

Spatial Practices/ Digital Traces:

**Embodiment and Reconfigurations of Urban Spaces
Through GPS Mobile Applications**

Regner Amaury Ramos Ramirez

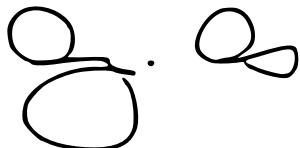
The Bartlett School of Architecture, UCL

This thesis has been submitted in fulfilment of the
requirements for the degree of Doctor of Philosophy.

Signed Declaration

I, Regner Ramos, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed:

A handwritten signature consisting of two stylized loops and a central dot.

11 July 2016

Abstract

This research explores the relationship between bodies, space and mobile technologies by studying the affective and spatial properties of three GPS-based mobile applications—Grindr, Mappiness and Waze. Discussions of how newly constructed subjectivities experience location, orientation and spatial movements—both physical and digital—emerge throughout the chapters. The study seeks to answer the following research questions: How are GPS-based apps enabling the construction of new digital subjects and embodiments? How do they enable users to perform these identities in space? How does the production of these new subjectivities create alternate forms of inhabiting urban spaces as well as alternate modes of digital mobility? In what ways do GPS apps create new spatiotemporal relations for bodies, and how are these relations made visible by the interfaces' spatial and urban representations?

To answer these questions, the three apps—which were selected from a group of contemporary apps based on their GPS properties, strong link to urban space and relation to embodied performance—are treated as a series of material objects. Though each app's particular purpose varies, as a set they suggest coupled themes that structure the study's analysis: physical boundaries/digital peripheries, companionship/wayfinding, embodiments/othering, judgement/confidence, gamification/interface, intimacy/tactility and trails/digital residue. Guided by Cyberfeminist theories, the method of study is conducted through three phases: personal empirical research, in-depth interviews with participants and the designing of a series of coded avatars of the participants' identities.

The dissertation argues that there exists a mutual shaping between a person's subjectivity and app-technology, and that these constructions affect the way space is navigated and perceived. To elaborate on this triadic relationship between body/space/technology and to open up new imaginaries to theorise about the body in space through a Cyberfeminist perspective, it proposes a new, performative figuration—the boy—arguing that these newly constructed identities are fluidly assembled and disassembled by their continuous negotiation between physical and digital boundaries. In this way, the study rethinks how Grindr, Mappiness and Waze enable alternate embodiments for performing identities in space, while also seeking to discuss how they create new spatial organisations and socio-spatial manifestations.

Contents/Index

Signed Declaration.....Pg. 3

Abstract.....Pg. 5

Contents/Index.....Pg. 7

Acknowledgments.....Pg. 9

Introduction.....Pgs. 11–20

Chapter 1

Theories/Framework.....Pgs. 21–66

Chapter 2

Method/System.....Pgs. 67–92

Chapter 3

Strolling/Scrolling.....Pgs. 93–144

Chapter 4

Striding/Sliding.....Pgs. 145–196

Chapter 5

Driving/Guiding.....Pgs. 199–240

Conclusion.....Pgs. 241–262

Bibliography/References.....Pgs. 263–300

Appendix.....Pgs. 301–309

Acknowledgements

To my advisors Dr. Ben Campkin and Dr. Peg Rawes, for the unwavering guidance they provided during my strolls, strides and drives in the last four and a half years. To my friends, for making me smile and laugh throughout this process, and making it clear that it can't be all work and no play. To my former flatmate Astrid, for constantly reminding me that "everything will be fine", as I sat on my yoga mat writing day in and day out. To Sabina, for all the years of camaraderie and teamwork, and for helping me prepare for my Viva. To Alejandra, for showing me that there's nothing a little Mexican food or greasy burger can't fix. To Miguel, for not only offering his unconditional companionship, but also for selflessly giving me a home during the months of finalising this dissertation. And to my sisters Tatiana and Cristina, and my cousins Jorge and Natalia, for always staying close to me despite the considerable distance.

To *Mami*, for being my main source of emotional support and spiritual strength, and an inexhaustible source of love and care. To *Papi*, for always believing in me, for being my exemplar of ambition and for giving me the confidence to not hide my identity for fear of being judged. And to both of them, for lovingly flying their 'boy' back to Puerto Rico every winter when the sun stopped shining over London.

Thank you all for being just a push notification away.

Introduction

This dissertation approaches the theorisation of space by studying a mutually constitutive, triadic relationship between the human body, urban space and mobile technology. To delve into this relationship, it focuses on one of the smallest and yet most ubiquitous systems of technology in everyday life: the smart phone GPS-based application. As such, this is a study looking into three particular GPS-based mobile apps—Grindr, Mappiness and Waze—as well as the ways in which these are informing new, digitally-mediated urban and spatial practices performed and embodied by the subject.

Each app varies drastically from each other in their functions: Grindr is advertised as a social networking app aimed at helping gay men find other men, and help foster face-to-face encounters; Mappiness is advertised as a digital survey attempting to map a correlation between a user's environment and their levels of happiness; and Waze is advertised as a satellite-navigation app for drivers to reach their destinations using the fastest, least congested routes. Strolling, striding and driving, as modes of urban movement, are figuratively and individually explored in the dissertation through their embodied and performative link to digital scrolling, sliding and guiding. Each of these practices respond to primary modes of user-interaction with Grindr, Mappiness and Waze's interfaces, respectively. Although the apps are vastly different, all three were selected from a group of contemporary apps based on their GPS properties, strong link to urban space and relation to embodied performance. They are treated as a series of material objects, particularly when addressing the physical and spatial properties of the screen and interface. Discussions of how these apps shape new subjectivities, alter location-experience and inform spatial movements—both physical and digital—emerge throughout the chapters.

By studying subjectivity in relation to architectural and urban space, this dissertation aims to answer the following research questions: How are GPS-based apps enabling the construction of new digital subjects and embodiments? How do they enable users to perform these identities in space? How does the production of these new subjectivities create alternate forms of inhabiting urban spaces as well as alternate modes of mobility? In what ways do GPS apps create new spatiotemporal relations for bodies, and how are these relations made visible by the interfaces' spatial and urban representations? How do the processes of feedback between user, space and interface displace boundaries between private and public, physical and digital, and individual autonomy and technological agency?

Contemporary technology is increasingly embedding itself into people's lives and has become a way for people to mark their presence in space and time. There is an element of performance within the use of mobile technologies, and especially for younger generations, it is a way

to let others know 'I'm here', wherever 'here' may be.¹ The marking of time—of documenting real-time performance in space—has become an inherent condition of the twenty-first century's technologically-enhanced subject. It is pressing to address the role of technology as a force which moulds the behaviour and identities of city-dwellers to then understand what type of subjects are being produced and how they construct spatial relations.

Mobile technologies are effectual at creating augmentations as well as distractions from day-to-day, physical experiences. At times, being so connected to the Internet can distract people from paying attention to the events, things or people that surround them, and arguably can be detrimental.² However, the view that people are losing touch with being in-the-moment because of technology, fails to acknowledge that mobile technologies are documenting time and experiences, as well as reconfiguring the relationships users have to each other and to their immediate environment;³ through mobile technologies, users have found a way to create their own real-time narratives in an almost autobiographical manner.

However, within the field of the built environment, research into the presence and incorporation of technological elements within urban landscapes has largely focused on the pragmatic and functional aspects related to safety, efficiency and productivity—particularly in research being undertaken on the topic of 'smart cities'.⁴ Going beyond merely their engineering focus is pivotal, however. These technologies play a significant role in a person's affectivity—a concept which Gilles Deleuze and Felix Guattari use to describe the ability to affect and be affected⁵—while also playing a significant part in a user's construction of self and space. As information systems geographer Muki Haklay states, when speaking of smart cities:

¹ See, for example, Eva Thulin and Bertil Vilhelmsen "Mobiles Everywhere: Youth, the mobile phone, and changes in everyday practice" in *Young* 15 (2007), Marilyn A. Campbell "The Impact of the Mobile Phone on Young People's Social Life" in *Social Change in the 21st Century Conference* (2008) and Daniel Miller *Tales from Facebook* (2011).

² A body of research looking into mobile technology and its negative relation to wellbeing can be found by looking to Michael H. Repacholi "Health Risks from the Use of Mobile Phones" in *Toxicology Letters* 120 (2001), Diana James and Judy Drennan "Exploring Addictive Consumption of Mobile Phone Technology" in ANZMAC 2005 Conference: Electronic Marketing (2005), World Health Organization NHTSA (U.S.) "Mobile Phone Use: A growing problem of driver distraction" (2011) and David C. Schwebel et al. "Distraction and Pedestrian Safety: How talking on the phone, texting, and listening to music impact crossing the street" in *Accident Analysis & Prevention* 45 (2012).

³ See Jean Gottman "Megalopolis and Antipolis: The Telephone and the Structure of the City" in I. de Sola Pool (Ed) *The Social Impact of the Telephone* (1973), Manuel Castells *The Rise of the Network Society: Volume 1* (1996), William J. Mitchell *City of Bits: Space, Place, and the Infobahn* (1997) and *E-topia: Urban Life, Jim—But Not As We Know It* (1999), Mitchell L. Moss and Anthony M. Townsend "How Telecommunications Systems are Transforming Urban Spaces" in J. D. Wheeler et al. (Eds) *Cities in the Telecommunications Age* (1999) and Adriana de Souza e Silva and Jordan Frith *Mobile Interfaces in Public Spaces: Locational Privacy, Control, and Urban Sociability* (2012).

⁴ See the work of Michael Batty *Cities and Complexity* (2005) and Carlo Ratti's projects in the MIT Senseable City Lab. Also see the work at The Bartlett Centre for Advanced Spatial Analysis by Joan Reades and Joan Serras; James Cheshire, Oliver O'Brien and Duncan Smith's visualisations and analyses; and Steven Gray and Richard Milton's mapping technologies.

⁵ See Gilles Deleuze and Felix Guattari *A Thousand Plateaus: Capitalism and Schizophrenia* (1980).

[...] it is necessary to discuss our underlying assumptions about them and challenge the prevailing thought that efficiency and productivity are the most important values. We need to ensure that human and environmental values are taken into account in the design and implementation of systems that will influence the way cities operate. [...] Too often, proponents of technology suggest a future in which we are 'all watched over by machines of loving grace,' assuming that the social impacts of technology are benign and beneficial, while technology in itself is value neutral.⁶

As technology becomes increasingly accessible and affordable, more people are drawn to its commodities because they make life more efficient. But as Haklay states, technology is not value-free; it influences users' perceptions and affectivity, and plays a part in negotiating the changing politics of urban spaces, having repercussions in the way citizens perform within the built environment.⁷ New ways to conceptualise, understand and theorise about space are needed. These new theories should account for various discussions that emerge through technology such as subjective difference, fluidity in embodiment and digitally-mediated, spatial performances of the self.

To address these points and answer the study's research questions, this dissertation is divided into five chapters. Each of these aim to conduct an exploration of the performative, design and spatial properties of three GPS-based apps focusing on the body/space/technology—a triadic configuration of material relations which emerge from the research findings. Though each app's particular purpose varies, as a set they suggest coupled themes that structure the study's analysis: connections/representations of the city, physical boundaries/digital peripheries, companionship/wayfinding, embodiments/othering, judgement/confidence, gamification/interface, intimacy/tactility and trails/digital residue.

In 'Theories/Framework', the first chapter, the primary theoretical sources of the dissertation are discussed. Drawing out a series of key texts from the fields of architecture, urbanism, media studies, geography, gender studies and philosophy, the chapter constructs a theoretical framework that explains the proposed relationship between body, space and technology. The chapter argues that through the incorporation of mobile applications in everyday spatial practices, the interrelations between body, space and technology foster new processes of becoming subject and relating to space. For this reason, Cyberfeminism becomes the primary theoretical framework for the study.

⁶ Haklay, Muki. "Beyond Quantification: We Need A Meaningful Smart City." Ben Campkin and Rebecca Ross (Eds) *Urban Pamphleteer #1: Future & Smart Cities*. London, 2013. 1-3.

⁷ See Ran Wei "Staying Connected While on the Move: Cell phone use and social connectedness" in *New Media & Society* 8 (2006), Scott W. Campbell and Yong Jin Park "Social Implications of Mobile Telephony: The Rise of Personal Communication Society" in *Sociology Compass* 2 (2008) and Judy Wajcman et al. "Intimate Connections: The impact of the mobile phone on work/life boundaries" in G. Goggin et al. (Eds) *Mobile Technologies: From Telecommunications to Media*" (2009).

Cyberfeminism describes the postmodernist philosophies of a contemporary feminist community interested in cyberspace, while also being rooted in the dichotomies of human/non-human, mind/body and organic/machinic. Dominant Cyberfeminist perspectives focused on exploring the Internet as a means to break free from social constructs such as gender and sex difference, as well as a means to link the body with machines. A selection of Cyberfeminist texts are key to this research: Donna Haraway's "A Cyborg Manifesto" (1985); Rosi Braidotti's *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory* (1994) and *Transpositions: On Nomadic Ethics* (1996); and N. Katherine Hayles's *My Mother Was a Computer: Digital Subjects and Literary Text*, (2005). These four texts all account for the fluidity of the subject as an embodied entity while either focusing on technology—as Haraway and Hayles do—or on spatial and geographic specificity—as Braidotti does.

In "A Cyborg Manifesto", the figuration of the cyborg proposed by Haraway is rooted in a critique of Oedipal narratives and Western patriarchy, colonialism, essentialism and naturalism. The arrival of high-tech culture empowered feminists to challenge and rethink dualisms such as God/man, male/female, total/partial and organic/machine. Because of this, the cyborg is helpful in this dissertation as a method of critique, though it is philosopher Rosi Braidotti's figuration of the nomad which this study aligns itself with more appropriately. Contrary to the cyborg, the nomad—also a marker for difference—expresses a subject's biography in relation to spatialised and temporal relations. As such, the nomad's identity is constructed out of an inventory of localised practices and traces, and marks its relevance in the dissertation as a subject produced by place and territory. The nomad figuration argues for a multilayered vision of the subject as a dynamic, embodied entity—one without a fixed identity, but with an inherent relation to space.

Foregrounding these figurations which are vital in the research, the chapter expands on each component of the body/space/technology triad, while also discussing language, as it relates to the dissertation's use of an alternate performative writing voice: that of 'the boy'—a practice constituting the author/researcher's subjectivity. This is to say, the figuration of the boy is used as a means for the researcher to signal his subjectivity within the study, while acknowledging that although the boy plays with and engages with the apps to construct a theoretical argument about them, the apps also affectively mould the boy through his unfixed stage of becoming subject. The figuration of the boy is an active method for the researcher to acknowledge and perform his subjectivity, as the dissertation is written from the stance of a multicultural, bilingual researcher, marked by difference.

The construction of the subject is viewed spatially, as an organism moulded by the places it belongs to and the practices it partakes in—both in urban space and cyberspace. For this reason, the digital screen is discussed as a permeable boundary between digital and physical spaces, playing off users' affectivity. Through the apps' interfaces, users deconstruct and reconstruct their identities to be able to fluidly navigate between offline and online contexts. Here, the work of postmodern literary

critic N. Katherine Hayles in *My Mother Was a Computer* is useful in its focus on interfaces. Through Hayles's account, technology is inseparable from the body, and there is no distinction between technological processes and the body—both are mutually responsible for shaping each other.

The second chapter, 'Methods/System', discusses the dissertation's method, which is divided into three phases. The first phase involves personal empirical research of the GPS-mobile apps. As such, the researcher becomes a user of the apps. To analyse and study Grindr, Mappiness and Waze, each app is critically dissected: their visuals, interfaces and designs are placed under study. Phase two gathers data from every-day app users, with the aim to increase the study's depth. Original interviews conducted with 20 Grindr Guys, 14 Mappiness Participants and 15 Waze Drivers are discussed to compare, contrast and foreground personal empirical observations which were recurring themes in the participants' use of the apps. These interviews provide multiple perspectives on how the apps are used and experienced. Similarly, each participant attests to how the apps alter their relationship to urban space, as well as how they construct a sense of identity through the interfaces.

Finally, the third phase of the research, emerges as a product of the interview analyses' anonymous nature, manifesting in a set of avatars for each participant. The interview conversations are coded within the avatars, and they reflect how each of the participant's experience in public spaces has shifted due to mobile technologies. The images produced here are a design exercise aiming to give a sense of embodiment and individuality to the interviewees, proposing that embodiment cannot be excluded from conversations related to the digital.

