by the use of mobile maps. This is evidenced by participants' remarks on non-Center-City streets:

[Chad, 27-yo white male, 1-year residency] So I think that's the beauty of the grid, which is if I know the cross streets then I know how to get there. . . . But if going outside of my usual grid or to a new place, I might turn on navigation to get a sense of what the most direct route is, but then at the same time I know enough about the grid system where I can at least get most of the way without using turn-by-turn navigation.

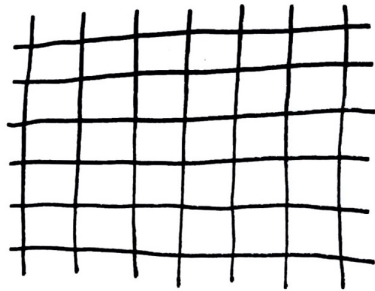
[Kevin, 52-years old white male, 10-year residency] It just creates a mental map in my head for—if I get an address and I know it's Center City, I can picture it. But the grid is very important in this—in the older sections of the city. This whole area is grid. Up here, there's a great cartoon someone did and they said Center City and they drew grid, and then they said Fishtown (a neighborhood in lower northeast Philadelphia) and they just drew lines all over the place (see Figure 5.9). So that is how Fishtown is, and it's funny, and everyone could relate to it. Because you can't really do a map to map that's easy in Fish Town as you could to here.

[Leah, 19-yo white female, 1-year residency] Yeah. the grid system in Center City is bomb. Because if I got lost in South Philly, I knew I could always keep walking west and end up in an area that I'm familiar with because I know West Philly. But in another city, if I kept walking left on a street, that's not always walking west. So that's my train of thought I guess. If you pop me somewhere in South Philly, I'll just continuously walk north on this straight street until I hit an area that I know. In any other city, Boston for example, if you keep walking, you could just end up in the same spot that you started in, and that's not—if you keep walking in one direction, that is. And that's not true.

Therefore, it should not be simply concluded that local residents rely less on mobile maps, because they are local. It was the design of the street grid combined with local residents' familiarity with it that helped them rely less on mobile maps.

In some other cases, participants were less certain about their survey knowledge of the streets. And we could observe the tension between the mobile maps and the mental maps. These incidents usually occurred in mobile navigation episodes. Although mobile

99% of Philadelphia



Fishtown

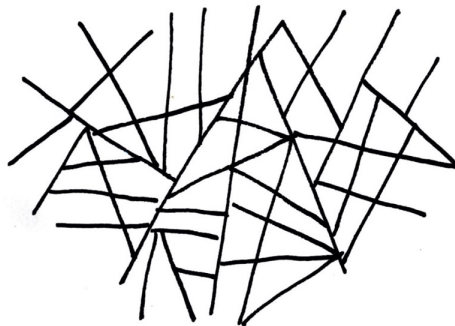


Figure 5.9: A cartoon depicting the different organizational logic of streets in Center City and Fishtown. This cartoon was sent to me from Kevin. Its origin is not verified.

navigation apps are supposed to give the users clear guidance for wayfinding, participants who used navigation exhibited confusion of different levels. Confusion arose from various sources, such as the inaccuracy of GPS locations due to the “urban canyon” effect in areas with highrise buildings, or in other times, map rotation on the device due to how the mobile device was held in the user’s hand while walking. For example, at several intersections, Todd and Chris had some trouble understanding the direction in which they were facing. Figure 5.10 shows how Chris attempted to tilt his phone or use his fingers to move the navigation map around, while he could not figure out the correct direction in which he should be walking. Matt walked past the Chinese restaurant without realizing it, and was confused with the instructions given by the navigation app.



Figure 5.10: Chris encountering troubles with mobile navigation.

At first glance, this confusion could be interpreted as an outcome of the lack of digital literacy associated with race or education attainment. All participants had completed a short questionnaire before the walk. Those participants who exhibited confusion when using mobile navigation all answered that they “frequently” used mobile maps on their phone. In the post-walk interview, Chris explained that when he enabled turn-by-turn navigation on the phone, he accidentally chose “driving” instead of “walking”. He explained:

[Chris:] I was confused which way to go, because the GPS was telling me to turn, but I knew, just from experience, that I could go straight. So, I just took that chance and took Google Maps’ way and kept that turn.

[Me:] So you trusted Google over your experience?

[Chris:] Yeah, ’cause I’m like it might save me a minute. It might be the best route for me, even though I had my own route.

And Todd also explained his confusion that “(The navigation) was all twisted around. I knew where I was at. I usually use it when I’m driving. I use it to see how far away I am driving.” In both cases, the user’s confusion when using turn-by-turn navigation was not necessarily a result of lack of digital literacy but due to the unexpected discrepancy between their experience and what the navigation app was instructing them to do.

Overall, findings presented in this section may suggest that using locative apps on the mobile device could potentially distract the users from paying attention to their surroundings (as evidenced by the extensive use of the mobile phone by the turn-by-turn

navigators). However, it appears that participants were only distracted by the navigation guide, when they were extremely unfamiliar with the place that they are going. Chris and Leah, for example, had only been living in the city for about half a month. What can be observed from most cases in this study was a combined effect of participants' survey knowledge, the design of the street grid, locative technology, and other contingent factors.

5.4 Looking up from the phone: Pedestrians' visual attention deployment in the street

By analyzing the MET data (combined with the verbal data), it was possible to compare the participants' spatial practice via the mobile phones and their embodied, material practice in the public space. Figure 5.11 shows sixteen density plots generated from the eye-gaze data captured by the MET. These plots show the distribution of the gaze points within the normalized coordinates⁶. Darker areas indicate denser gaze concentration. There are several patterns of gaze distribution. First, as is consistent with previous studies using outdoor mobile eye-tracking methods (Foulsham, Walker, & Kingstone, 2011), there exists a centralized bias, which means the overall gaze distribution tends to be denser in the center. Second, frequent cellphone use while moving can be clearly recognized from the concentration of gaze points in the lower-center area (e.g., Chris, Dan, Kelly, Leah, Lily, Lindsey, Matt, Nick, Natalie, and Todd), forming a mushroom-shaped density plot. It needs to be pointed out that although Brian used his cellphone for extended periods of time, he often chose to sit down or stop walking when using his phone. This might explain why, in his graph, there is no distinct, lower-central concentration of gaze points. Third, in some cases, a top-left bias can be observed (especially salient in the cases of Chad, Dan, Leah, and Todd).

The aggregated distribution of the gaze points within the coordinates provides only

⁶The positions of the gaze points are normalized such that (0,0) represents the bottom left corner of the point-of-view video and (1,1) represents the top right corner.

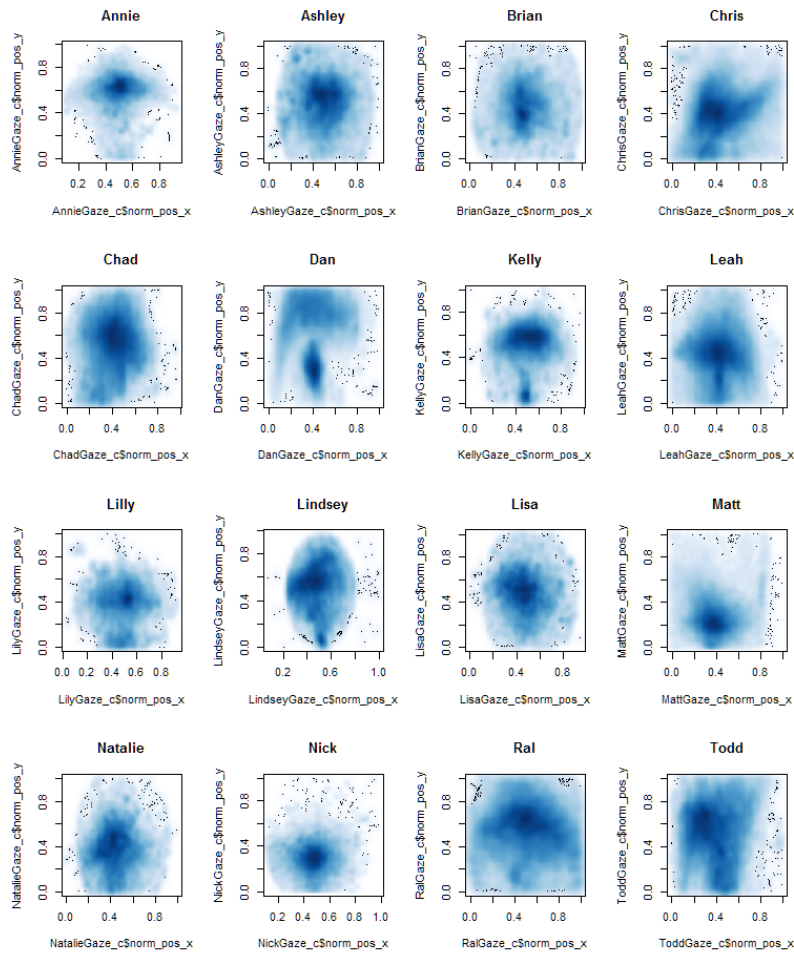


Figure 5.11: Aggregated density maps of eye gazes throughout the entire walking session with normalized coordinates, with (0,0) being the bottom left of the image and (1,1) being the top right. Out-of-bound gaze points are excluded.

very limited information in this context. As previously discussed in Chapter 2, outdoor eye-tracking studies conducted in dynamic conditions often yield complex data, which are difficult to analyze using conventional quantitative methods. The distribution of the gaze points does not provide information about the focus of attention on specific objects. It does not even provide information about the direction toward which the participant was looking, because of the lack of head movement data. A participant might turn his or her head to look at a store sign on his or her left side, but the eye gaze might still register as looking at the center of the vision. Therefore, to gather more meaningful information from the eye-gaze data, it is imperative to qualitatively analyze *what* the participants were