With its focus on Grindr, chapter three, 'Strolling/Scrolling', is the first of the empirical chapters. Grindr is advertised as the world's largest gay social network. Because of its use to facilitate sexual encounters, the chapter links Grindr to queer cruising practices in the city.⁸ Studying Grindr through the body's relationship to tactility and sight, the app is discussed as an extension of urban space in which strolling is figuratively experienced by scrolling. Queer theorist Mark W. Turner's *Backward Glances: Cruising the Streets of New York and London* (2003) acquires particular relevance through his accounts of the act of walking and cruising in urban settings. Similarly, to explore the relationship between digital interface, urban space and subjectivity, the chapter also draws upon histories of queer spaces in the city. Queer theories by architectural critic Aaron Betsky in his book *Queer Space: Architecture and Same-Sex Desire* (1997) as well as cruising theories by media studies researcher Sharif Mowlabocus in his book *Gaydar Culture- Gay Men, Technology and Embodiment in the Digital Age* (2010), provide place-based, situated ideas to understand non-heteronormative behaviour of men in cities—particularly in London.

Where historically gay identities have found themselves to be placeless, the app constructs new spatial relations between users and the city. By conducting interviews with 20 Grindr users, the

⁸ In queer culture, cruising is the act of walking or driving in particular areas looking for a sex partner.

chapter goes beyond the highly sexualised connotations the gay community has prescribed the app. Grindr is also discussed as an app that facilitates a variety of ways of using, experiencing and relating to public space, mediated by the interface and technology. Media theorist Mark B. N. Hansen's ideas on affection are also discussed, as the app's reliance on profiles and profile pictures offer spaces for the body to be deconstructed and reconstructed as a digital embodiment. Similarly, sociologist Erving Goffman's ideas on misrepresentation, subversion and stigmatisation are discussed, as foregrounded in his text *Stigma: Notes on the Management of Spoiled Identity* (1963).

Although Grindr is an app intrinsically related to cruising, it should not be confined to this view. Doing so would ignore the many purposes its users have assigned to it. Therefore, it is important to this research to not let the historical and spatial relevance between cruising and the app distract attention from the social and urban practices that have emerged as a consequence of the technology. Synchronisation in time and space is crucial for Grindr users to find each other on the interface. The app facilitates digital interaction, unexpected encounters and/or premeditated meetings, as Grindr displays those who are currently around a given user's particular radius. A sense of collectivity conditions the way Grindr users experience communal and self-acceptance in London, as well as how they create a sense of identity. One of the interface's particularities relates to a splitting of the physical body from the digital body via the app. The dissertation describes this as digital residue, in which Grindr users leave a digital imprint on an urban space for an hour after they are no longer there, allowing other users to view and contact their digital embodiment. The divided embodiments of the Grindr Guy are both imaginary and physical, represented and material, and the chapter explores how this increases the chance for spontaneous interactions as well as how it can create problems regarding privacy.

Chapter four, 'Striding/Sliding', discusses Mappiness, a digital survey designed in the form of an iPhone app. Mappiness attempts to map how happy, relaxed and awake users are within different locations in the UK, gathering the data from the reports of its participants. For participants, the app is a friendly and simple programme, but in reality Mappiness is more complex than its jovial design and appearance let on, performing complex tasks such as measuring noise levels surrounding the person and taking the weather into account, without the need for the user to actually report on them.

The chapter discusses 14 interviews with Mappiness users. The app behaves as an autonomous entity, beeping its users at random points of the day. Users then answer a series of questions in a combination of multiple choice answers and by sliding a button left and right on three digital scales. Their data is then uploaded and correlated with their physical location. The ability Mappiness has to contact the user and 'ask' for information, particularly by asking questions related to emotion and wellbeing, relates to Braidotti's theories of 'attractors'—non-human others which care or are cared for by humans. Similarly, through her portrayal of the computer as a maternal entity, Hayles's ideas in *My Mother Was a Computer* are useful in understanding the 'mothering' effect of the

app. Hayles calls for a rethinking of the maternal role, one that foregrounds the impact of computer technology as “the Motherboard of us all.”⁹

The app fosters a sense of discipline in its users in which they embody mood-registering mechanisms that upload their emotional states from different parts of the city when the app beeps and asks them, “How do you feel?” The act of physically sliding the button on the app’s interface to attempt to give the most accurate answer possible is figuratively explored by comparing it to striding in a city, where each step is carefully decisive towards a particular direction. Mappiness users must make decisions oriented in a particular direction of the scale to input and register their mood. This process of evaluating the length and distance of the stride (or slide) and its direction (left or right) allows the app to create a reading of the user’s happiness in that particular space.

Mappiness reimagines the traditional research survey, particularly those that are paper-based. Hayles upholds that a viewer/user’s relation to a work changes as its properties and qualities change as well. In this way, a text on a paper has different affective properties from a text on a digital screen. The agency and affectivity of a survey is discussed through an analysis of the design properties of the interface. In particular, Mappiness’s chime and tactile quality assume a pivotal role in this study, as they make the app become anthropomorphised as a life-like entity which ‘cares’ for the user and provides companionship in an otherwise solitary process of self-assessment. This is discussed in relation to Braidotti’s *Transpositions*, Hayles’s *My Mother Was a Computer* and technology and social studies theorist Sherry Turkle’s *Alone Together: Why we expect more from technology and less from each other* (2011).

In the pursuit of self-quantification, finding a personal ‘language’ to communicate one’s mood to the interface brings about Mappiness’s relationship to time. Although participants are expected to upload their *current* mood, often users’ way of making sense of their present emotions is by remembering those of the past. In this way, Mappiness creates spatiotemporal disturbances, as users introspectively revert back to past moods to attempt to make sense of the present. The chapter’s discussion of cognitive processes of answering based on memory is based on Robert M. Groves, Floyd J. Fowler, Jr., Mick P. Couper, James M. Lepkowski, Eleanor Singer and Roger Tourangeau’s theories in *Survey Methodology* (2009). Mappiness users partake in a play between awareness and memory, and the boundaries between physical and digital as well as time and space are constantly being negotiated, deconstructing and reconstructing a sense of self.

The fifth and final chapter, ‘Driving/Guiding’, explores Waze, a satellite navigation app which uses crowd-sourced information to help drivers find the quickest route to their destination in real time. Free to use, gamified in its design and efficient in rerouting drivers’ navigations when road

⁹ Hayles, N. Katherine. *My Mother Was a Computer: Digital and literary texts*. Chicago/London: The University of Chicago Press, 2005. 3.

conditions change Waze is discussed as an extension of the car. By discussing the act of driving alongside digital guiding, the chapter elaborates on the hybridity between user, space and machine.

Waze functions through direct participation of the user with the aim of ‘outsmarting traffic’: if the driver experiences any delays along the route, the app provides a platform for the user to report the problem to the server, which then reroutes any other Wazers heading towards the congested route. The act of drivers actively reporting road and navigation data onto the server to help other drivers brings out a discussion on alternate forms of community and digital citizenship that the app produces. In this exchange of communication, the Waze experience allows a reconfiguration of the public/private coding of the road, and the isolated interior of the car is re-examined as a space penetrated by digitally-mediated forms of social interaction.

‘Driving/Guiding’ engages with a historical account of car use, wayfinding and road navigation. Particularly relevant to this is the work of civil engineer Piet Bovy and geographer Eliahu Stern in their book *Route Choice: Wayfinding in Transport Networks* (1990), and geographer Peter Merriman’s *Driving Spaces* (2007). Similarly, the chapter utilises Iain Borden’s book, *Drive: Journeys Through Films, Cities and Landscapes* (2013), to discuss the experiential properties of driving a vehicle, while problematising the book’s over-reliance on the pleasures of driving.

The basis for this chapter’s arguments is the analysis of the interviews conducted with 15 Waze users, which discuss the hybrid relationship between bodies and technology and how these create new ways of participating and performing identity in space. The manipulation of Waze’s interface and map design by the designers—in line with Hansen and Hayles’s theories of affectivity—creates new spatial relations for the user. In its effort to set itself apart from other sat-navs, Waze introduces an element of gamification, which further fortifies the transactional interaction between app and user.

Rather than documenting and transmitting information as it occurs, Waze’s technology disturbs normal space-time configurations and presents a time lag regarding reports and presence of avatars on the road. As such, spatiotemporal relations acquire new manifestations as Wazers experience a dual embodiment, one physical and one digital, which occupy disparate positions and temporal realities. This digital residue which is left behind is only perceptible on the digital screen, but their visible presence creates a shift in the way other users relate to the app, trust its accuracy and relate to urban space.

The thesis concludes by discussing how each of the three apps enables alternate spatial configurations. The urban and digital movements associated with each of them—strolling/scrolling, striding/sliding and driving/guiding—point to different modes users experience space and technology, while hinting at a more intimate, physical relationship across all three. Although much has been already written about the construction of the subject—through urban and domestic spaces, for instance—this thesis proposes an investigation into the digital subjectivities that emerge through the

affective and performative interactions between people and their devices, and between the overlapping thresholds of physical and digital spaces. In this way, subjectivity here is not solely constructed through and within physical boundaries; subjectivity and identity are now rerafted through digital peripheries. These peripheries exist in a variety of forms: they range from being digital representations of spaces—delimiting borders and edges through which the self can traverse or hold itself back from—to peripheries formed out of social constructs. These are boundaries which have to do with the way we relate to ourselves, to others and to ourselves *through* others.

Throughout its chapters, the dissertation constructs its arguments through the experiences of the boy and the interview participants, analysing their performance in relation to the three apps. However, it is important to acknowledge that there are different types of performances and performers within the subsequent pages. The first of these performers is, of course, the researcher as an embodied subject. Engaging with Cyberfeminist discussions on embodied performativity through technology allows the researcher to highlight his own performance; this is done through the figuration of the boy. Secondly, the performativity of individuals in their use of Grindr, Mappiness and Waze are also brought out. Some of these participants are self-aware of their performance through the apps, constructing new or alternate modes of becoming subject. However, there are also participants that are not self-knowing or self-conscious about their subjectivity; they are not autoethnographic in the same way that the boy is.

These different modes of identifying performative, digital subjects is important to mention. The interview conversations that will follow in the empirical chapters narrate the participants' accounts of themselves, however the researcher also partakes in reading these conversations and creating personal, theoretical accounts of them. As such, there are a variety of conversations with different participants with different degrees of self-knowing, and while they may not necessarily agree with the postulations and findings of this study, the dissertation seeks to foreground, make sense and note their performance as digital subjects.

Chapter 1

Theories/Framework

In Spring 2012, in a seminar organised at The Bartlett School of Architecture, the boy was invited to present the early stages of his research to Rosi Braidotti. I remember him tackling the whole thing very casually, until he read a poster on the School of Architecture's wall which read, "Rosi Braidotti is the world's leading poststructuralist thinker."

After that, the boy's stomach turned to knots—and whether it was butterflies or something else, I don't really want to know.

"The monistic unity of the subject is also posited in terms of time. A subject is a genealogical entity, possessing his or her own counter-memory, which in turn is an expression of degrees of affectivity and interconnectedness. Viewed spatially, the poststructuralist subject may appear as fragmented & disunited; on a temporal scale, however, its unity is that of a continuing power to synchronize its recollections."

-Rosi Braidotti, 2006

Introduction

This first chapter discusses the dissertation's primary theoretical sources, and defines the research's scope.¹ Drawing out a genealogy of key texts from the field of architecture, urbanism, media studies, geography, gender studies and philosophy, the chapter explores theoretical works that investigate the relationship between body, space and technology—a triadic configuration of material relations which frame this dissertation. By exploring the performative, design and spatial properties of three GPS-based apps—Grindr, Mappiness and Waze—the body/space/technology triad—a term proposed as a result of empirical findings—emerges as a set of fluid relationships.

As research conducted in an architectural, educational setting, this dissertation is situated within experiential and critical approaches to architectural and urban space through the use of mobile apps.² The matter of space is approached through the way it is experienced and perceived by its

¹ The primary sources provide the basis for the dissertation's arguments at a macro scale. To ensure that the argument focuses on bodies, space and technology as an overarching theme—and to not broaden the scope with the case studies' discussions on gay cruising, queer histories, survey methodology and driving practices—the secondary sources have not been included in this first chapter. Each empirical chapter (chapters 3, 4 and 5) discuss their particular secondary literary sources.

² There is literature looking into the experience of technology, mobility and urban space, and also particular interest into their application into urban playscapes. See Adriana de Souza e Silva and Jordan Frith in *Mobile Interfaces in Public Spaces: Locational Privacy, Control, and Urban Sociability* (2012), particularly chapter three. Also see Michael Bull "The World According to Sound: Investigating the world of Walkman users" in *New Media and Society* (2001), Martin Flintham et al. "Where On-line Meets on the Streets: Experiences with mobile mixed reality games" (2003), Adriana de Souza e Silva "Hybrid reality and location-based gaming: Redefining mobility and game spaces in urban environments" in *Simulation & Gaming* (2009) and Adriana de Souza e Silva and Daniel Sutko (Eds) *Digital Cityscapes: Merging digital and urban playscapes* (2009).

technologically-aided inhabitants and their reconfigured embodied subjectivities. Playing a key role in this dissertation, mobile app technology is not described optimistically nor ominously. Rather, app technology is addressed as a force at play within contemporary society which fosters new modes of spatial experience and subjective performance. The dissertation argues that through the incorporation of mobile applications in everyday spatial practices, the interrelations between body, space and technology foster alternate processes of becoming subject as well as spatial relations.³ More than a study of a particular space or temporal context, this dissertation's overall aim is to conduct an inquiry into the changing spatial practices that mobile technologies are enabling.

Although this study does not directly look to their particular work as primary sources, it is important to note that architectural theorists have previously addressed embodied spatial experience via interface technology: among others, Manuel Castells upholds that the Information Age has lead to a variety of social and urban transformations, interconnecting and linking people and cities through a 'space of flows' (1996); Adriana de Souza e Silva and Jordan Frith (2012) look to portable technologies (books, mp3 players, mobile phone, etc) to study how these technologies reshape spatial relationships and strengthen users' connections to location; and Anastasia Karandinou (2013) urges architects to not simply map the visual, but to also think about technologically mediated environments in a phenomenological, multisensory way. However, these theories—and others accounting for the impact of technology on architecture and urbanism⁴—fail to acknowledge the multiplicity and specificity of spatiotemporal connections experienced by citizens, as well as the links between spatial practices and processes of becoming.

New ways to conceptualise, understand and theorise space are needed—theories that account for subjective difference, rather than ones centred on patriarchal models of the subject or ones that isolate technology from spatial practices. Needing to rethink about the kind of subjects we have become and the transformations in place—and because of the study's relation to subjective difference—Cyberfeminism grants the dissertation its primary theoretical framework, as it describes the postmodernist philosophies of a contemporary feminist community interested in cyberspace, the Internet and technology.

³ The dissertation argues for an an exploration of architecture and space constituted by cultural, material and embodied practices intersection with technologically mediated-forms of becoming and urban relations. The literature supporting the study of GPS mobile apps has an immense focus in quantitative analyses of their performance. See Anthony Steed "Supporting Mobile Applications with Real-Time Visualisation of GPS Availability" in *Mobile Human-Computer Interaction* Vol.3160 (2004), George Camacho et al. "Software Development for Local Data Transfer for Mobile Applications Using GPS and GPRS Technology" (2006), Roy Sandberg and Mark Rollins *The Business of Android Apps Development: Making and marketing Apps that succeed on Google Play, Amazon App Store and more* (2013) and Michael M *Mobile Tracking: Apps, GPS, IMEI for Android & iOS* (2014).

⁴ See, for example, Matthew Gandy "Cyborg Urbanization: Complexity and Monstrosity in the Contemporary City" in the *International Journal of Urban and Regional Research* (2005), Tapani Launis *Space, Time and the Virtual: New scientific, practical and representational methods for architecture and a digital modelling experiment of the built environment* (2006), Scott McQuire *The Media City: Media, Architecture and Urban Space* (2008) and Paula Geyh *Cities, Citizens, and Technologies: Urban Life and Postmodernity* (2009).

Due to the close relationship between body, space and technology each one of these topics will be individually addressed throughout this chapter's sections. In the first section, 'Cyberfeminism' as a theoretical framework is discussed. Dominant Cyberfeminist perspectives explore the Internet as a means to break free from social constructs such as gender and sex differences, as well as a means to link the body with machines. For this reason, "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century" by Donna Haraway (1985), *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory* (1994) and *Transpositions: On Nomadic Ethics* (1996) by Rosi Braidotti (1996) and *My Mother Was a Computer: Digital Subjects and Literary Text* by N. Katherine Hayles (2005) are key to this research.

The section focuses primarily on the figure of the cyborg as elaborated by Haraway through her manifesto first published in the *Socialist Review* (1985), and later included in her collection of essays *Simians, Cyborgs and Women: The re-invention of Nature* (1991).⁵ Straying from views which depict technology as a subversive force dominated by humans, Haraway upholds that both are mutually constitutive forces imprinting upon each other. However, the section also makes clear that Haraway does not view these forces technofetishistically but rather as tools to rethink traditional, patriarchal notions of the relationship between people and machines.

Although the section is heavily grounded on the figure of the cyborg, it makes evident that the dissertation does not seek to revive the cyborg but rather use it as one of the parting points in the construction of its arguments and the formulation of its conclusions. Haraway's formation as a biologist and philosopher allow her to use the cyborg in her pursuit for "a politics rooted in claims about fundamental changes in the nature of class, race, and gender in an emerging system of world order analogous in its novelty and scope to that created by industrial capitalism."⁶ The cyborg is a way for feminist thinkers to situate themselves within the transition from "the comfortable old hierarchical dominations" to the "scary new networks" of informatics domination—as she explains in her Manifesto's section, "The Informatics of Domination". As such, the cyborg is a helpful figuration due to its method of critique, rather than a directly translatable one in the twenty-first century.

Instead, this study finds a closer affinity to philosopher Rosi Braidotti's figuration of the nomad, which is discussed in the chapter's second section, 'Nomadism'. Contrary to the cyborg, the

⁵ The word 'cyborg' was coined by NASA scientists Manfred E. Clynes and Nathan S. Kline in 1960. They used it to describe a series of experiments exploring how the human body might be technologically enhanced in order to allow space travel. Since then and apart from Haraway, there have been a number of theorists who have appropriated the concept of the cyborg in their work, particularly focusing on using it as a way to rethink the human body. These include texts by Joseba Gabilondo "Postcolonial Cyborgs: Subjectivity in the Age of Cybernetic Reproduction" in C.H. Gray et al. (Eds) *The Cyborg Handbook* (1995), David Tomas "Feedback and Cybernetics: Reimagining the body in the age of the cyborg" in M. Featherstone et al. (Eds) *Cyberpunk/Cyberspace/Cyberbodies* (1995), Anne Allison "Cyborg Violence: Bursting borders and bodies with queer machines" in *Cultural Anthropology* (2001), Joanna Zylinska *The Cyborg Experiments: The extension of the body in the media age* (2002) and A. Gaggioli et al. "From Cyborgs to Cyberbodies: The evolution of the concept of techno-body in modern medicine" in *PsychNology* (2003).

⁶ Haraway, Donna. *Simians, Cyborgs, and Women: The Re-invention of Nature*. London: Free Association Press, 1991. 161.

nomad—also a marker for difference—addresses the matter of a subject's biography (or history), in relation to spatialised and temporal relations. Braidotti states, "The nomad's identity is a map of where she has already been: she can always reconstruct it a posteriori as a set of steps on an itinerary."⁷ As such, the nomad's identity is constructed out of an inventory of localised practices and traces, marking its relevance in the dissertation as a subject which is a product of place and territory. The nomad figuration argues for a multilayered vision of the subject as a dynamic, embodied entity—one without a fixed identity, but with an inherent relation to space.

Continuing on from Braidotti's vision of a non-unitary nomad, the situated, embodied nature of the subject is discussed in 'Body', the chapter's third section. As a poststructuralist thinker, Braidotti claims that she herself is a nomad, giving a historical account of the locations she has moved through and foregrounding how her voice has been deconstructed and reconstructed through the boundaries of multiple languages and places. Voice and language are also tools and processes in the act of becoming, and they attest to exploration of the body as a site of multiple experiences—past, present and future.⁸ Discussing language is necessary in the chapter as it relates to its author's own specificity; the dissertation makes use of an alternate writing voice—a performative practice constituting the researcher's subjectivity, which narrates the experience of a figuration called 'the boy' as he interacts and plays with the apps.⁹ The section will explore how 'boy'—as a male-gender figuration—relates with the feminist ideas of embodiment upheld by Braidotti, while correlating her

⁷ Braidotti, Rosi. *Nomadic Subjects Embodiment and Sexual Difference in Contemporary Feminist Theory*. 2nd ed. New York: Columbia UP, 2011. 41.

⁸ See chapter one of *Nomadic Subjects*, particularly the following sections: 'The Nomad as Polyglot', 'Frontiers', 'Passages' and 'The Unconscious, for Example'. Here Braidotti explains how her nomadic project traces and reflects her existential situation as a multicultural individual—a migrant who turned nomad. Her manner of writing is a way of negotiating with many languages and cultural affiliations. As such, this is then reflected as a figurative style of thinking, which Braidotti defines as 'autobiographical'. References on autobiographical, performative methods of writing will be discussed later on in the section.

⁹ Performative voices suggest an academic mode of critique related to position, gender and sexuality. Rendell, for instance, uses the word 'confession' to describe one of her performative methods of writing autobiographically. This can be noted in her work *Confessional Construction* (2002), where she—in her book *Site-Writing: The Architecture of Art Criticism* (2010)—writes "These careful instructions [...] touched upon my own developing interests in the confession as a construction rather than a revelation of the self." In this way, the practice of performative writing entails not just a passive retelling of an account, but is also an agent in the construction of the self and of meaning.

For more reading on autobiography and performative writing method, see James Clifford and George E. Marcus *Writing Culture: The poetics and politics of ethnography* (1986), Joan Scott "Experience" in Judith Butler & Joan Scott (Eds) *Feminists theorize the political* (1992), Linda S. Kauffman "The Long Goodbye: Against personal testimony, or an infant grifter grows up" in *American Feminist Thought at Century's End: A reader* (1993), Della Pollock "Performing Writing" in Peggy Phelan & Jill Lane (Eds) *The Ends of Performance* (1998), and Ute Bernd "Performativity" in Peter Hühn et al. (Eds) *The Living Handbook of Narratology* (2015).

For texts on performative writing focusing on the subject as an other, see Julia Kristeva *Powers of Horror: An essay on abjection* (1982), Donna Haraway "Situated Knowledges" in *Simians, Cyborgs, and Women* (1991), Chris Brickell "Masculinities, Performativity, and Subversion" in *Men and Masculinities* vol.8 (2005), "The Performative 'I'" in *Cultural Studies Critical Methodologies* (2007) and Roger N. Lancaster "Autobiography: When I Was A Girl (Notes on Contrivance)" in *A Companion to the Anthropology of the Body and Embodiment* ed. Frances E. Mascia-Lees (2011).

theories on nomadism with autoethnography.¹⁰ Similarly, this is then related to Haraway's theories on 'situated knowledges', which overturns the patriarchal idea that objectivism can exist and come from a singular subject. Thus, autoethnography acknowledges that both research and processes of every-day life are mediated by singular events, experiences and relations to spaces.¹¹

Chapter one's next section, 'Space', seeks to fill the gaps left in Cyberfeminist theories in relation to the built environment's role in the construction of subjects. With an interest in highlighting the role of space as a site for the construction of subjects and the role of mobile technologies in the creation of new forms of citizenship, community and spatial practices, it becomes necessary to look at theories on how space is produced.¹² In *The Production of Space* (1974), Henri Lefebvre denounces the idea of space as a physical construct and advocates for the idea that space is a social and performed concept, inseparable from the human body and its agency. Because, of course, his theories do not directly address the impact of mobile technologies in the use of spaces and in social relations, the section looks to architect and urban theorist William J. Mitchell's discussions in *City of Bits: Space, Place and the Infobahn* (1995) and *E-topia: Urban Life, Jim—But Not As We Know It* (1999), as he explores how technologies have altered the use of spaces, and in turn, the conceptual construction of communities and relationships. As such, Mitchell is concerned with the changing urban patterns fostered by telecommunications. Similarly, architect and theorist Antoine Picon's ideas of architecture, design and the digital in *Digital Culture in Architecture: An Introduction for the Design Professions* (2010) are discussed. Picon upholds that the digital realm can be considered a culture, one that influences representations, habits and rituals of the world.¹³ Though Picon is indeed interested in how the digital realm can inform design processes, urging new forms of architectural critique, it is his acknowledgement of the human subject with multiple embodiments—though very briefly discussed—that make him relevant to the discussion.¹⁴

¹⁰ See *Nomadic Subjects* chapter one, specifically 'Writing on the Threshold of Multiple Becoming'. Also see Heewong Chang *Autoethnography as Method* (2008), Tessa Muncey *Creating Autoethnographies* (2010) and Frances E. Mascia Lees *A Companion to the Anthropology of the Body and Embodiment* (2011).

¹¹ Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14.3 (1988): 575-99. Web. 30 July 2015. <http://www.staff.amu.edu.pl/~ewa/Haraway_Situated_Knowledges.pdf>.

Also see Amanda Coffey *The Ethnographic Self* (1999), Debora E. Reed-Danahay "Auto/Ethnography: Rewriting the Self and the Social" in *The Journal of American Folklore* (2000), Gian S. Pagnucci *Living the Narrative Life: Stories as a Tool for Meaning Making* (2004), Garance Maréchal *Ethnography and Case Study Research* (2010) and Carolyn Ellis *The Ethnographic I: A methodological novel about autoethnography* (2004).

¹² See Peter Blundell et al. *Architecture & Participation* (2005), in particular chapter six written by Anne Querrien. Also see Aaron Betsky *Queer Space* (1997), David Porter *Internet Culture* (1997), Clay Shirky *Here Comes Everybody: The Power of Organizing Without Organizations* (2009), Daniel Miller *Tales from Facebook* (2011), Sherry Turkle *Alone Together: Why We Expect More From Technology and Less From Each Other* (2011), Adriana de Souza e Silva and Jordan Frith *Mobile Interfaces in Public Spaces: Locational Privacy, Control, and Urban Sociability* (2012) and Jaime Woo *Meet Grindr: How One App Changed the Way We Connect* (2013).

¹³ Picon, Antoine. *Digital Culture in Architecture: An Introduction for the Design Professions*. Edited by Henriette Mueller-Stahl . Basel: BirkhauserGmbH, 2010. 50.

¹⁴ Picon, *Digital Culture in Architecture*, 51.

The third piece of the dissertation's relational triad is discussed in the chapter's fifth and final section: 'Technology'. The section's discussion begins by proposing that the digital screen be rethought as a permeable boundary between digital and physical spaces. The images, codes, text and representations that the screen displays are all agents in shaping a user's affectivity, and so literary and media theorist Mark B.N. Hansen's *New Philosophy for New Media* (2004) is brought into the discussion. He elaborates on how new media relate to theories of affection, placing the body at the centre of the discussion, unseparated from technology.

Through the apps' interfaces, users deconstruct and reconstruct their identities to be able to fluidly navigate between offline and online contexts. This interactional process between the organic and the machinic is discussed by both Haraway and Braidotti. However, the work of postmodern literary critic N. Katherine Hayles in *My Mother Was a Computer* (2005) is particularly useful here due to its focus on interfaces. For Hayles, there is no distinction between technological processes and the body, as both are mutually responsible for shaping each other—as opposed to thinking about technology as a substitute for humans.¹⁵

The section concludes by situating the role of technology within a Cyberfeminist discourse, discussing how the computer has been anthropomorphised to fit the figuration of the mother (Hayles 2005). What is particularly useful about figuratively approaching this relationship of computer/motherboard, is that, firstly, it uses the mother's womb as a space where the subject finds its origins. Braidotti writes in *Nomadic Subjects* that upon separation from the mother, the subject is no longer whole, continuously reworking itself in the search for totality. Secondly, technology viewed as a maternal figure also opens a space for discussing how caring for non-organic others can also be a valid process of becoming subject, contesting traditional, Oedipal/patriarchal configurations of care.¹⁶

¹⁵ See Hans Moravec *Mind Children* (1988) and *Robot: Mere Machine to Transcendent Mind* (1998). In the former, however, Moravec constructs his argument that machines will reach human equivalence through the matter of spatial mobility: a computer connected to one place is doomed to static iterations, whereas a machine that is mobile must gather a richer set of knowledge about an ever-changing world upon which to base its actions. There is thus a basic idea of nomadic subjectivity which he seems to apply onto the machines themselves.

¹⁶ Although care—as a feminist concept—constitutes a number of considerations that do not form a part of this study, it must be acknowledged: care surfaces throughout this study, in different ways, because of its relation to the two-way flux of interactions between user and app, as well as the reconceptualisations of interpersonal relationships which are being fostered by apps.

Cyberfeminism

Cyberfeminist theories surfaced in the early 1980s, through the work of Donna Haraway, and in particular through her discussion of the cyborg. In her 1985 seminal text, “A Cyborg Manifesto”, Haraway discusses the cyborg as a disassembled and reassembled figuration, arguing “for pleasure in the confusion of boundaries and for responsibility in their construction.”¹⁷ She particularly addresses this in reference to male/female, human/animal and organic/machinic divides. Haraway’s cyborg is a call to rethink the identity of the human body. Through a socialist-feminist analysis, it is a tool for the subversion of gender codes in the 1980s, when the arrival of new technologies were becoming increasingly prevalent and were reconceptualising social relations and social power structures. Rejecting traditional notions of essentialism, the cyborg figure is chimeric, inhabiting a world composed of fusions and hybrids. Haraway writes:

By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs. This cyborg is our ontology; it gives us our politics. The cyborg is a condensed image of both imagination and material reality, the two joined centres structuring any possibility of historical transformation.¹⁸

Today, with technology being prevalent and integrated into daily life, Haraway’s text is increasingly relevant due to its focus on the hybridity between organic and machine. For her, the divide is unnecessary and is established by patriarchal modes of defining hierarchies and distributions of power; rather than discussing technology through fear or as inferior, Haraway embraces technology’s ability to challenge these dualisms and destabilise normative structures. For Haraway, “It is not clear who makes and who is made in the relation between human and machine.”¹⁹ The mutual shaping between subjects and technology is a pivotal condition discussed throughout this dissertation and is one reason why Haraway’s theories are so relevant today. Even though the cyborg was informed by a specific context—by seeing the organism as an object of knowledge, a system of the reproduction/partition of energy and as a system of division of labour with executive functions, a

¹⁷ Haraway, Donna. “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century” in *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991. 2.

¹⁸ Haraway, “A Cyborg Manifesto”, 2.

¹⁹ Haraway, “A Cyborg Manifesto”, 24.

consequence of Haraway's background in biology—it paved the way for theorists to explore this relationship between people and technology.

Though technology is created to serve a purpose, the affectional and cognitive processes of the individual are not left pristinely unaltered. There is no such thing as master and servant when it comes to people and machines, and any view that portrays them as such fails by reductively misrepresenting the multiplicity of interactions users have with them. Of this, Haraway writes:

The machine is not an it to be animated, worshipped, and dominated. The machine is us, our processes, an aspect of our embodiment. We can be responsible for machines; they do not dominate or threaten us. We are responsible for boundaries; we are they.²⁰

At first glance these words risk being perceived fetishistically—technology being portrayed too optimistically—however, Haraway is not advocating *for* technology. Rather, Haraway is rethinking traditional notions of the relationship between people and machines while highlighting the complex negotiations of power and agency that take place through these interactions. The idea that “we are they” is not so much a sci-fi call to mutate into a human/machine hybrid as much as it is Haraway’s critique that “machine/organism relationships are obsolete, unnecessary.”²¹ Certainly creating a divide between the two disables exploration and analysis into the nuanced relations between them, and proves disadvantageous in ever fully understanding the parameters through which people become and perform.