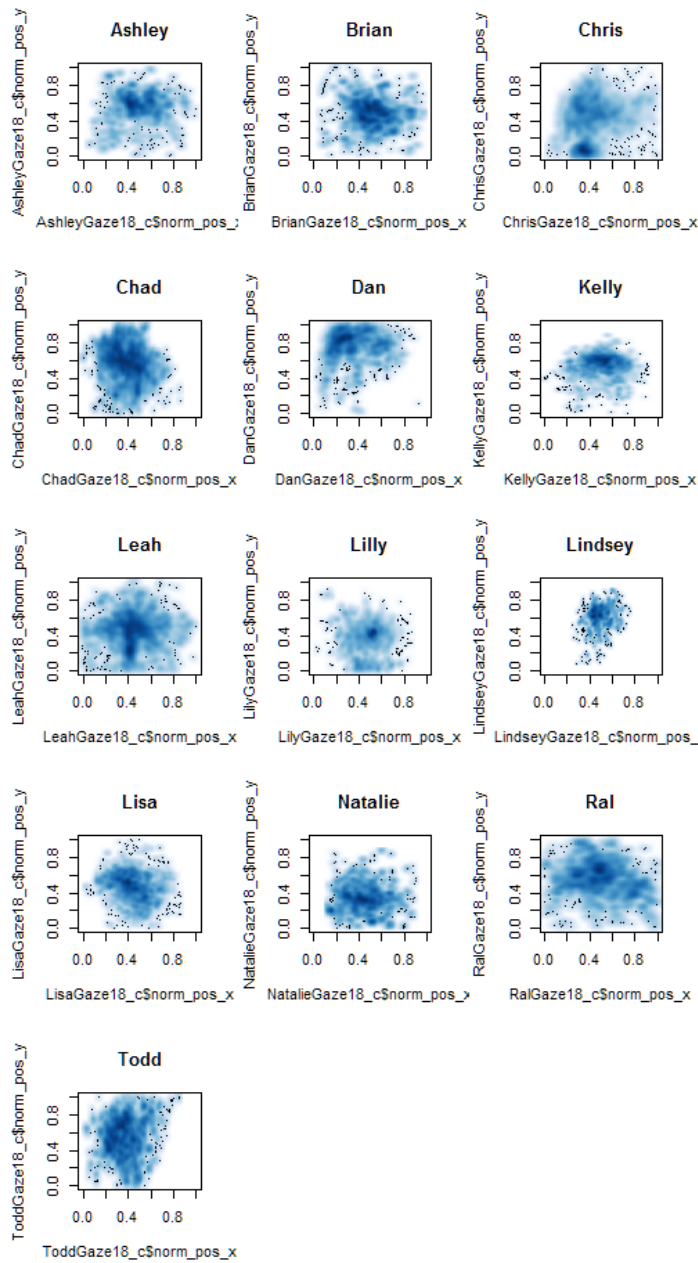


Figure 5.12: Aggregated density maps of eye gazes on the 18th Street blocks, with normalized coordinates, (0,0) being the bottom left of the image and (1,1) being the top right. Out-of-bound gaze points are excluded.

looking at.

During this study, participants chose different routes to complete the task, covering different street blocks. This has made it difficult to conduct a meaningful comparison between different participants' visual attentions. However, there is a two-block segment of

18th Street, connected to the T-Mobile store, which was visited by most (thirteen) participants. An examination of the eye-gaze data on this segment of 18th Street might yield more meaningful findings, as the between-case comparison of visual attentions is possible. The distribution of the eye-gaze points is shown in Figure 5.12. These plots offer much clearer information about the variation in participants' visual attention when facing similar visual stimuli. The central bias and top-left bias can still be observed. Chris's and Leah's mobile navigation use can be seen from the concentration of gaze points in the lower-center area.

5.4.0.1 Algorithm-assisted Coding of Visual Attentions

Video data captured on 18th Street with eye-gaze overlay were analyzed and coded qualitatively. Previously, eye-tracking studies often relied on *gaze fixation* detection algorithms to identify the fixation of the eye-gazes and saccades between gaze fixations. Fixations are calculated by the velocity or dispersion of gaze movement within a certain amount of time (Salvucci & Goldberg, 2000)⁷. These methods can be ineffective when calculating gaze fixation using data captured in an outdoor setting, where the participant is constantly moving. They are especially ineffective when a participant looks at an object close to him or her while moving, because the eye gaze would rapidly follow the relatively-fast-moving object and would be too dispersed for any algorithm to identify as a fixation. Large objects, such as a banner or a bus, are also challenging. In addition, the reliance on fixation and saccade is based on the “eye-mind” hypothesis (Just & Carpenter, 1980), in which gaze fixation is associated with the cognitive processing of external information. This assumption may not apply in a dynamic outdoor setting, where the participant is immersed in the surroundings and receives sensory stimuli of all sorts. Sumartojo, Dyer, García, and Cruz (2017) argue that, when used in complex environments, the analysis of the eye-tracking data should be combined with additional ethnographic interpretation of

the context and the participants' cognitive processes.

To effectively account for participants' visual attentions, three types of eye-gaze patterns were identified, as shown in Figure 5.13. First, using a dispersion-based algorithm provided by Pupil Player, fixations were identified (the image on the left). Second, relying on the visualization of 0.5-second eye-gaze scan paths, "gaze-lingers" were identified qualitatively (the two images in the middle). I define "gaze-lingers" as the concentration of gaze points on a human-recognizable entity within a short period of time. This type



Figure 5.13: Examples of fixations and gaze-lingers

of visual attention might not be recognized by dispersion-based algorithms to be a point of fixation. In the second image, the pedestrian, who was in close distance to the participant, was walking in the opposite direction, causing the gaze points to be dispersed over a short duration of time. In the third image, the gaze-linger on the food truck is salient to the human minds but would not be recognizable by the fixation-detection algorithm. In addition, gaze-linger is also context-sensitive. It is much easier for a human coder to identify a gaze-linger based on the trajectory of the gaze movement and the immediate context. Lastly, the fourth image shows a typical saccade pattern, which was not identified as focused attention on any entity by either the human coder or the algorithm.

⁷Pupil Labs' software, *Pupil Player* uses a dispersion-based, time-sensitive algorithm, described as the I-DT method in [Salvucci and Goldberg \(2000\)](#)

5.4.0.2 Participants' Visual Attentions while Walking on 18th Street

Using the above-described method, the entities on which the participants visually focused were identified and counted. Table 5.5 shows the results of the analysis of visual attention on the two-block segment of 18th Street. Most participants walked on the sidewalk located on the right side (relative to the participants) of the street (except for Leah and Ral). This means that if they were walking from south to north, they walked on the sidewalk on the east-side of the street. The top-left bias in the gaze plots (Figure 5.12), therefore, can be explained by participants frequently looking at the buildings and shops on the opposite side of the street. This is especially salient in the cases of Chad, Dan, Lisa, and Todd, where a left-biased concentration can be observed. Second, when participants were walking on the street, they did not just focus on getting from point A to point B. They were immersed in the surroundings and were paying attention to different entities and activities. On average, a participant looked at the façade of 6.92 buildings (SD=3.69), 13.08 entities of commercial interest (SD=4.68, including the exterior and interior of shops, posters, and blackboards on the sidewalk), and 5.69 individuals or groups of people (SD=3.7). In addition, participants moved their heads (looking up or turning the head left or right, not including slightly tilting the head) an average of 9.69 times.

Each participant has his/her biases in how he/she visually engages with various types of objects or people in the street. However, more attention paid to one type of object is, in general, not associated with stronger or weaker attention to others. Table 5.6 shows the correlation between the frequencies of visual attention to various types of objects, including aggregated categories of objects. Frequent head movement, including looking up or turning the head left or right, was correlated with more visual engagement with the façade of a building on the same side of the street. This is not surprising, because looking at buildings on the same side of the street does require more head movement, because they are too close to the participant. However, more head movement is also associated with more attention to the exteriors of shops on the opposite side of the street. More visual attention to the objects on the opposite side of the street was strongly correlated with more

Table 5.5: Frequencies of participants looking at various objects on 18th Street.

	BLD (SS)	BLD (OS)	SHOP (EXT-SS)	SHOP (EXT-OS)	SHOP (INT)	PPL	AD	SIGN	VEH	Look up	Head turns	All OS	All SS	All BLDs	All Shops	All Head Movement
Ashely	0	1	2	2	3	6	3	0	3	0	8	3	2	1	10	8
Brian	0	3	3	1	10	2	3	1	1	0	6	4	3	3	17	6
Chris	4	1	2	3	6	1	3	0	2	1	5	4	6	5	14	6
Chad	2	9	8	1	8	1	1	2	2	5	12	10	10	11	18	17
Dan	1	9	1	6	9	4	4	2	4	3	17	15	2	10	20	20
Kelly	3	5	1	3	2	15	1	2	3	1	12	8	4	8	7	13
Leah	2	5	6	1	3	8	0	1	1	0	5	6	8	7	10	5
Lily	0	3	2	0	6	10	4	0	4	0	2	3	2	3	12	2
Lindsey	3	7	2	2	2	2	3	1	0	0	4	9	5	10	9	4
Lisa	3	11	2	6	7	7	5	0	0	2	19	17	5	14	20	21
Natalie	0	3	2	1	9	3	0	1	2	0	11	4	2	3	12	11
Ral	1	5	5	1	8	6	2	2	4	1	6	6	6	6	16	7
Todd	1	8	0	2	1	9	2	1	7	2	4	10	1	9	5	6
Mean	1.54	5.38	2.77	2.23	5.69	5.69	2.38	1	2.54	1.15	8.54	7.62	4.31	6.92	13.08	9.69
SD	1.34	3.08	2.15	1.8	3	3.97	1.5	0.78	1.87	1.46	5.06	4.32	2.58	3.69	4.68	5.98

Note: BLD = buildings; ss= same side of the street; os = opposite side; ext = exterior; int=interior; PPL= people (groups of); AD = advertising signs or posters; Veh = Vehicles.

attention to buildings ($r=0.92$, $p<0.001$). Visual engagement with the exterior of shops was positively correlated with more attention to buildings in general ($r=0.6$, $p<0.001$). In addition, there was not a strong correlation between frequencies of looking at people, ads, street signs, or vehicles and other variables. This suggests that more head movement is associated with more visual engagement with the brick-and-mortar environment rather than with people. It also suggests that visual engagement with the environment does not deprive the participant of attention to people, or vice versa.