In her text “Cyberfeminism with a Difference” (1996), Braidotti approaches the technological debate by viewing postmodernity as a threshold of new relocations for cultural practice and proposes that technology “must be seen as co-extensive with and inter-mingled with the human. This mutual imbrication makes it necessary to speak of technology as a material and symbolic apparatus, i.e. a semiotic and social agent among others.”²² Cyberfeminism aims to achieve the breaking down of subjective singularities by embracing the reconstruction of daily life’s boundaries, in partial connection with others and in communication with all of our parts.²³

The cyborg provides a parting point—a useful way of approaching the topic of people and mobile technologies. Although it is defined as a fictional or hypothetical person whose physical abilities are extended beyond normal human limitations by mechanical elements built into the body,²⁴

²⁰ Haraway, “A Cyborg Manifesto”, 26.

²¹ Haraway, “A Cyborg Manifesto”, 25.

²² Braidotti, Rosi. "Cyberfeminism with a Difference." *New Formations*. No. 29 (Autumn 1996): 9-25. Reprinted in: *Zones of Disturbance*. Ed. Silvia Eiblmayer. (Steirischer herbst 1997): 112-120.

²³ Haraway, “A Cyborg Manifesto”, 27.

²⁴ “Cyborg” *New Oxford American Dictionary*, Web. 7 Aug. 2015.

the cyborg Haraway proposes is not confined to this definition, which theorists such as Mitchell adhere to when discussing the concept in their texts—a technologically-aided human. Her cyborg is *figural*, not *metaphorical*, and because of this it would be reductive to claim that the cyborg is accurately represented through this research, just as it would be erroneous to propose that the cyborg fully meets the complexity of this study.²⁵ It becomes important to use existing figures such as the cyborg as bases and as sources for context. However, Cyberfeminists such as Braidotti and Hayles have explicitly advocated for the need to create more figurations, not less. New theories should not shy away from proposing alternate figurations that might be more accurately suited for particular contexts and theoretical frameworks.

The inability of Haraway's cyborg in meeting the needs of this study is that it fails to account for the specificity of user as a subject that is constructed not just through technology but also through their relation to space and place. Without gender, religion or ancestry, the cyborg (as an embodied character), has limited history and lacks ethno-cultural and geographical specificity.²⁶ This of course is problematic in a study founded on the importance of location and geo-positioning systems. On the other hand, dominating theories of cities and technology are inadequate in regards to the findings of the research, rooted in cultural-material practices. It is necessary to discuss space in relation to the increasing number of performative, embodied practices, particularly ones that include the subject as an other.

²⁵ In *Nomadic Subjects*' 'Against Metaphors' section (page 11), Braidotti writes, "Learning to tell the difference between different forms of nonunitary, multilayered, or diasporic subjectivity is therefore a key ethical as well as methodological issue. Figurations attempt to draw a cartography of the power relations that define these respective and diverging positions. They don't aim to embellish or metaphorize: they just express different socioeconomic and symbolic locations."

²⁶ By this, a distinction between the cyborg's etymology and 'cyborg' as a tool for subjectivity must be made. In comparison to the figuration of nomad, which is rooted on geography and autobiography, the cyborg has no origin. As Haraway writes in the beginning of her manifesto, "The cyborg would not recognize the Garden of Eden; it is not made of mud and cannot dream of returning to dust." The idea of the cyborg, as a term, however, has a limited history and dates back to the 1930s, as described by Haraway in her interview with Nicholas Gane for the *Theory, Culture & Society* journal. Perhaps in an attempt to deal with historicity more directly, Haraway moved on from 'cyborg' to 'species', which—as a term—has a stronger tie with biology/origin.

Nomadism

In *Nomadic Subjects*, Braidotti uses her own position and historical, cultural and geographical specificity as markers of subjective difference. Originally published in 1994 when the non-unitary view of the subject as conceptualised by feminism was still a fairly recent outlook; the second edition of *Nomadic Subjects* was republished in 2006, amidst a changed landscape of theories exploring the non-unitary self. Throughout the book, Braidotti discusses the constitution of subjectivity in philosophy by applying Deleuze and Guattari's 'nomadism' (1980) to a feminist, poststructural framework, discussing difference as a site of problematisation for subjectivity.²⁷ The concept of difference has been tainted, becoming equated to inferiority—according to Braidotti, who furthermore states that "to be different-from means to be worth-less-than."²⁸ Braidotti explores sexual difference as embodied and experienced by women, while looking to moments of transition. To do this, she challenges pre-established structures, such as heteronormativity, to call for a shift towards a 'nomadic' vision of the subject. Writing in reference to the different modes and forms of nomadism, Braidotti states:

They require more historically grounded, socioeconomic references and subtler degrees of differentiation. Thus nomadic thought amounts to a politically invested cartography of the present condition of mobility in a globalized world. This project stresses the fundamental power differential among categories of human and nonhuman travelers or movers. It also sustains the effort to develop suitable configurations for different kinds of mobility they embody and engender.²⁹

With its focus on categories of human and nonhuman, as well as bodies in movement, Braidotti's nomad configuration is relevant to this dissertation—with its focus on spatial movements and urban practices through GPS apps—while also accounting for one's location in terms of space and time. In this way, and as described by Braidotti, the figure of the nomad is a politically informed map, outlining the subject's situated perspective—a transformative account of the self. Braidotti writes,

²⁷ In *A Thousand Plateaus: Capitalism and Schizophrenia*, Deleuze and Guattari use the nomad to think through a state of being that resists the hierarchy of centralisation. Though Deleuze in particular does not define the nomad as precisely as Braidotti does, he introduces the nomad as an agent to run counter to 'the State' (which thrives by taking the nomad's innovations and using them to fit its own needs).

²⁸ Braidotti, *Nomadic Subjects*, 20.

²⁹ Braidotti, *Nomadic Subjects*, 4.

“The figuration of the nomad renders an image of the subject in terms of a nonunitary and multilayered vision, as dynamic and changing entity.”³⁰ She refers to this process of changing subjects as a ‘sociocultural mutation’, one which alters the very structure of subjectivity as well as the social relations that uphold and compose it.

Braidotti makes explicit that the nomad is not a metaphor but rather a figure: it is not a jet-setting entity but rather representative of “the decline of unitary subjects and the destabilization of the space-time continuum of the traditional vision of the subject.”³¹ The nomad has multiple ways of coming into being: a homeless person or a migrant, a refugee or an illegal expatriate, a mail-order bride or a rape-in-war victim. As Braidotti writes, “The processes of becoming-other get expressed through suitable figurations—like my nomadic subject. As such, they are not metaphors, but rather critical tools to account for the materially embedded and embodied locations and power relations.”³² Nomadism, in Braidotti’s line of thought, has nothing to do with having no passport or having too many of them, but rather pertains to the drawing of a cartography of the different power relations which define these diverging positions, while expressing different socioeconomic and symbolic locations.

While the figure of the cyborg is used as a subversion of gender to break down categorical divides through its relation to technology, biology and politics, the figure of the nomad addresses matters of embodiment through more nuanced, spatialised and precise forms of being. And while the cyborg makes no reference to its history, the nomad would fail to make sense without it: “The nomad’s identity is an inventory of traces.”³³ Through it, Braidotti argues that one is able to read the present in relation to the cultural, political, epistemological and ethical frameworks that shaped a subject in the past, and continue to shape them in the present. As such, “More like a weather map than an atlas, my cartographies mutate and change, going with the flow while staying grounded.”³⁴ Though this form of nomadic thinking lies outside the traditional lines of thought frequently used in architectural research, through it this dissertation finds spatial relevance, allowing rethought definitions, relations and experiences of space.

³⁰ Braidotti, *Nomadic Subjects*, 5.

³¹ Braidotti, *Nomadic Subjects*, 10.

³² Braidotti, *Nomadic Subjects*, 12.

³³ Braidotti, *Nomadic Subjects*, 41.

³⁴ Braidotti, *Nomadic Subjects*, 13.

Body

Nomadic theory, as discussed by Braidotti, is a localised practice, in which her particular biography comes into play; it is reflexive of her own existential situation as a multicultural individual and a migrant who turned nomad, moving from Italy to France to The Netherlands—to name a few. As such, she is profoundly aware of her location and of the processes of becoming which have moulded her as a feminist thinker—particularly one who is influenced by Luce Irigaray, Deleuze, Guattari and Haraway. Becoming displaced as a nomad has had an impact on her voice, and Braidotti claims:

My own work as a thinker has no mother tongue, only a succession of translations, of displacements, of adaptations to changing conditions. This has become a defining feature of my texts. [...] This mode refers to a figurative style of thinking, slightly autobiographical, which may at times strike the readers as an epistemological stream of consciousness, but is rigorously structured around a number of key concepts.³⁵

Braidotti here proposes that voice and language are also responsible for becoming; they are manifestations of embodiments which constitute the nomadic subject.³⁶ Interested in discussing the different ways in which the human body is crafted, represented and enabled by mobile apps and their interfaces, nomadic theory allows the rethinking of bodily roots of subjectivity—this is the starting point for the epistemological project of nomadism, according to Braidotti.³⁷ She writes, “The body or the embodiment of the subject is to be understood as neither a biological nor a sociological category, but rather as a point of overlapping between the physical, the symbolic, and the sociological.”³⁸ In this way, nomadic theory makes a plea for different ways of thinking about the body—ways that transcend class, race, gender and similar categories which give bodies their structures. Rather than fixating the body as a monolithic essence, theories about the body should explore it as a site of multiple and complex sets of experiences, some of which can overlap and some of which can be seemingly contradictory. It is necessary to speak about the subject as an embodied entity able to flow from one

³⁵ Braidotti, *Nomadic Subjects*, 21-22.

³⁶ Also see chapter eight of Peg Rawes *Irigaray for Architects* (2007) where she discusses Luce Irigaray's ideas on voice, language and dialogues. For Irigaray, language is a spatial 'architecture' manifesting a sexed subject's desires.

³⁷ Braidotti, *Nomadic Subjects*, 24.

³⁸ Braidotti, *Nomadic Subjects*, 24.

set of experiences to another, meaning that a negotiation between a present, past and future consciousnesses are all in play in the formation of identity.

Nomadism is a never-ending process where a person's biography, memory and location are in flux.³⁹ This is made evident through Braidotti's writing tone of voice in *Nomadic Subjects*, which presents a retrospective mapping of the places she has been. She writes, "The autobiographical tone that emerges in the course of this chapter, as of others, is my way of making myself accountable for the nomadic shifts and performances that I enact in the text."⁴⁰ Through her writing, Braidotti practices a set of narrations of her own embodied genealogy, revisiting certain locations and accounting for them while attesting to the fluidity of a subject's boundaries.⁴¹ These practices open up spaces of in-betweenness where alternative forms of political subjectivity are revealed and able to be explored.

The practice of making oneself accountable is employed throughout this dissertation. Co-authoring it is a secondary, active voice who at the beginning of each chapter narrates the personal experience of the researcher—also known as 'the boy', a new figuration proposed in this study—as he engages with the apps. This voice is rooted in Braidotti's nomadic style of writing, where she accounts for her own singular position as a subject in a constant state of becoming through the spatial practices in which she partakes and the geographies she inhabits. The dissertation's active voice retraces the boy's steps as he conducts empirical research through the apps, highlighting not the findings but rather the processes and experiences, particularly when body, space and technology unravel. In this way, the narration becomes a brief performance alluding to the experience of the researcher and the development of the dissertation. In the attempt of undoing the illusory stability of fixed identities, researcher writes about the thesis and the thesis writes about the researcher.⁴²

Embedded within a discourse that centres around female figures and their politics, it is necessary to address the connotations that 'boy' brings into the theoretical framework. 'Boy'

³⁹ In *Nomadic Subjects*' third chapter, Braidotti upholds that the enfleshed nature of the self is inherently tied to time and memory. The capacity to remember provides the subject with the imaginary unity and sense of continuity necessary to function internally and socially. See page 105 of *Nomadic Subjects*.

⁴⁰ Braidotti, *Nomadic Subjects*, 27.

⁴¹ Braidotti, *Nomadic Subjects*, 27.

⁴² In her text "Experience" (1992), Joan Scott dispensed with the use of 'I' as a mode of authoritatively arguing from personal standpoint. In this way, Scott deconstructed the foundational category of experience. Similarly, Linda Kauffman in "The Long Goodbye: Against personal testimony, or an infant grifter grows up" (1993) stated that although personal testimony can be eloquent, it is not an infinitely exhaustible genre. Through a figural method of writing—one that fragments the researcher's embodiment into two voices—this dissertation aligns itself with Cyberfeminist ideas of the importance of situated knowledge and nomadism as modes that enable singular cognitive constructs. A relationship between Braidotti's nomad and performative voice/writing can be noted in Della Pollock's essay "Performing Writing", where on page 74 she asks, "What words remain to the body made at once by history and abstract by textuality? How then can we speak?" Through her text, she elaborates on performative writing's ability to evoke "worlds that are other-wise imaginable, unlocatable: worlds of memory, pleasure, sensation, imagination, affect, and in-sight." (Page 80). In this way, a subject's autobiography and performative writing method recognises its displacements while establishing an engaged, embodied and material finality.

brings a figurative, text-based body in the writing, while simultaneously attempting to consolidate the dualism between object of study and observer. ‘Boy’ is different from ‘man’: discussing the figure of a boy is to discuss the subject in reference to a specific time in one’s nomadic trajectory/cartography.⁴³ As literary and queer theorist Michael Cobb writes in his paper “Childlike: Queer Theory and Its Children”:

Children [...] have futures we can’t yet account for, but futures for which we nonetheless hold out hope. But children are also tokens of the past—they remind us, perhaps, of when in our histories we were young, of how we all made a tour through childhood [...] Children, that is, remind us of time.⁴⁴

Theoretical and academic discussions relating to the figuration of the boy can be found in literature, feminist and queer studies. These accounts primarily focus on studying the figure of the boy through a psychoanalytic perspective (Kathryn Bond Stockton, 2004) or through one which accounts for a malleability of the male gender, particularly one socially geared towards masculine traits (Kenneth B. Kidd, 2005). Though these arguments range from discussing Sigmund Freud to Rudyard Kipling’s ‘Mowgli’, the point of convergence for them lies in the point of indeterminacy of boyhood, particularly as the boy approaches puberty—the point in which males are expected to strongly follow and perform according to patriarchal norms.

In gender theorist and literary researcher Claudia Nelson’s *Boys Will Be Girls: The Feminine Ethic and British Children’s Fiction, 1857-1917* (1991), Nelson writes that early writings for children—children’s fiction, etiquette manuals and books on holidaying—sought to provide emotional education: “Covertly or overtly, the novels as a body promise to bestow upon their consumers not a talent for business or a knowledge of geography, but something more precious still: manliness or womanliness.”⁴⁵ Femininity, maleness and manliness—as Nelson terms them—is a central subject dating back to Victorian literature, where it rested on children novelists to actively partake in the socialising of gender.⁴⁶ As such, it becomes evident that just as gender theorist Judith Kegan Gardiner writes in her chapter in *Handbook on Men and Masculinities* (2004), gender is a social construct, not something granted to people with similar

⁴³ See Helen Franks *Goodbye Tarzan (RLE Feminist Theory): Men After Feminism* (1984), Judith Butler *Gender Trouble: Feminism and the Subversion of Identity* (1990), Deborah L. Madsen *Feminist Theory and Literary Practice* (2000), Judith Kegan Gardiner “Men, Masculinities and Feminist Theory” in Michael Kimmel et al. *Handbook on Men and Masculinities* (2004), Michael Cobb “Childlike: Queer Theory and Its Children” in *Criticism* Vol. 47 (2005) and Chris Brickell “Masculinities, Performativity, and Subversion” *Men and Masculinities* vol.8 (2005).

⁴⁴ Cobb, Michael L. "Childlike: Queer Theory and Its Children." *Criticism* 47.1 (2005): 119.

⁴⁵ Nelson, Claudia. *Boys Will Be Girls: The Feminine Ethic and British Children’s Fiction, 1857-1917*. New Brunswick and London: Rutgers UP, 1991. 1.

⁴⁶ Nelson, *Boys Will Be Girls*, 2.

genitals.⁴⁷ This of course diverges from Judith Butler's arguments (1990, 1993) where she advocates that gender is not so much a social construct as an identity constituted in time through a stylised repetition of acts; as such, gender is the material effect of embodied repetitions.⁴⁸

In his book *The Protean Self: Human Resilience in an Age of Fragmentation* (1993), psychiatrist Robert Jay Lifton elaborates on 'the protean self'—a "fluid and man-sided" form of being which "flourishes when provided with things diverse, disconnected, and global."⁴⁹ The protean self differs from past explorations of the self in that it enables the individual to engage in continuous exploration and personal experiment. According to sociologist Sherry Turkle in her book *Alone Together: Why We Expect More from Technology and Less from Each Other* (2011), Lifton's mentor was Erik Erikson, a developmental psychologist and psychoanalyst known for his theory on psychosocial development of human beings. An exchange between the two help to further situate 'boy' in relation to 'man'.