Frequencies of visual engagement with various types of entities/objects were aggregated and normalized using min-max normalization, so that a value closer to 0 represents relatively lower frequencies, and a value closer to 1 represents relatively higher frequencies. Table 5.7 shows the results of aggregation and normalization. A typology of five categories of visual attention biases were generated based on the normalized frequencies (Table 5.8). First are the *brick-and-mortar explorers* (Chad, Dan, Lisa, and Lindsey) and the *people watchers* (Leah and Lily). The former pay more attention to buildings and shops than people, whereas the latter pay more attention to people than buildings or shops. Next are the *window shoppers* (Ral, Chris, Brian) and the *non-shoppers* (Kelly, Todd). The former paid more attention to shops or ads, but not so much to other things, whereas the latter did the opposite. Lastly, there are the *passers-by* or the *blasé urbanites* (Ashley, Natalie), who paid relatively low attention to most things in the street. They focused more on getting to the next destination. Although it is difficult to infer the definitive underlying principles of such a typology with a relatively small sample, some qualitative characteristics might influence their visual behaviors. For example, the people watchers are both young, female, college students who paid attention to people for the purpose of looking at their appearances and accessories. Leah explained that looking at people's faces was "pretty normal. I usually look at people's faces or what they're wearing." On the other hand, the brick-and-mortar explorers are all older. Participants who paid more attention to shops, restaurants, and ads (the brick-and-mortar explorers and the window shoppers) are mostly men. This might be surprising to some, as a common gender stereotype is that

Table 5.6: Pearson correlations between frequencies of visual engagement with various objects

	BLD_ss	BLD_os	shp_ext_ss	shp_ext_os	shp_int	ppl	AD	Sign	Veh	heads_up	head_turns	OS	SS	BLDs	Shops
BLD_ss	-														
BLD_os	0.29	-													
shp_ext_ss	0.04	0.09	-												
shp_ext_os	0.43		-0.42	-											
shp_int	-0.32	0.02	0.29	0.07	-										
ppl	-0.01	0.04	-0.32	0.03	-0.53	-									
AD	0.05	0.20	-0.43	0.54	0.16	-0.08	-								
Sign	0.00	0.38	0.32	0.00	0.16	0.05	-0.46	-							
Veh	-0.39	-0.02	-0.33	-0.11	-0.20	0.40	-0.05	0.21	-						
heads_up	0.23	0.69**	0.33	0.37	0.24	-0.19	0.04	0.47	0.20	-					
head_turns	0.17	0.58*	-0.05	0.77**	0.38	0.00	0.20	0.25	-0.22	0.54	-				
OS	0.38		-0.11		0.04	0.04	0.37	0.27	-0.06	0.64*	0.73**	-			
SS		0.23		-0.13	0.07	-0.28	-0.33	0.27	-0.48	0.40	0.05	0.11	-		
BLDs			0.09	0.60*	-0.10	0.03	0.19	0.32	-0.16	0.66*	0.55	0.92***	0.39	-	
Shops	-0.01	0.33				-0.5		0.10	-0.34	0.46	0.58*	0.40	0.28	0.27	-
head	0.20	0.66*	0.04	0.74**	0.38	-0.05	0.18	0.33	-0.14			0.78**	0.14	0.62*	0.6*

Notes:

1. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
2. BLD = buildings; ss = same side of the street; os = opposite side; ext = exterior; int = interior; PPL = people (groups of); AD = advertising signs or posters; Veh = Vehicles.
3. Coefficients of correlations between aggregated variables and the variables from which they were aggregated were excluded.

Table 5.7: Normalized frequencies of visual engagement with various objects

	Head	BLDs	Shops	PPL	Veh	OS	SS
Ashely	0.32	0.00	0.33	0.36	0.43	0.00	0.11
Brian	0.21	0.15	0.80	0.07	0.14	0.07	0.22
Chris	0.21	0.31	0.60	0.00	0.29	0.07	0.56
Chad	0.79	0.77	0.87	0.00	0.29	0.50	1.00
Dan	0.95	0.69	1.00	0.21	0.57	0.86	0.11
Kelly	0.58	0.54	0.13	1.00	0.43	0.36	0.33
Leah	0.16	0.46	0.33	0.50	0.14	0.21	0.78
Lily	0.00	0.15	0.47	0.64	0.57	0.00	0.11
Lindsey	0.11	0.69	0.27	0.07	0.00	0.43	0.44
Lisa	1.00	1.00	1.00	0.43	0.00	1.00	0.44
Natalie	0.47	0.15	0.47	0.14	0.29	0.07	0.11
Ral	0.26	0.38	0.73	0.36	0.57	0.21	0.56
Todd	0.21	0.62	0.00	0.57	1.00	0.50	0.00

Table 5.8: Typology of the participants based on their visual biases

Category	Participants	Description
The brick-and-mortar explorers	Chad, Dan, Lisa, Lindsey*	Frequent head turns High attention on buildings and shops Low attention on people
The people watchers	Leah, Lily	Few head turns Low attention on buildings or shops High attention on people
The window shoppers	Ral, Chris, Brian	High attention on shops Low attention on buildings or people
The non-window shoppers	Kelly, Todd	High attention on buildings and people Low attention on shops
The passers-by (or the blasé urbanites)	Ashley, Natalie	Low attention on everything

Note: * Lindsey did not pay much attention to the commercial places or objects.

women are more likely to pay attention to shops. It is interesting that the two passers-by, Ashley and Natalie, both paid little attention to their surroundings, because of dogs. Natalie was walking with a dog during this study, and Ashley said that she was minding her steps, because “I look down a lot when I walk. You don’t wanna... There’s a lot of dog

poop [laughter]... You have to look where you walk.”

Beyond the simple comparison of frequencies of visual engagement with various objects, another important finding was a strong relationship between what the participants noticed or paid attention to on the street and their personal interests. These instances occurred again and again across the data. Shops and restaurants are obvious examples. In addition, there were other things, which the participants noticed. For example, Dan turned to look at the infants and toddlers, whom he encountered. He explained that this was because he and his wife were expecting their first child very soon. Ashley and Lindsey looked at plants along their routes. Their explanation was that gardening was their hobby. When Lindsey walked past a store, she paid special attention to it and stared into the window for an extended period of time. She explained, “I’m half Puerto Rican. We call them ‘botánicas’ - apothecaries but with more herbs. I was trying to see what they had.”

5.5 Looking down: Mediated interaction with the surroundings

The above findings reveal that, when walking in the street, the participants frequently surveilled their surroundings. As shown in Table 5.2, besides using their phones for mobile navigation purposes, participants used their phones for other purposes while walking as well. Two types of use were observed: interpersonal communication and location-based interaction with the surroundings. When a participant engaged in interpersonal communication, such as taking a phone call or checking/replying to a text message, he or she was temporarily disengaged from the immediate environment. Figure 5.14 shows how Chris looked down at his phone (eye-gaze out of boundary) while walking. When he was checking or replying to text messages, his attention was on a conversation that was unrelated to the surroundings.

More often than interpersonal communication, participants used their phones for locative purposes. These uses included searching for a nearby place using mapping apps or Yelp, searching for information in the search engine, or using phones to take textual

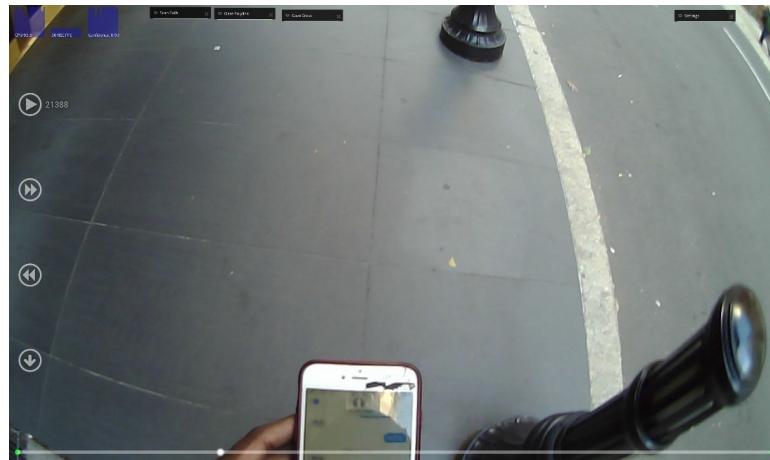


Figure 5.14: Chris looking down to reply a text message

or photographic notes about places. One finding was that participants who used their phones for such purposes were concentrated in the “brick-and-mortar explorer” and “window shopper” categories (See Table 5.9). Participants in other categories did not use their phones for locative purposes, except for Kelly (who used Yelp only once). They were also mostly men. This finding suggests that most participants carried their behaviors of surveilling the surroundings (or lack thereof) over to the online setting. However, there is more to that. As some participants had entered shops and restaurants during the walk, I compared the use of the mobile phone for non-wayfinding locative purposes to whether the participants physically entered any shop (as seen in Table 5.9). It should be noted that the interpretation of the results should be done carefully, as only thirteen cases are included here. Three participants (Lisa, Lily, and Chris) neither entered shops nor used locative apps. It could be that they were just interested in a quick completion of the wayfinding tasks, but we cannot assume this was the case. What is more important is the practices of other participants. The participants who used locative apps (not for wayfinding purposes) multiple times never (or rarely) entered any shop. Lindsey entered a grocery store on 18th Street, because she knew that this store has another entrance/exit on Chestnut Street. Entering the shop was only to use it as a shortcut (As previously explained, many participants estimated the location of the T-Mobile store to be in the middle of the 1800 block of Chestnut Street). On the other hand, participants who entered multiple

shops never used their phones for locative purposes (other than wayfinding). This finding indicate a supplementary relationship between using a mobile device for locative purposes and physical visits to local businesses. This finding suggests that the behavior of physically exploring an urban place and the behavior of digitally exploring a place might be very similar practices.