Publicly, Erikson expressed approval for Lifton's work, but after Erikson's death in 1994, Lifton asked the Erikson family if he might have the books he had personally inscribed and presented to his teacher. The family agreed; the books were returned. In his personal copy of Lifton's *The Protean Self*, Erikson had written extensive marginal notes. When he came to the phrase 'protean man,' Erikson had scrawled 'protean boy?' Erikson could not accept that successful maturation would not result in something solid. By Erikson's standards, the selves formed in the cacophony of online spaces are not protean but juvenile.⁵⁰

While the term 'man' is generic, 'boy' is chronologically situated, and there is certainly a sense of corporeal and subjective ambiguity in 'boy' that cannot be found in the figure of the 'man', particularly one formed via online spaces. Although each man is different, 'man' holds a strong association to patriarchy, which Cyberfeminist theories seek to make redundant. 'Boy', on the other hand is curious, playful, not yet grown up nor fixed within patriarchal models. In fact, as Cobb affirms, "Boys had to be made, or else."⁵¹ One of the gaps between using 'boy'

⁴⁷ Gardiner, Judith Kegan. "Men, Masculinities, and Feminist Theory." *Handbook on Men and Masculinities*. Ed. Michael Kimmel, Bob Connell, and Jeffrey Hearn. London: Sage, 2004. 35.

⁴⁸ See Judith Butler *Gender Trouble: Feminism and the subversion of identity* (1990) and *Bodies that Matter: On the discursive limits of 'sex'* (1993). Also see Della Pollock "The Performative 'I'" in *Cultural Studies Critical Methodologies* (2007).

⁴⁹ Turkle, Sherry. *Alone Together: Why We Expect More from Technology and Less from Each Other*. USA: Basic, 2011. 179.

⁵⁰ Turkle, *Alone Together*, 179.

⁵¹ Cobb, "Childlike", 121.

while looking to Braidotti's call for figurations is that Braidotti never deals with the complexities of 'boy', aligning herself almost singularly to the female gender (without ever really engaging with queers, lesbians or other categories of gendered difference). Because the boy is male, he need not be left out of feminist discussions, particularly when its leading theorists and thinkers advocate for a fluidity of the subject and a blurring of divides. Just as 'boy' is not yet fixed in patriarchy, one could also argue that 'boy' is perhaps not fixed to heterosexuality either.

Queer studies provide discussions that can help to inform the figuration of the boy within a Cyberfeminist framework. Here, Cobb raises a relevant concern for this study, stating that the queer and the child are a confusing coupling because although dominant culture has a tendency to treat and assume all children as straight, culturally they are seen as asexual.⁵² Though feminist philosopher Simone de Beauvoir, as well as Braidotti, Deleuze and Guattari all discuss the politics of 'girl' as a gendered, temporal, embodied subject, 'boy' is ignored; he is left in the periphery, marginalised for not being female.⁵³ Instead—particularly in "Cyberfeminism With a Difference", through the use of the 'riot girls'—Braidotti adheres to 'girl' as the performative figuration of choice.⁵⁴

In Spring 2012—in a seminar organised for Braidotti to discuss her work in *Transpositions* (2006) at the Bartlett School of Architecture UCL—Braidotti stated:

If you remember the first edition of Haraway's "Cyborg Manifesto"—mid 80s, subtitled "A socialist feminist manifesto for the 20th century"—there was a very contested sexual idea in the manifesto when she said "the cyborg is the girl." And all hell broke lose. "Do you mean a woman?" "No, I mean a girl."

[...] The girl emerges from all of this as a figuration of indeterminacy. [...] The girl is the not yet and the no longer. It's the figure of in-betweenment. There is a fascination for the unmarked body of the girl; the boy is marked by phallicity, inexorably in a sense; it's much more difficult to escape the gravitational pull of

⁵² Cobb, "Childlike", 119.

⁵³ See Michael Cobb "Childlike: Queer Theory and Its Children" in *Criticism* (2005) and Kathryn Bond Stockton "Growing Sideways, or Versions of the Queer Child: The Ghost, the Homosexual, the Freudian, the Innocent, and the Interval Animal" in S. Bruhm and N. Hurley (eds) *Curiouser: On the Queerness of Children* (2004).

⁵⁴ 'Girl' is also chronologically situated, however the female body's anatomy temporally performs different to that of the male body; the immaculate anatomy of 'girl' will not always last, as the female enfleshed body may undergo transformations that will mark her as 'woman'—particularly the loss of virginity and the stage of motherhood. Braidotti does not discuss these transitory markers in the figuration of the girl as a figuration which can navigate through disparate temporal contexts. See Simone de Beauvoir *The Second Sex* (1949), Gilles Deleuze and Felix Guattari *A Thousand Plateaus* (1980) and Catherine Driscoll *Girls: Feminine Adolescence in Popular Culture and Cultural Theory* (2002).

phallogocentrism; masculinity is stuck with that. Femininity can sort of negotiate with this.⁵⁵

Braidotti never states that escaping ‘phallogocentrism’ is impossible for ‘boy’ but rather that it is difficult.⁵⁶ To adopt the term ‘girl’ rather than ‘boy’ in this research would be inadequate as it would also neglect the relations between the lifeworld and the production of knowledge of the researcher as a situated and embodied subject. Even though the term ‘boy’ does act in some ways as a prelude to patriarchal models—there is a set of behaviours and attitudes that are expected to take shape in boyhood—it can be argued that this is not the norm and that the naivety and innocence of ‘boy’ grants it indeterminacy as well.

In “The Feminist Standpoint: Towards a Specifically Feminist Historical Materialism” (2003), feminist philosopher Nancy C.M. Hartsock explains that while girls can identify with a concrete exemplary figure in everyday life (the mother), boys—guided by an occasionally-present figure (the father)—must identify with an abstract set of culturally constructed stereotypes and maxims. She writes, “Masculinity is idealized for boys, whereas femininity is concrete for girls.”⁵⁷ Destined to be masculine, the boy—including the queer boy—is instructed to construct an identity and fulfil a role that he must not sway from.⁵⁸

Queer, cultural and literary theorist Kenneth B. Kidd’s *Making American Boys: Boyology and the Feral Tale* (2005) makes a unique contribution to the existing discussions on boyhood and the construction of gender by linking them to the ‘feral tale’. Kidd defines this as a “literary but still folkloric narrative of animal-human or cross-cultural encounter, in which childhood figures prominently.”⁵⁹ By ignoring ‘boy’ in their theorisations of subjective embodiments, Cyberfeminists limit themselves, failing to come in contact with a figuration that helps sustain their affinity for the deconstruction of human/animal divides, as well as their desire to extend an ethics of care and companionship to animal others. Haraway and Braidotti

⁵⁵ Braidotti, Rosi. Rosi Braidotti Seminar. The Bartlett School of Architecture, UCL. Foster Court, London. 21 Mar. 2012. Seminar Response.

⁵⁶ The concept of ‘phallogocentrism’ was developed by Jacques Derrida as a form of logocentrism which emphasises the phallus as an ultimate signifier. Braidotti uses it instead of ‘phallocentrism’ influenced by Luce Irigaray’s appropriation of the term in *Speculum of the Other Woman* (1985).

⁵⁷ Hartsock, Nancy. “The Feminist Standpoint: Toward a Specifically Feminist Historical Materialism.” *Feminist Theory Reader: Local and Global Perspectives*. Eds. C. McCann and S. Kim. New York and London: Routledge, 2003. 298.

⁵⁸ There is a literary genealogy of texts seeking to ‘correct’ any deviances in a boy’s behaviour. See William Gibson *Boyology; Or, Boy Analysis* (1916), Michael Gurian *The Wonder of Boys: What Parents, Mentors, and Educators Can Do to Shape Boys into Exceptional Men* (1996), William Pollack *Real Boys: Rescuing Our Sons from the Myths of Boyhood* (1998), James Garbarino *Lost Boys: Why Our Sons Turn Violent and How We Can Save Them* (1999).

⁵⁹ Kidd, Kenneth B. *Making American Boys: Boyology and the Feral Tale*. Minneapolis and London: University of Minnesota Press, 2004. 5.

miss out on the potential explorations between the thinking technologies that link animal and human, and enable new constructions of the subject and embodiment.⁶⁰ In *Transpositions*, Braidotti writes:

Haraway argues that the subject-object, nature-culture divide are linked to patriarchal, Oedipal familial narratives. Against them, she mobilizes an enlarged sense of community, based on empathy, accountability and recognition. Moreover, she extends these prerogatives to non-human agents or subjects, such as animals, plants, cells, bacteria and the earth as a whole.⁶¹

The feral boy in the United States represented the ideal American male in the early twentieth century. Two brief examples of these are the Boy Scout and Cub Scouts of America and the tales of Huckleberry Finn. Along this same line, the animal stories of Rudyard Kipling play a relevant role—with The Jungle Book’s Mowgli being the exemplar of a boy/animal/savage: a child raised by wolves who develops emotional and familial relationships with non-human others.⁶² In this way, the figuration of a boy—although ignored by Braidotti and Haraway—fits into Cyberfeminist figurative frameworks enabling new imaginaries and modes of rethinking patriarchal relationship and hierarchies, particularly to non-human agents.⁶³

In her book *Alone Together*, Turkle writes about her concerns regarding relationships between humans and machines, expressing her dread through a particular figure. She states, “Thirty years later, I find myself debating those who argue [...] that my daughter might want to marry one [a robot].”⁶⁴ Throughout various points of the book, Turkle resorts to using the figure of her daughter as a means to sustain her arguments rooted in fears and qualms with sophisticated technologies, which one could argue sustains Haraway’s theory on situated, partial knowledge—that of a mother who works at an institution with a proclivity for robotics, MIT. But similarly, one could also argue that she uses the figure of her daughter to sustain her

⁶⁰ ‘Thinking technologies’, a proposed concept by Haraway will be elaborated on in the following section, ‘Technology’.

⁶¹ Braidotti, Rosi. *Transpositions: On Nomadic Ethics*. Cambridge, UK: Polity, 2006. 57.

⁶² See Haraway *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (2003) and Braidotti *Transpositions: On Nomadic Ethics* (2006).

⁶³ The figuration of the child or the pre-adolescent, both girl and boy, provides ways of relating to Haraway’s companion species and Braidotti’s attractors optimistically, while also being used as a potential victim endangered by technologies and new relations with non-humans, such as those described by Sherry Turkle in *Alone Together*.

Also see Kathryn Bond Stockton “Growing Sideways, or Versions of the Queer Child: The Ghost, the Homosexual, the Freudian, the Innocent, and the Interval Animal” in *Curiouser: On the Queerness of Children*, Steven Brumh and Natasha Hurley (eds) (2004).

⁶⁴ Turkle, *Alone Together*, 287.

discussion because it makes her humanity contrast with that of a robot, making her relatable to her readers:

And it has left me thinking about solitude—the kind that refreshes and restores.

Loneliness is failed solitude. To experience solitude you must be able to summon yourself by yourself; otherwise, you will only know how to be lonely. In raising a daughter in the digital age, I have thoughts of this very often.⁶⁵

‘Boy’, in this study, acts oppositely to Turkle’s ‘daughter’. It holds the researcher responsible for discussion, while also acting as a catalyst for theoretical production. The boy is not a means to *justify* the findings. Instead, it is an active tool to address the importance of embodiment in all its senses, a reminder of a partial form of knowledge but one that is situated and embodied through various mediums and contexts. Unlike ‘daughter’, ‘boy’ sustains the dissertations’ key arguments through the idea of embodied performance, not by being a scapegoat.

Women’s studies theorist and psychologist Tessa Muncey claims in *Creating Autoethnographies* (2010), “[T]he western view of self is not homogenous and varies among other things with gender and ethnicity.”⁶⁶ Here it is worth referring to Braidotti once more, as she states:

[...] Femininity and masculinity do not coincide with men and women—man and woman can occupy both masculine and feminine positions. [...] Masculinity and femininity are social, symbolic institutions; man and woman are empirical reference, and as empirical reference, can cross over whichever way they want. Only a system called patriarchy says that men must be masculine and women must be feminine. That’s patriarchy; it’s stupid, and it works brilliantly.⁶⁷

Braidotti advocates for a fluidity in the boundaries of gender. This is where performance becomes an indispensable agent, particularly through the discourse announced by Muncey as she writes that performance “can be seen as the embodiment of story.”⁶⁸ This is also sustained

⁶⁵ Turkle, *Alone Together*, 288.

⁶⁶ Muncey, Tessa. *Creating Autoethnographies*. Los Angeles, London, New Delhi, Singapore and Washington DC: SAGE, 2010. 15.

⁶⁷ Braidotti, Rosi. Rosi Braidotti Seminar. The Bartlett School of Architecture, UCL. Foster Court, London. 21 Mar. 2012. Seminar Response.

⁶⁸ Muncey, *Creating Autoethnographies*, 31.

by performance studies theorist Ronald J. Pelias's ideas in which he describes performance as a "an act of becoming, a strategy for discovering oneself by trying on scripts to test their fit."⁶⁹ Through the figure of the boy, the thesis addresses the body's politics of location, as discussed by Braidotti.

'Politics of locations' are cartographies of power that rest on a form of self-criticism, a critical, genealogical self-narrative; they are relational and outside directed. This means that 'embodied' accounts illuminate and transform our knowledge of ourselves and of the world. Thus black women's texts and experiences make white women see the limitation of our locations, truths, and discourses. Feminist knowledge is an interactive process that brings out aspects of our existence, especially our own implications with power, that we had not noticed before.⁷⁰

This dissertation is thus written through the stance of a non-heterosexual, bilingual Latino 'boy' who engages with personal, situated readings of the body/space/technology triad. Moreover, it is written through a non-patriarchal position marked with difference, a fluid subject who—through his nomadic cartography—fails to fully fit inside patriarchal structures. Through this emerges an unfixed 'boy' mothered by technology—a subject that is deconstructed and reconstructed through mobile app technology.⁷¹ Through Cobb's accounts, boys are constructed as subjects via their contact with the wild world; in this dissertation, the figure of the boy is used to foreground how subjects are constructed via their contact with mobile technology, echoing Cobb's statement that boys provoke "all sorts of tensions about who will count as human, what will count as human, and whether or not conventional understandings of 'civilization' and morality will be either challenged or fortified by the feral boy and his story."⁷² By narrating the experience of the boy in the beginning of each chapter, the performative active voice in the thesis relates to Cobb's theories on the queerisation of children:

One way to track queer children is to offer one's childhood memories, to play with the stories about one's past. [...] At stake in the autobiographical gesture, I feel, is the idea that adult queers had childhoods that, contrary to the dominant story, were also queer, which from this vantage point in time, permits the

⁶⁹ Muncey, *Creating Autoethnographies*, 31.

⁷⁰ Braidotti, *Nomadic Subjects*, 16.

⁷¹ Here there is a suggestion to see the boy as 'offspring' of the computer-mother, as proposed by N. Katherine Hayles in *My Mother Was A Computer* (2005). Similarly, a correlation can be made to Jane Rendell's first chapter in *Site-Writing*, as she situates her cognitive understandings and experiences in space as a result of a state of in-betweenness: between the patriarchal rules established by society and through "the voice of the mother", who suggests alternative modes of producing space.

⁷² Cobb, "Childlike", 121.

theorists to have more than past innocence—they had important sexual lessons that shaped their present tense.⁷³

The intention for bringing personal difference to the forefront is to account for the realities of location in terms of space and time—a vision of the self as a nonunitary, dynamic and changing entity. In line with Braidotti, this then responds to a desire to formulate a dissertation which accounts for subjectivity as a process of becoming nomad, through an “informed map that outlines our own currently situated perspective.”⁷⁴ Nomadism’s relation to one’s own historical cartography means that it begins with the embodied self. Partaking in thinking and writing processes which account for this singular subjectivity, such as the figure of the boy, casts an external light upon the traditional role of the researcher, estranging it from the familiar while accounting for difference. Braidotti writes, “With increased self-reflexivity comes also another important side effect: defamiliarization. A new critical distance is established between oneself and one’s home grounds—a sense of estrangement that is not painless, but rich in ethical rewards and increased understanding.”⁷⁵ As such, the awareness of one’s location acts as a spotlight illuminating material and affectual conditions that were blind spots before. These not only allow the reader’s relationship to the text and their reading of it to shift, but it also allows the researcher to critically approach the subject of study—in this case, the three mobile apps—in potentially unforeseen ways.

As a result of the nomad’s specificity, the exploration of the self by means of written performances that give a sense of embodiment also relates to the field of autoethnography.⁷⁶ In his chapter in *A Companion to the Anthropology of the Body and Embodiment* (2011), anthropologist Roger N. Lancaster states that autoethnography can be used to emphasise “[...]the use of stories as

⁷³ Cobb, “Childlike”, 126.

Although this statement might point towards this research under the term ‘queer’, the research purposely avoids appropriating this taxonomy. By understanding transhistorical categories woman, man, homosexual and so forth, scholars use queer theory a way to think about the politics of gender and sexuality, but the term is defined in different ways by different theorists. See Eve Kosofsky Sedgwick *Between Men* (1985) and *Epistemology of the Closet* (1990), Teresa de Lauretis “Queer Theory: Lesbian and Gay Sexualities” in *Differences: A Journal of Feminist Cultural Studies* (1991), Judith Butler *Gender Trouble* (1990) and *Bodies that Matter: On the Discursive Limits of ‘Sex’* (1993), Aaron Betsky Queer Space (1997), William B. Turner *A Genealogy of Queer Theory* (2000), Katarina Bonnevier *Behind Straight Curtains: Towards a Queer Feminist Theory of Architecture* (2007), Sharif Mowlabocus *Gaydar Culture: Gay Men, Technology and Embodiment in the Digital Age* (2010) and Mimi Marinucci *Feminism is Queer: The Intimate Connection Between Queer and Feminist Theory* (2010).

Due to its broad definition, ‘queer’ is solely applied to chapter three when discussing Grindr. Rather than claiming to be queer, this dissertation clings to Cyberfeminist constructs of subjective difference.

⁷⁴ Braidotti, *Nomadic Subjects*, 5.

⁷⁵ Braidotti, *Nomadic Subjects*, 16.

⁷⁶ See *Nomadic Subjects* chapter one, specifically ‘Writing on the Threshold of Multiple Becoming’. Also see Heewong Chang *Autoethnography as Method* (2008), Tessa Muncey *Creating Autoethnographies* (2010) and Frances E. Mascia Lees *A Companion to the Anthropology of the Body and Embodiment* (2011).

empirical evidence, as ethnographic material to be productively examined.⁷⁷ This thesis's active voice narrates the everyday, seemingly trivial experience of the boy, and subtly hints at descriptions of events, conversations and encounters between the boy and the apps. In this way, and as Lancaster explains, the autoethnographic voice reveals:

[...] something of the texture of events. It neither dwells on telling readers how the author feels nor supplies them with the author's own interior states as evidence; instead, in line with autoethnography as embodied experience, it performs what Sotirin calls the radical specificity of living a life, evoking the indeterminacy and contingencies of life experienced 'in the flows, multiplicities, and provisionality' of particular moments and events.⁷⁸

The element of the habitual and the everyday is an important aspect of the research; this is reflexive of the nature of apps in general. In *Creating Autoethnographies*, Muncey writes, "the most important events in life are not the grand, dramatic or catastrophic, but the apparently small and prosaic ones of everyday life..."⁷⁹ This process of becoming is of course partially informed by singular, extraordinary events, but more importantly it holds a stronger relation to the everyday; it is through people's day-to-day life, their everyday contexts and their quotidian relationships with others that they become subjects.⁸⁰ Through this process of story-telling, one could argue that researchers can write themselves into the thesis itself in a creative, political manner, through the fragmentation of their identity. Muncey writes:

[...]sense of self transforms our relation to the world and gives us a unique character. In being an object to ourselves we can perceive ourselves, interact with ourselves, communicate with ourselves; this self interaction can exert influence on the world in general and other people in particular. The self then is a process not a structure; the reflexive process allows us to act upon and respond to ourselves, and an important feature of this interaction is language.⁸¹

⁷⁷ Lancaster, Roger N. "Autoethnography: When I Was A Girl (Notes on Contrivance)." *A Companion to the Anthropology of the Body and Embodiment*. Ed. Frances E. Mascia-Lees. Massachusetts, Oxford and West Sussex: Wiley-Blackwell, 2011. 48.

⁷⁸ Lancaster, "Autoethnography", 48.

⁷⁹ Muncey, *Creating Autoethnographies*, 34.

⁸⁰ This notion of the everyday is also reflected through the figuration of the boy, as the thesis narrates—at the beginning of each chapter—the boy's everyday experiences dealing with these apps primarily as a user/consumer. Although the figuration of the boy does not deny his role as researcher in addition to a consumer, the thesis's voice highlights the latter.

⁸¹ Muncey, *Creating Autoethnographies*, 12.

The postulation that any researcher's objectivity is illusory and that subjectivity should be accounted for, is something Haraway calls 'situated knowledge'.⁸² This concept in relation to spatiality is particularly relevant in this dissertation, as it accounts for the need for the human body and affectional shifts to be made more evident within the study of built environment. Similarly, according to geographer and geographic information scientist Mei-Po Kwan, in her chapter in *The Map Reader: Theories of Mapping Practice and Cartographic Representation* (Dodge et al., 2011), research in the field of geospatial technologies has often rendered the body, personal experiences and emotions irrelevant. She upholds that disembodied visions detached from experience have been privileged by historically specific and socially constructed notions of science. In a similar note, Haraway argues that this method of conducting research has been credited to achieving a detached view into a completely knowable world, separate from one's own subjectivity. However, as Kwan writes:

The kind of knowledge produced with such disembodied positionality denies the partiality of the knower, erases subjectivities and ignores the power relations involved in all forms of knowledge production. Haraway calls this decorporealised vision 'the god-trick of seeing everything from nowhere.'⁸³

The figure of the boy sustains that to neglect how one's research and social life are mediated by every day experiences, relations and emotions, one would be excluding a key set of relations through which societies and spaces are experienced and produced.⁸⁴ The boy enters the thesis to outwardly acknowledge his reality of a situated, partial knowledge, and actively reject the supposedly 'objective' view of research methods. Similarly, it marks the presence of the researcher's body within the work, in the same line as those bodies that are represented through Grindr, Mappiness and Waze's interfaces. In doing so, he acts as an agent that plays with and is affected by his immersion in the everyday use of mobile apps. The figuration of the boy, in reference to the researcher, can be appropriated by and applied to other subjects who engage with mobile technologies in non-normative ways, at times 'misusing' the app in ways not intended by the developers, or devising their own modes of performance. The boy is purposefully

⁸² Haraway, "Situated Knowledges", 575. Web. 11 Aug. 2015. <<http://www.staff.amu.edu.pl/~ewa/Haraway, Situated Knowledges.pdf>>.

⁸³ Kwan, Mei-Po. "Affecting Geospatial Technologies: Toward a Feminist Politics of Emotion." *The Map Reader: Theories of Mapping Practice and Cartographic Representation*. Ed. Martin Dodge. Chichester, West Sussex and Hoboken: Wiley-Blackwell, 2011. 449.

⁸⁴ Kwan, "Affecting Geospatial Technologies", 448.

experimental, aware of the fluid nature of his embodiment and in search for constructing an identity through technology.

Certainly Cyberfeminist theories provide ways to think about embodiments and their relationship to technologies. However, apart from Braidotti's nomadism, they do not address the matter of space, in-depth, if at all.⁸⁵ A feminist approach to urbanism is discussed by Braidotti, through the work of Barbara Kruger (1983, 1984, 1990) and Jenny Holzer (1988), but their billboards and light displays are discussed in terms of urban interventions and art rather than as an examination of the role of the body as an agent producing and being produced by space.⁸⁶ Space is a site for the construction of subjectivities, and it must be discussed as such, while being aware of the agency of GPS mobile apps. The overlap between digital and physical space is pivotal for understanding the kinds of environments mobile apps are enabling, as well as new forms of citizenship, community and spatial practices.

⁸⁵ Through Cyberfeminism, cyberspace is viewed as a means of freedom from social constructs, with its vehicle for liberation being technology. Because Cyberfeminism is primarily concerned with the role of the body in relation to cyberspace, theorisations about cyberspace as a material space are overlooked. Situating the figure of the cyborg in spatial settings, such as the city, is then sought out in the late 1990s, particularly by William J. Mitchell in his books *City of Bits* (1997) and *E-topia* (1999), and later by Antoine Picon in *Digital Culture in Architecture* (2010) and Matthew Gandy in his text "Cyborg Urbanisation" (2005).

Among others, references on cyberspace can be found in Michael Benedikt *Cyberspace: first steps* (1991), Mike Featherstone and Roger Burrows *Cyberpunk/cyberspace/cyberbodies* (1995), and Sherry Turkle *Life on the Screen* (1995; 2002).

⁸⁶ See Barbara Kruger "No Progress in Pleasure" (1982) and *We Won't Play Into Your Culture* (1984). Also see Jenny Holzer *Jenny Holzer* (1988).

There is a literature of feminist critique on architecture and urban space. See Diana I. Agrest *Architecture From Without: Theoretical Framings For A Critical Practice* (1991), Mark Wigley "Untitled: The Housing of Gender" in (Ed.) Beatriz Colomina *Sexuality and Space* (1992), Jennifer Bloomer "Architecture and the Feminine: Mop-Up Work" and Elizabeth Grosz "Women, Chora, Dwelling" in ANY issue 4 (1994), Diana Agrest et al. (Eds) *The Sex of Architecture* (1996), Debra Coleman et al. (Eds) *Architecture and Feminism* (1996), Jane Rendell, Barbara Penner & Iain Borden *Gender Space Architecture: An Interdisciplinary Introduction* (2000), Hilde Heynen and Gülsüm Baydar (Eds) *Negotiating Domesticity: Spatial Productions of Gender in Modern Architecture* (2005) and Peg Rawes *Irigaray for Architects* (2009).

Space

The discussion of physical versus non-physical and its relation to embodiments and technology goes back to Haraway's manifesto, where she briefly makes mention of it without exploring in detail.⁸⁷ However, in an interview 15 years after the manifesto's initial publication, Haraway adds, "There is a simple point here—with which Kate Hayles, I think, is in agreement—which is that the virtual isn't immaterial. Anyone who thinks it is, is nuts."⁸⁸ One must acknowledge movement and consciousness as embodied, situated and material practices of everyday life, and that is precisely what the GPS-based apps discussed throughout the subsequent chapters sustain: space, in this dissertation, is discussed as the setting for a set of material, urban practices.

Henri Lefebvre, in *The Production of Space* (1974), advocates for a non-Cartesian exploration and analysis of urban space, stating, "It seems to be well established that physical space has no 'reality' without the energy that is deployed within it."⁸⁹ The energy he mentions is a way of talking about the social exchanges and embodied practices that make up public spaces in cities. Lefebvre's interest lies in discussing the specific use of a particular space, and the spatial practices that express and constitute it. As such, he seeks to understand the operations users perform upon spaces.

Lefebvre does this by means of a triadic relationship of his own—that of spatial practice, representations of space and representational spaces—which although are not the central focus of this research still provide a way to think about space outside of fixed definitions. These are discussed and expanded on by social theorist Chris Butler in *Henri Lefebvre: Spatial Politics, Everyday Life and the Right to the City* (2012). According to Butler, Lefebvre's first category—spatial practices—embraces production and reproduction, and the particular locations and spatial sets characteristic of each social formation. It takes into account each member of a given society's relationship to that space, implying a specific level of performance. Representations of space, his second category, are tied to the relations of production and to the 'order' which those relations impose—knowledge, signs and codes. Lastly, representational spaces, embody complex symbolisms linked to the clandestine or underground side of social life.⁹⁰ Through his triad, Lefebvre considers not the physical properties of

⁸⁷ In *Simians, Cyborgs, and Women: The Reinvention of Nature* (1991), Haraway deals with the connection between the physical and non-physical through her discussion on 'material-semiotic nodes'.

⁸⁸ Gane, "When We Have Never Been Human, What Is to Be Done?: Interview with Donna Haraway." Web. 10 July 2015. <<http://tcs.sagepub.com/content/23/7-8/135.abstract#cited-by>>.

⁸⁹ Butler, Chris. "The Production of Space." *Henri Lefebvre: Spatial Politics, Everyday Life and the Right to the City*. Oxon and New York: Taylor & Francis Group, 2012. 40-41.

⁹⁰ Lefebvre, Henri. *The Production of Space*. Translated by Donald Nicholson-Smith. MA, Oxford, & Victoria: Blackwell Publishing, 1991. 33.

space but rather the social actions of the subjects who perform in them; in seeking to understand the three categories of space, Lefebvre considers the human body in his discourse. He writes:

[T]he relationship to space of a ‘subject’ who is a member of a group or society implies his relationship to his own body and vice versa. Considered overall, social practice presupposes the use of the body: the use of the hands, members and sensory organs, and the gestures of work as of activity unrelated to work.⁹¹

The ideologically dominant theoretical tendency, according to Lefebvre, divides space up into parts and assumes its creation as a passive receptacle. Lefebvre, however, seeks to define space through uncovering the social relationships that are latent within it. Similarly, he brings the element of time into his discourse stating that it is the most essential part of lived experience, although now invisible and no longer intelligible.⁹² Through GPS apps such as the three case studies in this dissertation, time is brought into the discussion as a crucial element in the representation of bodies in space, and the enabling of social relations through the interface. They attest to a specific, local temporality produced by the presence of bodies, which can be visible or invisible as long as they reproduce themselves within a lived, spatial experience.⁹³

Lefebvre's ideas on the production of space do however vary from the theoretical propositions in this dissertation, in that he argues, “Space commands bodies, prescribing gestures, routes and distances to be covered.”⁹⁴ In the relationship between bodies, spaces and technology, the boundaries for agency are continuously being negotiated. Space cannot command a body by default; the shifts in power-negotiations allow for an ever-changing subject which moves and inhabits space fluidly, not prescriptively. The traditional role of the architect or urban designer—that of being responsible for predetermining the social and functional use of the spaces they design—is contested, allowing for alternate readings and decodings of space.

Attempting to address what the changing role of the architect is in the digital revolution, Antoine Picon, in *Digital Culture in Architecture*, discusses the birth of cybernetics and its effects on the field of architecture.⁹⁵ The parting point for his discussion lies in the acknowledgement that “The

⁹¹ Lefebvre, *The Production of Space*, 40.

⁹² Lefebvre, *The Production of Space*, 95.

⁹³ The matter of time and embodiment via mobile interfaces will be discussed under the term ‘digital residue’ in this section.

⁹⁴ Lefebvre, *The Production of Space*, 143.

⁹⁵ Picon also shows an awareness of how the subject, as a user of space, is deconstructed and reconstructed through digital spaces and boundaries. This is evident when on page 55 of *Digital Culture* he writes, “One can observe for instance a tendency of the self to fragment in direct relation to the multiple affiliations made possibly by online life.” However, going in depth into a discussion of a fragmented subject with multiple identities is not part of his book’s agenda.

question is no longer whether digital technology is good or bad for design; it is rather about the direction architecture is taking under its influence.”⁹⁶ In this way, Picon separates himself from nostalgia and recognises the counter-productivity of reverting to less-technological modes of creating space.⁹⁷

Though Picon focuses on digital modes of designing in various parts of his book—as well as advocating for the analysis and critique of design processes rather than their mere formal results—his main concern lies in urging architects to bridge physical and virtual spaces in terms of user-interaction. It is necessary to clarify one aspect of this claim: Picon never seems to differentiate between ‘virtual’ and ‘digital’, often using them interchangeably. Where ‘digital’ relates to information, codes and symbols represented on a machine’s interface, ‘virtual’ has strong connotations with immersive 3D environments; these of course lie outside the scope of this investigation. Perhaps the biggest qualm with the word ‘virtual’ is that it is used to describe that which is not ‘real’ or tangible. In research which acknowledges and addresses the material properties and residues left over by digital practices, the word ‘virtual’ is not appropriate. Despite this, Picon does advocate for the loss of clear-cut opposition between ‘real’ and ‘virtual’.⁹⁸

Although Picon uses of both terms nearly synonymously, he proposes certain postulations which inform this research: “In a sociological or anthropological sense, the digital realm can be considered as a culture because it is synonymous with various habits and rituals, because it influences our conduct as well as our representations of the world.”⁹⁹ Here, Picon engages with a more holistic view of architecture, one that steps outside of construction and built form, and sustains his arguments by rooting it within sociology. Similarly, when discussing conducts and habits, he acknowledges “that a new connection between body motion and on-screen changes is about to spread...”¹⁰⁰ This is inherently tied to the outcomes of this research, where spatial movements and digital traces are

⁹⁶ Picon, *Digital Culture in Architecture*, 8.