Table 5.9: The use of mobile phone for locative purposes other than wayfinding, in comparison to visits to inside of shops.

Category (According to gazes on 18 th Street)	Participants	Used phone for locative purposes? (All streets)	Entered shops? (All streets)
The brick-and-mortar explorers	Chad	Yes (multiple times)	No
	Dan	Yes (multiple times)	No
	Lisa	No	No
	Lindsey	Yes (multiple times)	Yes (once)
The people watchers	Leah	No	Yes (multiple)
	Lily	No	No
The window shoppers	Ral	Yes (multiple times)	No
	Chris	No	No
	Brian	Yes (multiple times)	No
The non-window shoppers	Kelly	Yes (once)	No
	Todd	No	Yes (multiple)
The passers-by (or the blasé urbanites)	Ashley	No	Yes (multiple)
	Natalie	No	Yes (multiple)

5.5.0.1 “Digital Clairvoyance”: Locative Apps as an Interface to Out-of-sight Places.

When participants used their mobile phones for locative purposes, such use was often a quick peek into places that were out-of-sight, or what I would call “digital clairvoyance.” Participants used their phones to investigate nearby places of interest or to find information about an event that was out of eyesight.

In one case, when Ral walked past a 7-Eleven convenience store at the intersection of 20th Street and Locust Street, he looked at the 7-Eleven store (Figure 5.15, first image). He quickly pulled out his Android phone, tapped on the Google Search bar on the home screen, and typed “wawa near me” (Figure 5.15, third image). The app showed him a map and a list of three Wawa⁸ convenience stores. He scrolled down to check all three Wawa locations. He explained his behavior in the interview:

So I have passed a 7-Eleven. I’m not a huge fan of 7-Eleven. So I was just curious to see if there’s any Wawas nearby... For reasons I grew up back home with a Wawa. And I like Wawa more than 7-Eleven. That’s why I was curious to see if any nearby locations.

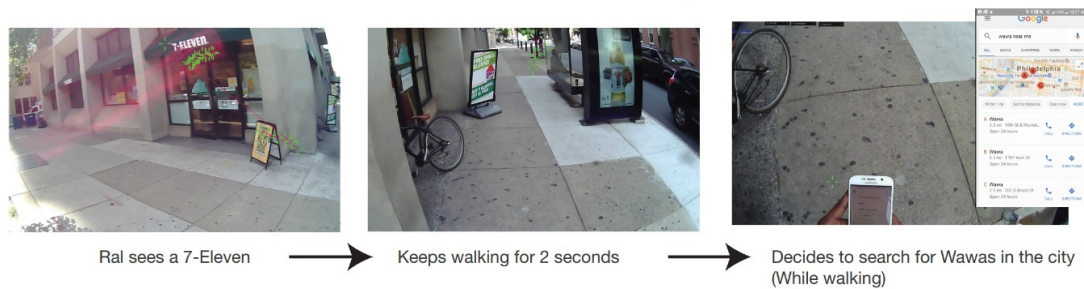


Figure 5.15: Ral searching for Wawa

In a similar case, when Lindsey was walking on Walnut Street, she took out her iPhone and opened the web browser. She selected Google from the bookmarks. She then typed “running shoes” and performed a search query. The search engine returned several images of Nike running shoes and some ads. She then added “rittenhouse square” to the search key words and performed the search query again. This time, the query returned a map and a list of relevant shops nearby, which included “Philadelphia Runner,” “New Balance,” and “lululemon” (Figure 5.16). She tapped on “Philadelphia Runner,” which opened a card that provided an overview of the reviews (4.1 stars), price range (three “\$” signs), distance (329 ft), and a picture of the window display. She put the phone away and walked across an intersection. After that, she returned to her phone and scrolled down and reviewed

⁸Wawa is a convenience store chain popular in the region.

more information about this store, including its address, store hours, and phone number. She explained her behavior as such:

... Because I've seen... when we went to the wrong T-Mobile, I've seen *Modell's* [sic] ⁹ at the corner of my eye. So, I wanted to see where there was a legitimate runner store... Really, I was trying to remember the name of the store. I knew specifically there was a runner store, like a technical runner store. But I don't remember the name of the store. I remember the general vicinity of the store.

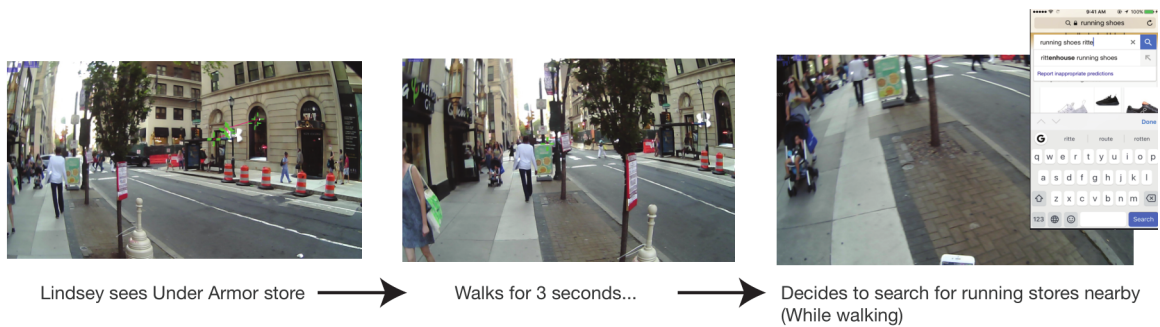


Figure 5.16: Lindsey searching for runner's stores

In addition to intentional searching behaviors, digital clairvoyance may occur unintentionally. When using mapping apps for wayfinding, these apps provide much more visualized information than street names. Google Maps and Apple Maps apps both display icons of places, especially commercial places on top of the base map. These icons provided sneak peeks for the participants to estimate the environment. For example, when Chad was searching for the Chinese restaurant in Apple Maps, he noticed the icons displayed on the map that represent businesses along South 20th street (Figure 5.17). He decided that he would walk north-to-south on South 20th Street, rather than approaching the Chinese restaurant on Spruce Street. He explained:

... The one that caught my eye was just the different color of the Liberty Vet Pets, and I was like, "Huh. I don't have a need to go to a vet today." But

⁹Note that Lindsey did indeed walked past *Modell's*, which is a sports goods store. However, she never looked at it. It took me hours reviewing her data to realize what had happened—She in fact saw another sports goods store called *Under Armor*. This incident shows how unreliable human short-term memories are. Eye-tracking data, although not perfect, provide behavioral information that is otherwise difficult to obtain in micro-level observations.

then I just quickly glanced down a list of places I was going to pass, saw all the juicery, and I guess the Food & Friends is all I really remember. That's what got to me.

. . . . It definitely made me aware of what was along the road and I guess have them being listed vertically here and the way the street was, I kind of targeted my approach to walk down the street that way instead of coming down from the side, where there's really nothing on the screen there.

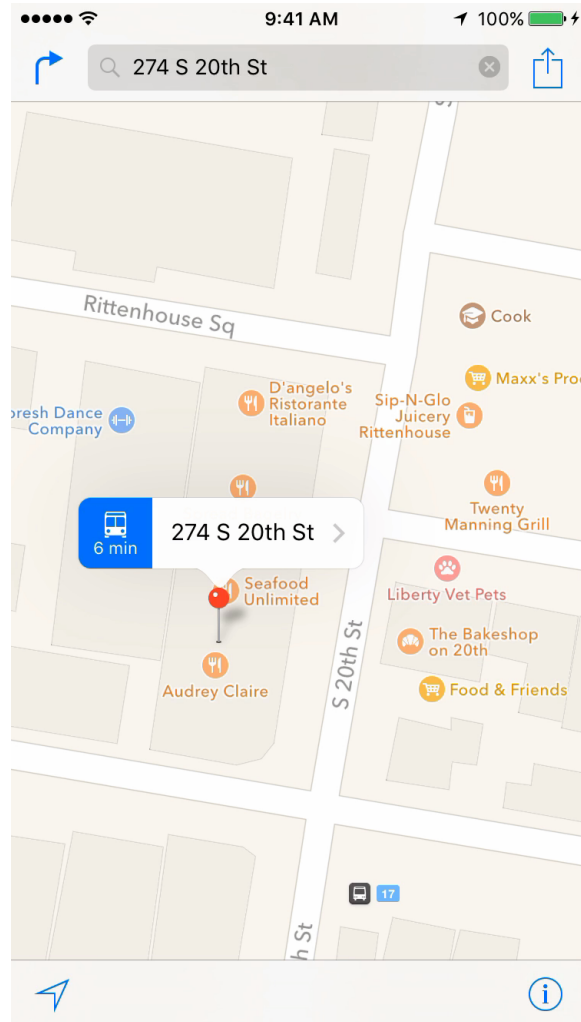


Figure 5.17: Chad searching for the Chinese restaurant in Apple Maps.

5.5.0.2 Web Searching Triggered by Context

Such digital clairvoyance not only facilitated sneak peeks into places, but participants also searched for other types of information prompted by what they saw in the street. For

5.5.0.3 Digital Linger: Extended Engagement with the Surroundings

Another finding is that locative apps were used to extend the engagement with places and activities that the participants just walked past by, or what I call the “digital lingering.” What I mean is that, when using locative apps, the participants could keep walking and move away from a place but still maintain their connection to the places, activities, or objects, which they walked past. It is as if participants were “lingering” at the places, without maintaining a physical presence there. Digital lingering can be seen as a special type of digital clairvoyance.

In one case, when Dan walked past a restaurant (Marathon on Rittenhouse), he said, “Something smells nice.” He then took out his phone to search for information about the restaurant on Yelp (Figure 5.19). He kept walking for one whole street block, where few other pedestrians were present, while checking out reviews and pictures of food and interior décor of this restaurant on his phone. During this process, his attention was on both the mobile app and the immediate surroundings. He was able to avoid objects and pedestrians on the sidewalk, while checking the information on Yelp.

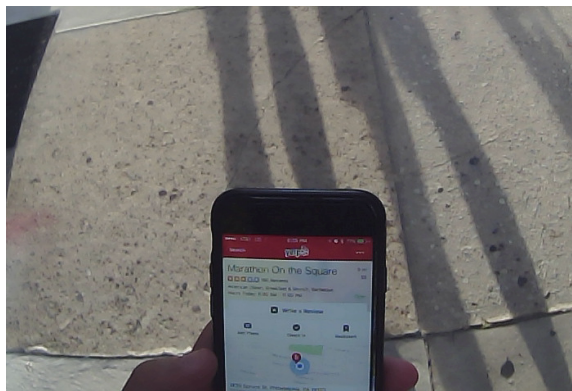


Figure 5.19: Dan checking out Marathon on Rittenhouse on Yelp

Similarly, when Ral walked past a restaurant called Spread Bagelry on 20th Street, he noticed the sign “Spread Bagelry” from across the street. He later said in the interview that he had previously heard about this restaurant from his friends. He searched “Spread Bagelry” in Google on his phone. Without waiting for the map or images to be fully loaded

on the page, he scrolled down and quickly read the reviews from Zagat and Thrillist. He then tapped on “menu” in the Google Search result, which led him to the menu on Spread Bagelry’s official website. He briefly examined the menu and turned off the phone. He kept moving during this process, while avoiding collide into objects and people on the sidewalk.

Another participant, Kelly took out her phone when she walked past The Black Sheep Pub & Restaurant on 18th Street. She noticed the sign of the restaurant/bar across the street but she did not stop to examine the establishment. Instead, she researched this restaurant on Yelp while walking down 18th Street.

5.5.0.4 An In-depth Look: Chad wants Frozen Yogurt

I wish to further elaborate on digital clairvoyance/digital lingering using a more complex case, as shown in Figure 5.20. In this case, the participant (Chad) walked past “Yogorino,” a frozen yogurt shop (location 1). He noticed the esthetics of the shop, but he did not stop walking to examine the shop. He could be heard saying “Let’s take a peek. Yogorino... That’s nice. It’s open... 11... may go there later.” At a later time during the walk, when he arrived at the T-Mobile store (location 3), he noticed “Sweet Café,” which was right across the street (3a). Chad said, “It says Sweet Café, which might have frozen yogurt.” He then started to search for frozen yogurt on Yelp (3b). Yelp showed him a map with all the nearby stores that sold frozen yogurt. He noticed three shops: Sweet Café, Ben & Jerry’s, which is located two blocks away from his current location; and Yogorino. He said:

See what we got here. Sweet Café, three stars... Ben & Jerry’s... I wonder what the other place... Yogorino... Oh! It’s got pretty good reviews... Looks pretty good... “Hands down the best frozen yogurt I’ve ever had.” I plan to head back there later. Wonder what the hours are... Mmm... “Hours”... “open till 10 pm.” How lovely. Maybe I’ll go for a walk later after I eat.

Later, during the review session, Chad explained why he had done that:

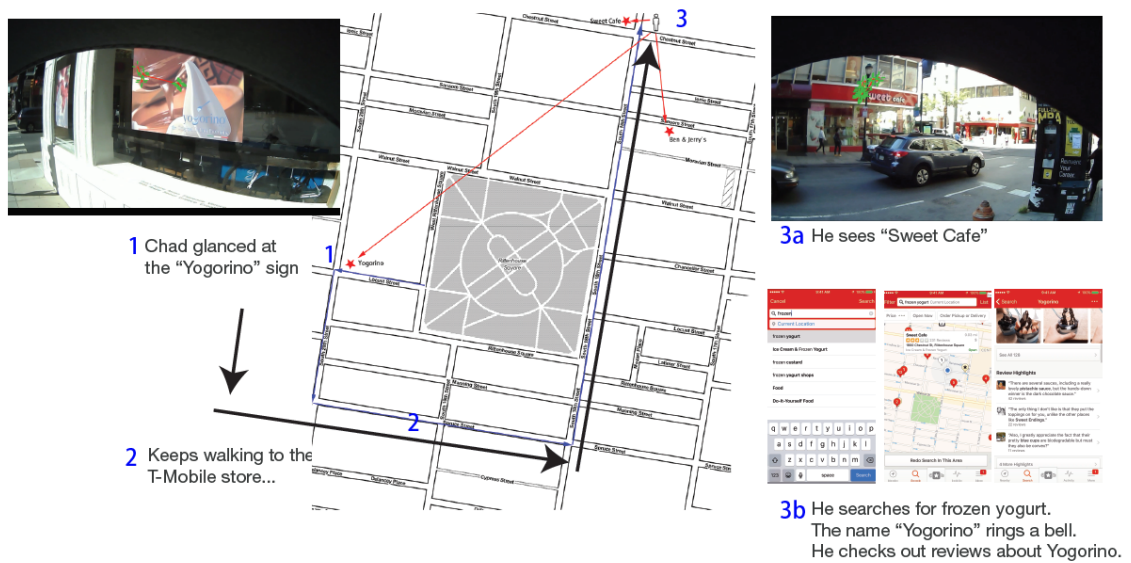


Figure 5.20: The case of Yogorino; blue lines represent the path Chad took from Yogorino to the T-mobile store; red lines indicate paths of digital clairvoyance.

Probably because I had seen the other frozen yogurt place (Yogorino) earlier and I was going to compare the two and see if there were any other places around that might be different. And the Sweet Café, the aesthetic of it was kind of generic and didn't seem to be like something I would be interested in. It was more like a commercial frozen yogurt, not really pertinent to the neighborhood. Whereas Yogorino was more unique, artisanal, which appealed to me. So I guess I just wanted to see what else there was around before committing to just walk into a random place.

In this case, Chad initiated the inquiry due to his desire for frozen yogurt, which was triggered by seeing Sweet Café. However, Chad avoided visiting Sweet Café as a result of examining the shop itself (material cue of being "generic") and digital information (three-star review) generated by Yelp users. His preference over Yogirino was a result of physically encountering the place earlier and reading the positive reviews from Yelp users. In this process, Chad experienced both physical movement in space (seeing Yogorino and then walking to Sweet Café) and a digital visit to a place right next to him (Sweet Café) and a distant place (Yogorino).

5.6 conclusion

Walking in the streets allows city residents to observe and make sense of the city at the ground level. With the prevalent use of smartphones, walking through the city has become hybridized and mediatized (Laurier et al., 2016). In this chapter, I reported findings from the field study. As previously mentioned in Chapter 2, recruiting local residents as participants allows the observation of how knowledge of local places and participants' needs and interests are implicated in their socio-spatial practices. This recruitment decision yielded crucial findings for this study. I have delineated how the survey knowledge of local streets was mixed with information provided by mapping apps for wayfinding. Further, I argue that the knowledge of the street grid, the design of the urban space, and the use of mobile maps are inseparable in urban wayfinding. There is no clear line between the apparatus with which city residents use to make sense of the city space and the material built environment itself. The street grid is embedded in the built environment, residents' mental maps, and the digital representation of the built environment in mobile apps at the same time. Additionally, findings from recent empirical research show that the use of mobile phones in urban public spaces is far less frequent than it is depicted in popular beliefs (Hampton et al., 2015). As such, to say that digital wayfinding aids are responsible for reducing urban serendipity may be an oversimplification of what actually happens in the real world. Findings from this study do not support the notion that algorithm-optimized routes are to be blamed for a reduction in chance encounters in the city. Between the human-intuitive routes and the algorithm-optimal wayfinding, one is not necessarily more serendipitous than the other.

What might reduce chance encounters is the attention on mobile phones while walking. The four turn-by-turn navigators had to constantly pay attention to their phones, ignoring activities and entities in their immediate surroundings, even the destinations themselves. However, in real life, people do not use turn-by-turn navigation all the time. Findings from this study show that many participants absorb information embedded in

their surroundings, while walking through city streets. Analysis of the MET data suggests five types of attention deployment while walking in city streets: the brick-and-mortar explorers, the people-watchers, the window-shoppers, the non-shoppers, and the blasé urbanites. Further, it was discovered that participants' use of locative apps was associated with their varied interests in different entities and activities; on the other hand, frequent use of locative apps to explore local businesses did not seem to overlap with frequent visits to local businesses. A plausible explanation is that people who prefer to use locative apps had interest in knowing more about local places, but they might not wish to be directly involved in social interaction with people in the shops. Previously, research on social networking sites (SNS) shows that people with low self-esteem benefited more from using SNS than those with higher levels of self-esteem (Steinfeld, Ellison, & Lampe, 2008). Similarly, people who usually would avoid in-store inquiries might do so using mobile phones. This finding suggests that mobile locative apps may be associated with a type of reconfiguration of social interaction in public places and its use may benefit some but not others. Further investigation on this matter is much needed in the future.

I identified an affordance of mobile locative apps called digital clairvoyance, where mobile locative apps are used as an interface for a behind-the-curtain peek at out-of-sight places and the activities associated with them. Related to this, I identified another affordance of mobile locative apps, which I call "digital lingering", referring to extended engagement with nearby places while continuing to move. Again, the key finding is not that people can use mobile phones to "see" other places. Rather, the key finding here is that digital clairvoyance is not a behavior or process that is independent of a person's immediate surroundings. When using mobile apps to survey the surroundings, a person's position in time-space is reconfigured through a series of socio-material arrangements that are inseparable from physical encounters of places and activities. The findings show that digital clairvoyance is a highly participatory practice. Participants did not use mobile phones to escape from the environment; rather, locative app use was often entangled with the contextual information obtained from the environment.

Finally, There are several limitations in this data set. Some information that was not collected in this research could have been useful in the analysis. For example, the participants' mobile digital literacy might explain some participants' limited use of their mobile phones. Additionally, participants' familiarity and unfamiliarity with different places may affect their visual/cognitive attentions, especially when local knowledge was shown to play an important role in this research. Unfortunately, it was not possible to collect too much additional data in this research, as collecting an incredibly large amount of information already required a lengthy, multi-device, multi-modal data collection process. Future research in this field with more resources should aim to address these concerns.