⁹⁷ This dissertation argues that there is a complimentary relationship between Picon, Mitchell, Lefebvre, Haraway and Braidotti, where their ideas are useful in completing a theorisation about the body/space/technology triad. Individually, their work produces pairings of two of these three components but never engages with the entire triad: Picon and Mitchell address the space/technology aspect, while the feminists address the body/technology relationship.

Both Picon and Mitchell use the term ‘cyborg’ in their books and understand that by mentioning it, they must reference Haraway, who was the most influential in its development. Although they do speak of subjects and embodiments, it is less an in-depth analysis of the role of the body in space, and more a safety net for not using the cyborg in a manner which completely separates it from Haraway’s definition. In this way, the matter of embodiment is an inescapable concept they are forced to deal with, though only doing so superficially. Although their concerns lie in the conceptualisation of space through new technological tools, they do not reference any substantial arguments on reconfigured spatial practices through technologies by newly constructed subjects. Similarly, Haraway—more than Braidotti—ignores the agency of architectural and urban space as a force that plays alongside technology.

⁹⁸ Picon, *Digital Culture in Architecture*, 49.

⁹⁹ Picon, *Digital Culture in Architecture*, 50.

¹⁰⁰ Picon, *Digital Culture in Architecture*, 49.

explored through their link to different modes of embodiment and their relation to spatiotemporal displacements. Picon expresses his concerns with how bodies relate to physical and digital space:

This type of experience is probably typical of a situation of transition towards an enriched reality. Individuals, digitally-connected individuals, are changing just like their sensations and perceptions. Since it seems difficult to have two bodies in the long run, the question then becomes how to reunite, to synthesize, the various sensations and perceptions linked to our augmented life. One of the tasks of architecture may have to do with this need for a new synthesis.¹⁰¹

Picon's ideas in *Digital Culture in Architecture* are important because they provide an architectural framing into the matter of digital practices and the construction of space, while expressing his belief in the the non-unitary nature of the subject. Aware of the fracturing of identities and how these manifest in digital spaces, in an almost posthuman manner Picon introduces the idea of multiple embodiments and the reconstruction of the subject by upholding that today humans possess two bodies—the 'real' body and the 'virtual' body.

For Picon, the contemporary city must be a city of sensations and ambiances while also being a space of collective narratives and scenarios.¹⁰² Rooted in materiality—that is, through people's relation with the physical world—practices, performances, events and experiences are key elements in the construction of identity. He writes, "A last characteristic of the digital city, the most essential perhaps, is the importance of occurrences and events as defining elements of urban life and the prospects of urban development."¹⁰³ Beyond the realm of architecture, and when aligned with the technological debate fostered by GPS apps, it can be noted that instead of acting autonomously from physical reality, digital practices and spaces act *with* them, in mutual exchange.

Calling for definitions of architecture and urban design to encompass 'virtual places as physical ones', William J. Mitchell writes in *E-topia* (1999) that "we must recognize that the fundamental web of relationships among homes, workplaces, and sources of everyday supplies and services—the essential bonds that hold cities together—may now be formed in new and unorthodox ways."¹⁰⁴ *E-topia* discusses how information and technologies' evolution has altered the way people build workplaces, communities and relationships, while proposing strategies for the design of cities that will be smart but also meaningful. Similarly, and as this study seeks to highlight, he writes, "digital telecommunications networks will not create entirely new urban patterns from the ground up; they

¹⁰¹ Picon, *Digital Culture in Architecture*, 56.

¹⁰² Picon, *Digital Culture in Architecture*, 195.

¹⁰³ Picon, *Digital Culture in Architecture*, 176.

¹⁰⁴ Mitchell, William J. *E-topia: Urban Life, Jim-But not as we know it*. Cambridge/London: The MIT Press, 1999. 8.

will begin by morphing existing ones.”¹⁰⁵ The spatial practices and configurations enabled by GPS-based apps are not random and spontaneous but rather rooted in existing social and spatial habits which, when appropriated by individuals and different cultures, begin to transform, giving way to the construction of alternate forms of cultural practices and local customs. From Mitchell’s perspective, electronically mediated spaces are not uniform or dimensionless but rather spatially extended with the ability to engage bodies, while being situated in specific physical contexts. In this way, their spatial and material configurations matter. Mitchell writes:

More subtly, increased use of telecommunications to arrange and coordinate face-to-face meetings can even further diminish the frequency of urban chance encounters. Once, when you wanted to meet someone, you went to places where you could find anyone. [...] Now, by telephoning or emailing ahead to arrange precise times and places, you can end up meeting only those you explicitly choose to meet. It is efficient, but also a condition that threatens us with loss of public life and growing social fragmentation.¹⁰⁶

Despite Mitchell’s call to ground the future design of cities upon the flow of information and electronic connectivity, and as can be read in the above quote, he places particular focus on tele-connectivity as a means to promote a more efficient city in terms of economy and labour. However, in his book he briefly acknowledges emerging senses of community via online platforms, though he does not elaborate. By focusing his discussion on more obvious forms of sociability, such as Facebook, Mitchell misses out on the complex social structures and embodied relations which take place through digital spaces’ overlaps with the built environment.

GPS mobile apps such as Grindr, Mappiness and Waze, in their individual ways, split and fragment the body, displacing it in time and space. The apps’ interface give users a digital body that responds to their movements in space, but due to a time-lag and GPS location service inaccuracies, it may display these bodies in imprecise locations or in delayed moments in time. These remnants of digital, temporal bodies are described in this dissertation as *digital residue*. The concept of digital residue, which has emerged in response to the empirical findings of this dissertation, holds a direct relationship to space and time; it is a material manifestation of the no-longer—a split, performative embodiment that mirrors (and simultaneously documents) practices, movements and urban histories. Digital residue, although passive in nature, are important agents presented on the interface, because they open the possibility for spontaneous interactions between app users, by being visible and present in a space when the physical body is no longer there. The digital residue left behind by any

¹⁰⁵ Mitchell, *E-topia*, 15.

¹⁰⁶ Mitchell, *E-topia*, 15.

one user is detectable, visible and contactable by other users on the interface, attesting to a shift in the way public life is experienced, while also enabling new configurations of social relations. Mitchell's ideas are useful here because he calls for urban designers to retheorise about the body in space.¹⁰⁷

Prior to *E-topia*, in *City of Bits* (1997), Mitchell had already speculated that with their endlessly multiplied, displaced, and time-shifted speech and hearing organs—referring to the computer and mobile phone—the configurations of human bodies have changed along with “their relationships to the city’s spaces and temporal rhythms.”¹⁰⁸ Although he uses the word ‘cyborg’ loosely to describe the relation between people, the city and technologies—which one might say is more metaphorical than figural—Mitchell’s concerns with the way citizens inhabit their particular locations attest to how technology is changing the use and understanding of cities¹⁰⁹

In *City of Bits*, Mitchell proposes that the real role of the computer “is to construct cyberspace—a new kind of place for human interactions and transactions.”¹¹⁰ Instead, this dissertation—which does not focus on the personal computer but rather on the mobile phone and its apps—would argue that cyberspace is not a ‘new’ space. Harnessing the power of GPS satellites, cyberspace has an intrinsic relation to geolocation, and although it is a tool for interactions and transactions, it is not always an alternate space; it embeds itself onto the fabric of the built environment, made visible by the digital interface. Furthermore, the spatial practices that take place in digital platforms are not entirely new, but rather practices that are adapted to the digital environment.

Much of the literature in relation to bodies, spaces and technologies has centred around virtual worlds such as Second Life—in which users create an avatar and establish interpersonal relationships with other users, in an artificial computer environment—or MUDs—which according to digital theorist Shannon McRae, are “text-based virtual worlds, interactive databases from which it is possible to craft highly complex, extremely vivid environments in which the user experiences a feeling of actual presence.”¹¹¹ In these digital spaces, as is also the case of niche, online forums, the term ‘community’ plays a different role to its traditional definition. Communities in these spaces refer to a group of people holding common qualities, properties, identities or ideas. On the other hand, the ‘communities’ that are being enabled and constructed through

¹⁰⁷ Mitchell, William J. *City of Bits: Space, Place, and the Infobahn*. Fourth Printing. Cambridge and London: The MIT Press, 1997. 28.

¹⁰⁸ Mitchell, *City of Bits*, 35.

¹⁰⁹ It is important to note here that Matthew Gandy has also used the cyborg as part of his theoretical discussion in “Cyborg Urbanization” (2005). Although Gandy is correct in stating that the cyborg is a way of thinking about the world, he uses it as a conceptual tool to analyse the flows, structures and relations that define global cities. Gandy’s cyborg is a tool to understand growth and development in cities that destabilises the “pervasive narratives of dematerialization, spatial malleability and virtualization.” He does not focus on the cyborg as the figuration defined by Haraway, linked to the embodiment and agency, but rather as a metaphor to explore relationships that link the city and the human body as a network—not through spatial or embodied practices.

¹¹⁰ Mitchell, *City of Bits*, 109.

¹¹¹ McRae, Shannon. "Flesh Made World- Sex, Text and the Virtual Body." *Internet Culture*. Ed. David Porter. New York and London: Routledge, 1997. 76.

mobile apps share these qualities, but they also hold a geographical commonality; users who interact with each other or have any sort of transactional relationships, share location and inhabit a mutual space. In this way, Internet theorist Shawn P. Wilbur's claim in his chapter in *Internet Culture* (1997), must be contested: "Virtual community is the illusion of a community where there are no real people and no real communication. It is a term used by idealistic technophiles who fail to understand that the authentic cannot be engendered through technological means."¹¹² One must be cautious about using words such as 'authentic' and 'real', as they are often placed in categories that—tending towards the absolute—imply fixity and determinacy. Instead, these types of interactions attest to different spatial and social constructs, as well as emerging forms of difference in the twenty-first century. Though interchanges and social exchanges on digital spaces can be transactional and detached, it would be erroneous to define them as indicative of a 'non-real person' nor of 'non-real communication'. Social relationships, spatial configurations and construction of identity are dynamic and fluid.

Technology

To address how alternate forms of embodiments and modern subjectivities experience and enable new constructions of space, the role of the screen must be rethought, theoretically approaching it as a permeable membrane that connects physical spaces to the digital sphere. It is through this permeability and transgression of boundaries, that subjectivities shift. Particularly relevant here are the work of Mark B.N. Hansen, who addresses the affectual properties of images in virtual environments, and Hayles, who uses a feminist approach to situate the technological debate within discourses regarding affection and embodiment, in relation to text and codes.

In *New Philosophy for New Media* (2006), Hansen sets out to examine new media theory by focusing on the role of affection and memory in the construction of a 'digital image'—this being the entire process by which information is made perceivable and understandable. He argues that the body is the centre for the filtering of information, proposing that this act of filtering is what allows people to construct their individual understandings of a particular subject. Similarly, he upholds that people only select images that are relevant to their own individual embodiment. Hansen proposes a cognitive, embodied relationship between technological artefacts and the body. In this, Hansen

¹¹² Wilbur, Shawn P. "An Archaeology of Cyberspaces: Virtuality, Community, Identity." *Internet Culture*. Ed. David Porter. New York and London: Routledge, 1997. 14.

challenges technofetishistic ideas of technological transcendence and argues—as do the Cyberfeminists—that the human body and subjectivity are indispensable in the construction of theoretical frameworks, as well as the manner in which cognitive processes unfold. Hansen believes that not only does new media turn viewers into users, but the image itself has become the body's process of perceiving it. Hansen writes:

I propose to reconsider French philosopher Henri Bergson's theory of perception and, in particular, to take seriously the crucial emphasis Bergson places on the body as what he calls 'a center of indetermination within an acentered universe.' On Bergson's account, the body functions as a kind of filter that selects, from among the universe of images circulating around it and according to its own embodied capacities, precisely those that are relevant to it.¹¹³

Every mental and perceptual construct takes place from within the body itself, as an aggregate of images which composes each person's universe. The body then is the assemblage of the individual's material world, choosing within certain limits that which it will receive and store. Each person's lifeworld results from the body's storing as well as its discarding of that which has no interest for its particular needs or functions. As such, it can be concluded that affectivity—defined by Hansen as "the capacity of the body to experience itself as 'more than itself' and thus to deploy its sensorimotor power to create the unpredictable, the experimental, the new"¹¹⁴—plays a pivotal part in the construction of the subject, the spaces they inhabit and the relations they have with their technologies.¹¹⁵ Hansen's theories on new media are important to situate affection in this research because they deal with non-physical environments, images and embodiment. His ideas link with those by Haraway, Braidotti and Hayles, as they all converge in the acknowledgement that every cognitive process, every desire and every choice is mediated by the subject from within their own localised embodiment.

Even though in his book Hansen addresses various forms of media—cinema, photography and virtual reality, to name a few—he leaves out one of the most pervasive forms of media of the twenty-first century: the mobile phone, ignoring its interface as an essential part of his image-based discourse. How the body filters, engages with and responds to the images presented on the mobile phone's screen, through the use of mobile apps, is central to this dissertation and cannot be excluded

¹¹³ Hansen, Mark B.N. *New Philosophy for New Media*. First MIT Paperback Edition. Cambridge, Massachusetts: The MIT Press, 2006. 2.

¹¹⁴ Hansen, *New Philosophy for New Media*, 7.

¹¹⁵ Hansen uses affection and affectivity interchangeably, while Braidotti uses the term 'affectivity'. For this reason, this research may make reference to affection when referencing Hansen, but will use affectivity for consistency and in alignment with Braidotti.

from theories of affection and the body and addressing it is in some ways more urgent than discussing virtual reality. Hansen argues that new media turns the viewer into an active user, and so the image is no longer simply something to be looked at but rather to be interacted with and be moulded by; it is an image in which the user actively goes into, as digital culture and digital media theorist Lev Manovich writes in *The Language of New Media* (2001), zooming in and clicking on individual parts.¹¹⁶ Nowhere in media is this more evident than in mobile applications.

Before further expanding on the discussion of technology in relation to subjectivity, it must be clarified that 'technology' encompasses more than a machinic, computer-based component. Though Cyberfeminism, apart from Hayles, does not delve into the material properties of the interface, it does provide a broader definition for what 'technology' entails. Donna Haraway conceptualises the technological as not just material artefacts and flows of information but also as situated, embodied processes. She calls these processes 'thinking technologies', and of them she writes:

I think that training with my dog is a thinking technology for both of us because it provokes, through the practice of us, coming to learn how to focus on each other, and do something that neither of us could do before and can't do alone, and do it in a rule-bound way by playing a specific game that has arbitrary rules which allow you to play, or to invent something new, something beyond functional communication, something open.

It's a thinking technology, partly because it makes me understand what Charis Thompson calls ontological choreography differently [...] But this is just a tiny little domain of thinking technologies. I also think ethnographic practices are thinking technologies. I think almost any serious knowledge project is a thinking technology insofar as it re-does its participants. It reaches into you and you aren't the same afterwards. Technologies rearrange the world for purposes, but go beyond function and purpose to something open, something not yet.¹¹⁷

Technology is thus also a process of provocative practices between two entities. However, as has been found in this research, these forms of thinking technologies are not limited to the organic-organic relations Haraway describes above. They can extend to organic-machinic exchanges. Through these modes of interactions, subjectivity is constructed. This can be linked to Braidotti's nomadic

¹¹⁶ Hansen, *New Philosophy for New Media*, 10.