Chapter 6

Conclusion

6.1 Summary of the Findings

This dissertation has addressed the questions, “How do city residents make sense of the urban spaces and places?” and “What is the role of digital technology in reconfiguring these social practices?” I argue that related research in communication/media studies looking at media representation and technology use failed to offer a holistic understanding of what makes a city a place for its residents in the era of digital media. People’s understanding of their lived environment is associated with many different contingent factors in everyday life. Media use is only one aspect of it. On the other hand, research studies that have looked at embodied socio-spatial experience and practices in everyday life often took a human-centric perspective that limits the interpretation of technology use in contemporary urban spaces. Only by recognizing the inseparability and entanglement of people, space, place, time, and meaning can a clear picture be formed of the role of communication and media technologies in everyday urban living. As such, I used a non-media-centric, non-representational approach in this study, in attempt to understand digital media use in everyday life by examining the overall socio-spatial practices in general.

In addition to this theoretical perspective, this dissertation research is unique in its use of drastically different research methods and the combination of both a holistic, ecological view of the matter and situated, micro-level observations. Previous studies about geo/locative media have exclusively relied on research methods that were designed based on representational theories, be it interview, ethnography, or content analysis. This study incorporates both in-depth interview and field inquiry data. Additionally, the field study

was not designed to solely confirm findings from the interviews but to generate complementary data related to situated spatial practices.

6.1.1 Materiality and Embodied Experiences

Chapter three presented findings from the interviews on how different types of communicative resources come together and shape city residents' everyday-life socio-spatial practices. Participants' hand-sketched cognitive maps were analyzed using semantic network analysis methods. It was found that in a city like Philadelphia, residents have a fairly consistent understanding of the core spatial elements in the city. Many residents are aware of peripheral spatial elements, but there is little consistency between different cases. At first glance, this finding is idiographic and may seem to lack generalizability. However, the goal of this analysis was not to find out the geographic topology of Philadelphia, *per se*. Rather, this analysis revealed one type of time-space constraints in city residents' everyday lives that is the urban built environment and social activities that took place in the city. The densely-connected map elements in the downtown core suggests a strong pull of residents' footprints to it. This finding is important, as the subsequent analysis of the interview data revealed the entanglement of the participants' physical footprints in the city, media exposure, social networks, and digital media technologies. Many participants claimed that their material, embodied experience (feeling the "vibe") is the most reliable source of sense of place. Of course, this material, embodied, socio-spatial practice was constrained by city residents' everyday life routines, network compositions, and the urban built environment itself. At the same time, it was found that none of these communicative resources alone could define the sense of place for the city residents. Further, the following analysis of city residents' perception of safety shows that not only the "image" or "identity" of a place is a combined outcome of multiple communicative resources, including embodied experience and mediated information exchange, but also these resources are often deeply entangled and co-constitute a person's idea of a particular place in the city. Consequently, the constitutive nature of the image of a place (the

city, a neighborhood, a street block, a coffee shop, etc.) is often situational and unstable.

6.1.2 Sociability and Yelp Review

In chapter four, I examined the concept of urban strangers, using a revised framework of pseudonymous strangers from [Licoppe \(2014, 2016, 2017\)](#). I theorized that viewing user-generated reviews on Yelp is comparable to brief encounters with urban strangers. Participants reported placing different levels of trust in Yelp reviews. When examined closely, I found that most participants did not report trusting or distrusting reviews based on the perceived control of business owners over the reviews, contrary to [DeAndrea et al. \(2015\)](#)'s findings. Rather, review writers are perceived as faceless strangers, and their identities, expertise and taste were considered, evaluated, and judged. This is consistent with existing research on online reviews (e.g., [Brown et al., 2007](#); [Li & Zhan, 2011](#); [Pentina et al., 2015](#); [Senecal & Nantel, 2004](#); [shin Lim & Heide, 2014](#)). My unique findings, however, pertain to the participants' interpretations of the situations in which the reviews were created. Many participants described their attempts at making sense of the situation in which the reviews were produced. These findings present a useful contribution to the study of user-generated online reviews — reading online reviews temporarily places the reader and the reviewer in a time-space bundle where they are briefly co-present. This micro-co-presence was often disregarded by communication scholars, as there seems to be no message exchange or mutual awareness. I argue that social interaction without mutual awareness should be taken seriously by communication scholars.

6.1.3 Mobility and Serendipity and Geo/locative Media

In my final findings chapter, I presented findings mainly from the field research. I first discussed the use of mobile navigation and pedestrian's route choices. Because participants in this research were local residents who had prior exposure to the city street grid, their route choices and use of mobile apps realistically reflect the actual use of mobile

maps and navigation apps by a city resident. I found that most participants relied on the combination of their internalized spatial knowledge and the mobile maps to achieve a wayfinding task. Additionally, it was found that the use of the mobile navigation apps did not necessarily reduce chance encounters in the public space. I then analyzed the use of mobile locative apps during the exploratory walk. I found that the use of mobile apps was seamlessly integrated into the spatial practices of walking. The need for using locative apps arose from situational stimuli. The *in situ* spatial practices of the participants were seamlessly integrated with temporary bundling with out-of-sight places and activities. I observed two specific types of bundling scenarios: digital clairvoyance, where the participant peeks behind the curtain of out-of-sight places using locative apps; and digital lingering, where the participant use mobile apps to examine places next to them while continuing to move. I argue that in neither situations did the participants ever completely remove themselves from their immediate surroundings. Rather, they were both “here” and “there” at the same time. These findings challenge previous assumptions that mobile devices isolate the users from their immediate surrounding, inhibiting meaningful, serendipitous social interactions.

6.2 Theoretical Implications

6.2.1 From “Legibility” to “Searchability” of Urban Space

In his seminal work, “The Image of the City”, Kevin Lynch (1960) argued that a well-designed urban space needs to have high “imageability”. He also called it the “legibility” of a city. More than fifty years after Lynch’s observation, some scholars, resonating with his idea, began to address the need for an inquiry of the legibility/imageability of urban space in the digital era (Al-ghamdi & Al-Harigi, 2015; Bentley et al., 2014; Lingel, 2013). While I agree with their proposal, I also believe that, based on my findings, there is more to be considered than the “legibility” of city space. I agree with de Waal (2014)’s call for urban scholars to stop using “yesterday’s terminology” to understand contemporary urban

spaces in the era of digital media. I believe that, by calling it “legibility”, Lynch invoked an image of “reading” urban space, as well. That is to say, the urban space is meant to be “read” like a book. This implies a sequential, linear spatial process of traversing the city, just as in Hägerstrand (1970, 1975)’s time geography. Geomedia, on the other hand, is associated with non-sequential, non-linear socio-spatial practices. In this sense, we could say that the urban space has become “searchable” with digital media. This shift is similar to the shift in media culture from book-reading to screen-reading, where the content-consuming behavior became non-linear. Bookmarking, searching, skipping, hypertext-hopping became the norm. Some scholars might be wary of this shift. Frith (2017) argues that “spatial search” applications such as Yelp, Google Places, Zomato, etc., inherently have the same problems with conventional maps — the invisibility of certain places in representation. My findings suggest that (1) spatial search behaviors are done through digital media platforms other than maps or locative media apps as well. It is the prevailing logic in regards to place-based information. (2) Although Frith’s concerns are warranted, his representational, media-centric view of spatial search limits the strength of the argument. My findings suggest that media only has a very limited, often indirect role people’s sense-making of local places. Social networks, embodied spatial practices, and spatial search are always going to be entangled. The invisibility of places in spatial search should not be viewed as an inherent flaw in the design of the applications. Therefore, when I suggest to examine the rise of the “searchability” of urban space, it comes with a footnote. The searchability of urban space *does not* replace the Lynchian imageability/legibility of the city space, just as book-reading and web-searching co-exist in today’s society.

6.2.2 Urban Communication beyond Neighborhoods

Findings from Chapter 3 suggest an alternative approach to urban communication research that is currently dominated by local-community-centric research. Based on my findings, I argue that urban communication is about much more than local communities (neighborhoods) and street blocks; and a research agenda in urban communication

that is beyond neighborhoods is much needed. However, I am not proposing that non-local-community-centric research should replace the current research focus on neighborhoods and local communities. It should be supplementary. What I am proposing is (1) A spatial-relational view of local communities that do not overly view local communities/neighborhoods as islands of inquiry; (2) A non-media-centric, non-representational approach to studying urban communication; and consequently (3) A focus on everyday life socio-spatial practices, of which media and media technologies are an integral part.

6.2.3 Co-presence, Social Interaction, and Communication as Meaning Construction

Findings from Chapter four beg the questions: What is social interaction? What is co-presence? Narrowly defined, social interaction and co-presence, even mediated, requires the mutual awareness from involved actors ([Licoppe, 2016](#)). Mass media researchers noticed the phenomenon of *parasocial interactions* ([Horton & Wohl, 1956](#)), wherein content consumers respond to the representation of social actors in media (such as a character in a television show), as if it were a normal relationship. My findings suggest that users of locative media also engage in brief, interaction-like behaviors with online strangers. Could this argument apply to all online information? In a broad sense, it could; However, to say that the exposure to any human-created information is interaction might be farfetched and not particularly helpful. I would argue that when information creator's identity can be somewhat inferred, reading such information *could* be considered as interaction.

Much of today's communicative behaviors and practices may look like "online information-seeking" behaviors. However, there is no clear line between communicational and informational behaviors/practices. Human communication, in its essence, is not about message exchange but meaning construction. Communication/media technologies, in turn, are not conduits of information/messages. As [Aakhus \(2003\)](#) points out, as an alternative to studying communication technologies as tools for "communicate-at-distance", we

should:

. . . . recognize that ICTs are tools for participating in broader human activity like relationships, family, work, and learning. Moreover, these tools propose solutions to a primary aspect of human communication: the dialectic between autonomy and connection. . . . What is missing in contemporary studies of mediated communication is a better understanding of the relationship between communicators, their communication tools, and the communication activities they construct. (Aakhus, 2003, pp. 40–41)

As such, much of today's interpersonal communicative behaviors between strangers look like information behaviors, where the mutual awareness between the strangers is absent.

6.2.4 Revisiting Time-space Reconfiguration with Media Technologies

At this point, I wish to revisit the statement I made in the introductory chapter of this dissertation, “The key to understanding the role of digital communication technologies or any communication technology in contemporary society is to understand the *reconfiguration* of the space-time constraints of our social lives”. What can findings from this research tell us about that? I would like to conclude this section by revisiting Hägerstrand (1970, 1975)'s time geography. Time geography had often been criticized as overly materialist and ignoring human agency (e.g., Giddens, 1986; Gregory & Urry, 1985; Harvey, 1990b). However, this might be a misreading of Hägerstrand's writings, as he never intended to offer a reductionist account of human behaviors; what he attempted was to offer a simplified, bare-boned description of the fundamental principles of human actions (Hägerstrand, 1989). In fact, Hägerstrand's diagrams show that his framework went beyond representationalism and offered a pre-linguistic, pre-cognition view of spatial behaviors (Thrift, 1996). A recent revision of time geography by Helen Couclelis (2009) attempted the inclusion of the social constraints of activity, human agency, and a physical/online duality. Couclelis proposed a modification of the time geography diagram with parallel coordinate plots (PCP), as seen in Figure 6.1 and Figure 6.2. However, I argue that this diagram not

only overcomplicates the socio-spatial interactions, but also falls back into the representationalist pitfall. Additionally, the duality of physical and virtual “spaces” limits the utility of this diagram, as an individual could be present in both the physical and the virtual space. Actions in the virtual space might have an effect on the actions in the physical space, and vice versa.

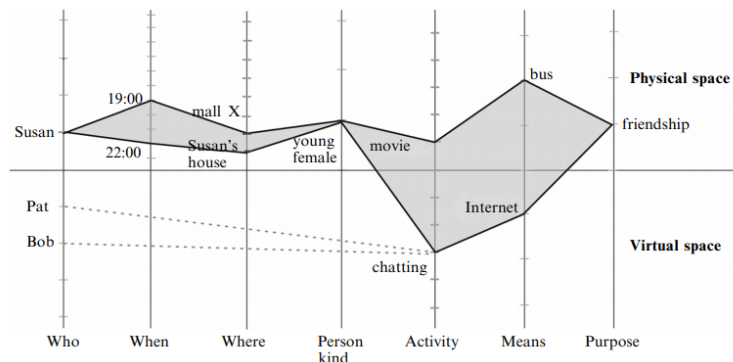


Figure 6.1: Couclelis (2009)'s time geography PCP diagram.

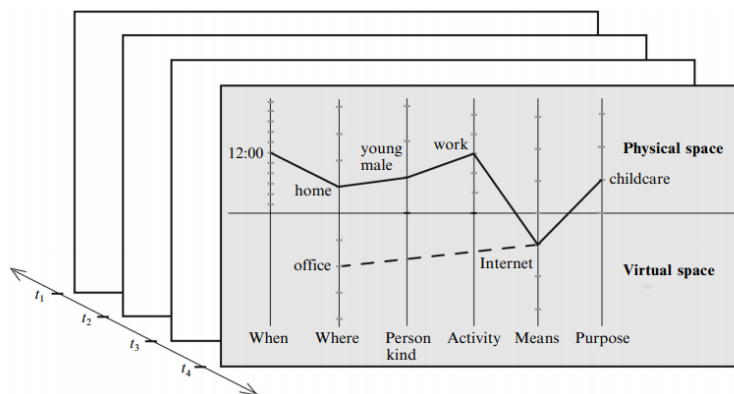


Figure 6.2: A variation of Couclelis (2009)'s diagram

I argue that the original time geography framework and diagram were versatile and simplistic, which should be seen as a strength. I suggest that it only needs a small adjustment. To begin with, one of the tenets of time geography, “the indivisibility of the human being (and of many other entities, living and non-living)” might not be true, even before digital ICTs. Many things are, of course, not indivisible—it is only relatively true—a building is indivisible to a bus, but divisible to a pedestrian. Even human beings are not

indivisible. A person playing a video game using a virtual reality (VR) headset is moving his or her body in both the physical space and the “virtual space” at the same time. The body movement is both constrained by the material set-up and the in-game situations. Even before electronic technologies, a telescope or binocular takes a person’s eyesight to a distant place, while the rest of the body remains in its original locale. This statement becomes especially problematic, when we start to contemplate what is considered to be a part of a human being. Human beings consume food, rely on parasitic bacteria to digest food, perspire, inhale, exhale, excrete, and of course, reproduce. Police dogs rely on sniffing residues of human bodies to trace suspects. Henrietta Lacks, an African American woman who died from cervical cancer in 1951, became the source of the first immortal human cell line (capable of indefinite proliferating in the lab)—*HeLa*—which is still being used in laboratories around the world, more than 70 years after her death. To say human beings are indivisible is not entirely wrong, when viewed from certain perspectives. However, when examining time-space constraints of human activities, it may be quite limiting. What has been ignored here is the extension of human agency across time-space boundaries.

A revised time geography of the digital era does not rush to separate “physical” from “virtual” activities. Of course, an individual’s material body still travels through time-space in the similar way Hägerstrand described, facing similar space-time constraints. However, as my findings suggest, through the use of digital media, especially geome-dia/locative media, an individual can be both “here” and “there” at the same time (digital clairvoyance and digital lingering). The distant “there” undergoes reconfiguration as a result of this entanglement. Whether the individual is “here” or “there” depends on how we observe it. Figure 6.3 presents my modified time-space diagram. The individual’s physical body still faces Hägerstrandian constraints (hence the angled path). From time to time, with the use of digital communication and media technologies, the individual’s presence can be observed at multiple spatial points and can be bundled with others, as well. However, this remote bundling is no longer viewed as separate, parallel behaviors occurring

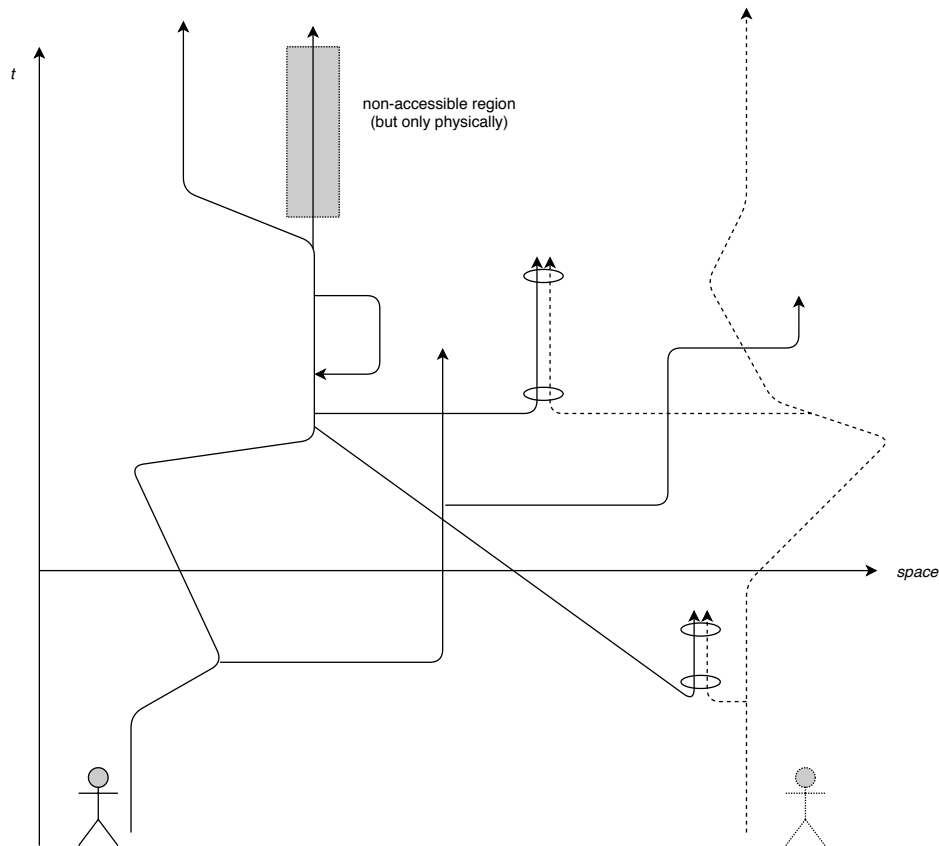


Figure 6.3: My modification of the time geography diagram

at the same time (as seen in Figure 1.2) but one process. Note that “appearing” at a remote place through digital channels is instant, as the transmission of electronic signals is at the speed of light, hence the horizontal movements on the diagram, compared with the human body’s zig-zagged movements through time-space. Additionally, perhaps more profoundly, digital technologies allow individuals to return to a previous time point and become co-present with the echoes of others, and even his- or herself.

This revised, non-linear model of time geography allows us to examine the role of digital communication and media technologies from a holistic, integrated perspective, while paying attention to the physical constraints of human movement at the same time. As Figure 6.4 shows, the process of a person viewing Yelp review can be visualized as such. And if you recall Chad’s Yogorino case from Chapter 5, Figure 6.5 shows how Chad visited Yogorino at different time points in different ways.

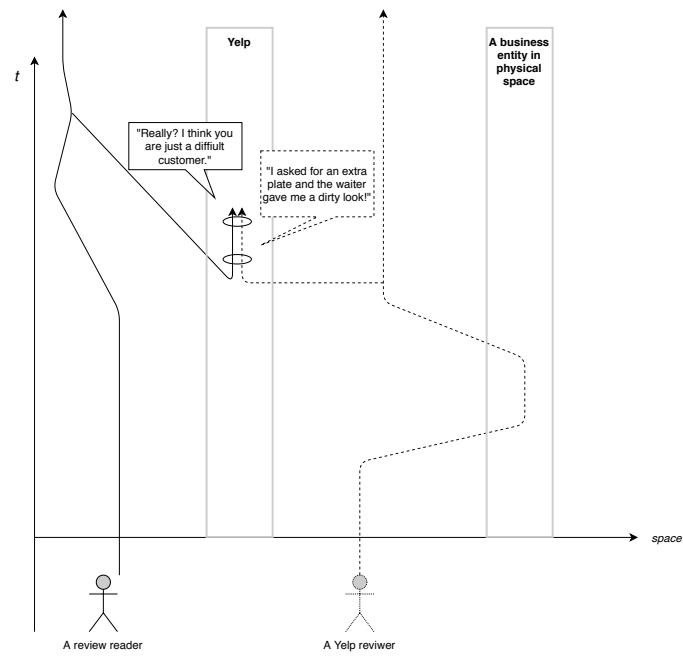


Figure 6.4: A revised time geography diagram illustrating a very brief episode of social interaction occurred on Yelp.

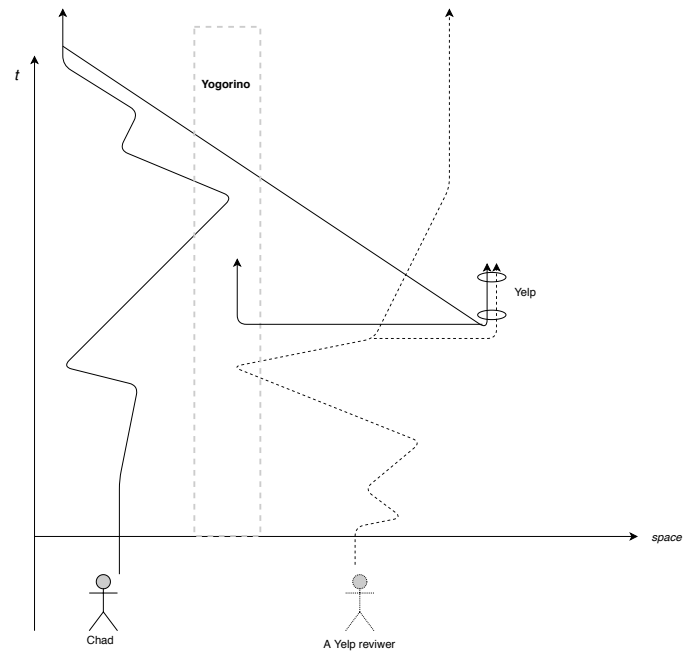


Figure 6.5: Illustration of Chad's movement in space-time using the modified time-geography diagram

6.3 Reflection on Methodology

Finally, I wish to conclude this dissertation work by offering some reflection on methodology. In this dissertation, I have used some research methods that could be considered unusual in communication/media studies research, such as door-to-door-contact recruitment, outdoor mobile eye-tracking, and cognitive mapping. Each of these methods presented great challenges, but at the same time, they yielded great results.

First, the door-to-door contact recruitment was able to yield diverse participants for this work. Additionally, walking in the neighborhoods and talking to local residents during the recruitment process helped create a sense of place for the researcher. However, at the same time, door-to-door contact requires commitment in spending tremendous amount of time, energy, and even money, just in the recruitment phase. This recruitment method is the most suitable for research studies that do not target a population that are not attached to specific places, such as a neighborhood or an organization. Urban communication certainly can benefit from this recruitment method. This method is especially helpful when researchers wish to study urban communication issues beyond specific neighborhoods. However, researchers who wish to use this method for participant-recruitment need to carefully weigh the cost and benefit.

Second, the outdoor-mobile-eye-tracking method has yielded rich data that could generate research findings far beyond what has been covered in this dissertation work. This dissertation only used a small portion of the collected data. I find that mobile eye-tracking has great potential in studying the relationship between people, technology, and the built environment. However, outdoor mobile eye-tracking is by no means a convenient data collection method. The tedious calibration process, the cumbersome research equipment setup, and the delicate nature of infrared-driven eye-gaze capturing present great challenges to research studies where the researchers are often interested in examining natural human behaviors. As such, researchers who wish to use outdoor (field) mobile eye-tracking to study urban behaviors should always consider collecting supplementary data

such as pre- and post-study interviews, shadowing the participants, think-aloud, and supplementary recording. Luckily, the recent technological advancement in eye-tracking may make data collection much easier. For example, Pupil Labs has just recently released their “Pupil Invisible” eye-trackers, which not only are wireless but also do not require calibration.

When analyzing the outdoor mobile eye-tracking data, researchers need to think beyond the traditional quantitative approaches. Findings from this work show that qualitative analysis of eye-tracking data could yield extensive, meaningful results that quantitative methods would not be able to capture. However, it is reasonable to suggest that advanced machine-learning technologies (such as image recognition) might be able to help automate certain analytical processes.

Additionally, through examining the mobile eye-tracking data, I find that this method has great potential for studying social interactions in public spaces. Urban public space is not just a collection of objects and buildings. Urban strangers are a major part of this environment. Although not reported in this dissertation, data collected for this work do show the correspondence between the oculesics of the participants’ and other pedestrians’. Previously, scholars have made observations of nonverbal interactions in public space (e.g., [Anderson, 2011](#); [Goffman, 1966](#)). And eye-tracking methods might be able to offer concrete, behavioral data for more in-depth investigations.

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Appendix A

Interview Questions

Attachment 7.1. Pre-interview survey (read to participant)

[Read to participant] *Before we begin our interview. I would like to ask you a few questions about yourself, and your technology use.*

1. Do you use the internet or email, at least occasionally?

Yes
No

2. Do you access the internet on a cell phone, tablet or other mobile handheld device, at least occasionally?

Yes
No

3. Which type of cell phone do you have? [If participant cannot specify, ask to select from the list]
 - Smartphone
 - iPhone
 - Android
 - Blackberry
 - Windows
 - Symbian
 - Some other type of smartphone
 - I have a cell phone, but it's not a smartphone
 - I do not have a cell phone

4. Do you own a desktop or laptop computer?
Yes
No

5. Other than the data plan on your cell phone, do you have high-speed internet service at home (such as cable internet, DSL, FIOS, or satellite internet service)?
Yes
No

6. How often, if ever, do you use your desktop or laptop computer to...
 - a. Get public transit information
 - b. Reserve a taxi or car service
 - c. Get information about local places
 - d. Find place to eat based on your location
 - e. Find things to do in nearby areas
 - f. Use Google Maps
 - g. Use Yelp or other review sites.
 Frequently
 Occasionally
 Rarely
 Never

7. How often, if ever, do you use your cell phone to...
- a. Get public transit information
 - b. Reserve a taxi or car service
 - c. Get turn-by-turn navigation while you are driving or walking
 - d. Get information about local places
 - e. Find place to eat based on your location
 - f. Find things to do in nearby areas
 - g. Use Google Maps
 - h. User Yelp or other review sites
- Frequently
Occasionally
Rarely
Never
8. Have you ever been in a situation where you had trouble doing something because you didn't have your cell phone with you?
- Yes
No
9. Which of the following statements most closely matches how you feel about your cell phone, even if neither one is exactly right?
- Not always needed
Couldn't live without
10. How do you usually get around in the city?

[Demographics]

11. What is your occupation?
12. What is your age? [Record exact age]
13. About how long have you lived in [name the city where the participant was recruited]?
14. About how long have you lived in the neighborhood where you live now?
15. What is the highest level of school you have completed or the highest degree you have received?
- Less than high school (Grades 1-8 or no formal schooling)
High school incomplete (Grades 9-11 or Grade 12 with NO diploma)
High school graduate (Grade 12 with diploma or GED certificate)
Some college, no degree (includes some community college)
Two year associate degree from a college or university
Four year college or university degree/Bachelor's degree (e.g., BS, BA, AB)

Some postgraduate or professional schooling, no postgraduate degree
 Postgraduate or professional degree, including master's, doctorate, medical or law degree
 (e.g., MA, MS, PhD, MD, JD)

16. Are you now employed full-time, part-time, retired, or are you not employed for pay?

Employed full-time
 Employed part-time
 Retired
 Not employed for pay
 Have own business/self-employed
 Disabled
 Student
 Other

Attachment 7.2. Semi-structured Interview Guide

1. Can you tell me how you came to [the city where the participant is living]? Where have you lived before coming here?
2. How do you like [the city] so far? What are the memorable places you have been to? Is there anything you don't like about [the city]?
3. I would like you to make a quick map of [the city]. Make it just as if you were making a rapid description of the city to a person who was just beginning his or her life in this city, covering all the main features. We don't expect an accurate drawing - just a rough sketch. This map could include elements, such as buildings, squares, neighborhoods, streets, shops, or whatever elements spontaneously occur to you at this time. Please remember not to draw a map for tourists, but rather a map that represents actual life in the city.
4. Let's look at this map you have just sketched. [If participant does not indicate his or her home on the map] Could you mark approximately where you live on this map? Please do not mention any specific addresses.
5. Can you mark approximately the places you have worked at on this map? Can you mark all the places where you have lived in the city on this map? Please do not mention any specific addresses.
6. Can you explain to me what each element on the map is? (Could you tell me why you think it is should be included on the map?)
7. [Showing the participant a print map of this city] Let's look at this map of [the city].
 - a. Can you mark on this map all the areas that you are familiar with? Think of the places that you have been to. Why are you familiar with those areas? Why are you not familiar with [other areas]?
 - b. Can you mark on this map all the areas that you think are safe? Think of the places that you would feel safe walking around alone at 9 p.m. Why do you think those areas are safe? Why do you think [other areas] are not safe?
 - c. If money was not an issue, and you can move to any neighborhood in the city, which places would you choose to move to? Which places would you choose to avoid? (Why is that?)
 - d. Can you mark on this map all the areas that you have an attachment with? Places where you have positive memories, or would like to visit from time to time? (Why is that?)