¹¹⁷ Gane, "When We Have Never Been Human, What Is to Be Done?: Interview with Donna Haraway." Web. 10 July 2015. <<http://tcs.sagepub.com/content/23/7-8/135.abstract#cited-by>>.

theories, as she writes that the subject “actively yearns for and constructs itself in complex and internally contradictory webs of social relations. To account for these, we need to look at the internal forms of thought that privilege processes rather than essences and transformations.”¹¹⁸ The thinking technologies between users and their mobile apps discussed in this study make Braidotti’s nomadic theory fitting, because it addresses subjective deconstruction and reconstruction, as a product of identity-relocation. But it is Hayles who through her theories on embodiments, affect and the posthuman accounts for a direct relationship to interfaces, providing a much needed link between subjectivity and technology.¹¹⁹

In *My Mother Was a Computer*, Hayles explores the relations between codes and languages, questioning how their interactions inform creative, technological and artistic practices. Her text is important to this dissertation because in it, Hayles addresses how the properties of interfaces—whether they are analogue or digital—alter the experience of reading the interface, through a process of affectivity. She touches on the matter of digital interfaces being inseparable from discussions of materiality, which is indeed part of the posthuman discussion. Along the lines of Braidotti’s bilingual, nomadic subject, Hayles is concerned with how code, an emergent language, has become comparable to that of speech and writing, entangling itself within daily life. From this premise, she argues that the lines between human and machine, as well as analog and digital are blurred, as digital media interact with long-standing cultural practices. Perhaps her most relevant example of this lies in comparing electronic text versus print, particularly through the use of typography and the physicality of the page.

Physical characteristics of a text, such as page size, typeface, gutter widths, leading and font size, are all ‘bibliographical codes’, as argued by Hayles, and they are signifying components that should be considered along with linguistic codes. From this she goes on to say, “even small differences in materiality potentially affect meaning [...] of the same work.”¹²⁰ If variations in the material production of texts fosters affective shifts in perception, experience and cognition, the same could be said about digital interfaces that represent physical elements such as spaces and bodies. The navigational apparatus of a work or interface changes the work by altering how the reader/viewer/user encounters the information. Through this changing of how the work performs, one can also argue that it changes what the work means, further attesting to the subjective cosmology wherein people perceive and see spaces, others and themselves.

¹¹⁸ Braidotti, *Nomadic Subjects*, 10.

¹¹⁹ Posthumanism dates back to 1988 when Steve Nichols published “The Posthuman Manifesto”. It has been studied alongside ‘transhumanism’. In this dissertation, the term is used/explored in contemporary debates as defined by Hayles (*How We Became Posthuman: Virtual Bodies In Cybernetics, Literature, And Informatics*, 1999; *My Mother Was A Computer: Digital Subjects and Literary Texts*, 2005) and Braidotti (*The Posthuman*, 2013). They argue that digital embodiments, genetic modification, prosthetics, robotics and reproductive technologies have blurred traditional distinctions between human and others. Thus, posthumanism, as defined by Hayles and Braidotti, argues for the displacement of traditional humanistic unity of the subject, while advocating for the flexibility and multiplicity of the subject’s identity—one rooted on embodiment.

¹²⁰ Hayles, Katherine. *My Mother Was a Computer: Digital Subjects and Literary Texts*. Chicago: U of Chicago, 2005. 90.

Separating body from mind is untenable for Hayles, and her concern lies in linking this with the role of machines and computers as technological systems that define and shape us and our culture. Through her writing in *How We Became Posthuman: Virtual Bodies In Cybernetics, Literature, And Informatics* (1999), she sustains that neither humanity nor information can exist apart from its historicised, embodied instantiation, overturning theories by roboticists like Ray Kurzweil and Hans Moravec, who believe that human consciousness can be downloaded and transferred on to a chip.¹²¹ This decorporealisation of the human subject, reduced to being copy/pasted onto a different artefact is met with exceeding disapproval by Haraway and Hayles, who uphold the need to think of the subject as a collective system of parts and states of being, through a situated, embodied perspective. Haraway states:

I mean these guys actually talk about this—and they are guys. It's a kind of technomasculinism of a self-caricaturing kind. They ought to be ashamed of themselves! I find myself regularly unable to believe they mean it. And then I read their stuff and I have to get it that they do mean it. It's stupid and silly, and hardly worth commenting on except that powerful people turn it into projects and so you have to comment.¹²²

Subjectivity is constituted via the interplay of multiple inputs, including bodies, environments and what Hayles terms 'distributed cognition', which refers to the ways computers—including smart phones and apps—help humans think. One cannot help but question who serves and who is being served by such process, or even if there is such a thing as a 'master and servant' relationship. In *My Mother Was a Computer*, Hayles writes:

[...] human action and agency are understood as embodied processes sharing important characteristics with the processes taking place within computational media, including possibilities for evolution and emergence. In my view, an essential component of coming to terms with the ethical implications of intelligent machine is recognizing the mutuality of our interactions with them, the complex dynamics through which they create us even as we create them.¹²³

¹²¹ See Kurzweil *The Age of Intelligent Machines* (1990), *The Age of Spiritual Machines* (1999), *The Singularity Is Near* (2005) and Moravec *Mind Children* (1988) and *Robot: Mere Machine to Transcendent Mind* (1998).

¹²² Gane, "When We Have Never Been Human, What Is to Be Done?: Interview with Donna Haraway." Web. 10 July 2015. <<http://tcs.sagepub.com/content/23/7-8/135.abstract#cited-by>>.

¹²³ Hayles, *My Mother Was a Computer*, 243.

The person who emerges after engaging with technologies is changed, no longer the same as they were before. Consider, for example, the loading time for images, text or codes to appear on a digital screen. According to Hayles, the swiftness or lag of the connection is an important component of the text and of the affectual experience, “for it determines in what order the user will view the material. Indeed, as anyone who has grown impatient with long load times knows, in many instances it determines whether the user will see the image at all.”¹²⁴ In this way, there is a process of feedback between the body technology.

Grindr, Mappiness and Waze’s agencies respond to this back-and-forth movement, shifting to the point where it blurs the boundaries of individual autonomy and technological control. Though the apps can grant users a sense of freedom, these ruptures attest to the idea that the individual must concede a degree of power to the machine and compromise their autonomy. When machines and their technologies are neither depicted as technophobic nor technofetishistic, their function and utility in everyday life, as well as our mutual interactions with them, leave space for them to be approached with greater nuances. Hayles writes:

Encountering intelligent machines from this perspective enables me to see that they are neither objects to dominate nor subjects threatening to dominate me. Rather, they are embodied entities instantiating processes that interact with the processes that I instantiate as an embodied human subject. The experience of interacting with them changes me incrementally, so the person who emerges from the encounter is not exactly the same person who began it.¹²⁵

Hayles is certainly not the only one of the Cyberfeminists who uphold this stance. However, between her, Haraway and Braidotti, she is the only one who delves into the affective properties of the interface. It is the outlook presenting non-humans and humans as agents in mutual interaction where their particular interests coincide. Haraway states, “The machine is us, our processes, an aspect of our embodiment. We can be responsible for machines; they do not dominate or threaten us. We are responsible for boundaries; we are they.”¹²⁶ Similarly, Braidotti’s nomadic thinking allows for “internal contradictions and attempts to negotiate between unconscious structures of desire and conscious political choices. In this respect, nomadic subjects enact a multilayered consciousness of

¹²⁴ Hayles, *My Mother Was a Computer*, 102.

¹²⁵ Hayles, *My Mother Was a Computer*, 243.

¹²⁶ Haraway, “A Cyborg Manifesto”, 26.

complexity.”¹²⁷ Embodiment combined with acute awareness of complex and multiple desires and choices is central in the work of Braidotti—specifically connecting her to the work of Luce Irigaray.¹²⁸

Cyberfeminism questions how technology deconstructs the notion and representation of gender—as idealised by patriarchy—while disrupting the myth that surrounds the concept of femininity. One strong figuration which is central to technology is that of the mother, as one of the pillars on which sexual difference theory stands on is ‘materiality’, which in turn is rooted on the Latin word *mater*. This is evident in Hayles’s *My Mother Was a Computer*, where she states that the title alludes to the displacement of Mother Nature by the universal computer. No longer the only source of human behaviour and physical reality, Mother Nature now gives way to the computer—portrayed by Hayles as the Motherboard of us all.¹²⁹ This emphasis on the matrix foregrounds the maternal body as the primary and constitutive site of origin of the subject,¹³⁰ and of this Braidotti adds:

At the beginning of the self, there is a separation from the totality one enjoyed as part of the mater or matrix. This causes an irreparable loss and hence an inexpressible grief. This structure of ‘unrepresentability’ is a crucial part of psychoanalytic theories of subject formation. It rests on two key ideas: first, that the original loss of (the illusion of) totality, which translates into a wound, becomes a constitutive element of our subjectivity.¹³¹

Loss of identity and corporeal totality from the separation between mother and offspring leaves the subject continuously attempting to reconstitute itself, to make itself whole. In this way, the subject is never able to be fully fixed but rather it finds stability by negotiating and policing through different boundaries and identities. Embodiment is therefore a dynamic and complex phenomenon involving the reworking of affects, attachments and separations in the attempt to fill the void left behind by the loss of the maternal site. The posthuman subject may appear as fragmented and disunited, but on a temporal scale, its unity lies in the continuing, embodied relations attempting to synchronise its recollections. Unsurprisingly, the figure of the cyborg—a hi-tech imaginary that attempts to find alternative schemes of thought—evokes new patterns of interconnectedness with other agents and entities that do not necessarily qualify as human.

¹²⁷ Braidotti, *Nomadic Subjects*, 38.

¹²⁸ Braidotti, *Nomadic Subjects*, 91.

¹²⁹ Hayles, *My Mother Was a Computer*, 3.

¹³⁰ Braidotti, *Nomadic Subjects*, 99.

¹³¹ Braidotti, *Nomadic Subjects*, 110.

The computer as ‘mother’ is an anthropomorphic projection that allows a number of explorations into the computer’s functioning and the human relationships established with it. Furthermore, it enables a cultural imaginary in which digital others are understood as autonomous entities, capable of establishing meaningful, nurturing relationships with people. Being an other is not solely a mark of exclusion or marginality. Rather, under Cyberfeminism—and as expressed by Braidotti in *Transpositions*—they can also be the sites of powerful and alternative subject-positions, agents for political and ethical transformation with new patterns of becoming. For Haraway, a renewed kinship system must be included in the discussion of becoming, one that breaks down the patriarchal divides between subject-object, nature-culture; from her position as a scientist, she proposes to extend an enlarged sense of community based on empathy, accountability and recognition to non-human subjects such as animals, plants, cells and bacteria.¹³²

In the twenty-first century, however, this invitation towards a caring of and with non-humans must also be extended to non-organic others. Despite the deep-seated technophobic vision of dominant morality—which often assigns attributes such as minor ‘perversions’ or ‘juvenile’ to those who show emotional attachment to machinic others—Braidotti advocates for the idea of digital care, contesting the notion that the human is the standard-bearer for ethical behaviour and stressing that “Animals, machines and earth ‘others’ can be equal partners in an ethical exchange.”¹³³ For Braidotti, in the case of technological others, the onrush of data and information imprint themselves onto the subject, while also confirming the singularity of the particular body which receives and recomposes itself around said data and affects. These flows of becoming mark a process of structural shifts of the self, altering the parameters and boundaries of the subject.

¹³² Braidotti, *Transpositions*, 57.

¹³³ Braidotti, *Transpositions*, 121.

Conclusion

This thesis proposes a body/space/technology triad which accounts for a three-way, mutually constitutive relationship, in which all its parts have the capacity to imprint, mould and shape the other. The intention is to break down the traditional hierarchical constructs in a similar way to Haraway's cyborg. As Braidotti writes, "Bodies-in-time are embodied and embedded entities fully immersed in webs of complex interaction, negotiation and transformation with and through other entities. Subjectivity is a process that aims at flows of interconnections and mutual impact."¹³⁴ In order to construct a theoretical framework around the body/space/technology triad, it is necessary to look at the work of intellectuals working outside the field of the built environment as well; an inward look into architecture—from within architecture itself—fails to see the interconnection as part of its nature. This prevents an adequate understanding and reconceptualisation of what space in the twenty-first century is, as well as how it is practiced.

Though Haraway's cyborg presents a parting point for this dissertation to contextualise itself within a theoretical framework, a closer look to its politics reveals that, while as a metaphor it is fitting, as a figuration, the problem with many cyborg theories relating to architectural space is that they use 'cyborg' loosely: as an organic entity enhanced by technology. Yet even in the most nuanced accounts of the cyborg figuration, the lack of acknowledgement of an individuated, subjective position means that it is not as rich a figuration as the nomad is, particularly in terms of its geospatiality and relation to cultural identity.

With its relation to memory and location, the nomad is the exemplar of Braidotti's transpositions— "creative and highly generative interconnections which mix and match, mingle and multiply possibilities of expansion and growth among different units or entities."¹³⁵ This is where posthuman figurations separate themselves from nostalgia: their relation to the past is not seen through a longing, romantic lens, but rather through a political acknowledgement that where one has been shapes who one is. The point of understanding and tracing one's process of becoming, as Braidotti upholds, is to learn to think differently about the kind of subjects we are in the process of becoming through our nomadic practices.¹³⁶ In response, 'the boy'—as discussed by the thesis's active voice—is a narration from the outside, a figuration intended to mark the situated nature of the researcher as well as his relation to difference. Figurations play a crucial part in the Cyberfeminist

¹³⁴ Braidotti, *Transpositions*, 154.

¹³⁵ Braidotti, *Transpositions*, 171.

¹³⁶ Braidotti, *Transpositions*, 173.

discussion, and Braidotti writes, “Figurations are forms of literal expression which represent that which the system had declared off-limits. They are situated practices that require the awareness of the limitations as well as the specificity of one’s locations.”¹³⁷ Becoming, as a process, has furthermore become highly complex by the embededness of technology within every-day spatial and digital practices. Through it, the body has turned into many multiple bodies, further attesting to the nonunitary nature and vision of the embodied self.

With the multiplicity of bodies, the question turns to the kind of spaces these bodies are reproduced in. A need to rethink about the changing definition of space is as pressing as rethinking the concepts of community, citizenship, publicness and privacy, which are propagated in them. The idea that space is a quantifiable, fixed entity has not been an adequate one for decades, yet the theorisation of alternate definitions of space is, problematically, met with resistance by non-academics.

Almost equally as problematic as this are theories which portray digital spaces as separate spaces from physical ones. This position cancels out legitimate forms of spatial practices which bind the two realms together. Similarly, perhaps because of the novelty of cyberspace, a significant amount of research into technology and space has looked to forums like ‘Second Life’ to theorise about the role of the body—setting a trend that separates digital from physical and avatar from body.¹³⁸ However, as an object of study, ‘Second Life’ presents an artificial world with no link to the physical location of the user, other than by the displacement of their embodiment, which cohabits two different spaces at the same time. Instead, theorists should be looking to address the body as a centre for determinacy in the construction of the subject and its relation to space by acknowledging the overlap of digital and physical spaces.

Braidotti’s nomadism is useful because it indirectly encourages the architectural discipline to think about embodied, nomadic ways to conceptualise the production of space. But it is also necessary to understand what technology does, how it performs and how we relate to it in order to engage in an in-depth discussion of the body/space/technology triad. Engaging with theories of affect allow the role of the digital screen to be approached through more than its programming. Instead, the screen is analysed, theorised and discussed as a material construct with which the body performs a set of interactions, and whose displayed information plays a part in the construction of the subject and their relation to space.

There is much to be explored in the relational interaction between the organic and the machinic, and part of these reconceptualisations have come as a result of Cyberfeminist propositions,

¹³⁷ Braidotti, *Transpositions*, 170.

¹³⁸ See T.L. Taylor “Living Digitally: Embodiments in Virtual Worlds” in R. Schroeder (Ed) *The Social Life of Avatars: Presence and Interaction in Shared Virtual Environments* (2002), Elaine Graham *Representations of the Post-Human* (2002), Donald E. Jones “I, Avatar: Constructions of self and place in *Second Life* and the Technological Imagination” in *Gnovis* 6 (2006) and Tom Boellstorff *Coming of Age in Second Life* (2008).

such as Hayles's theories on the affectual properties of text and codes via digital and analogue mediums. Similarly, by upholding the idea that technology is inseparable from the body and vice versa, Hayles steers away from technofetishism and of the technophobia associated with machines taking over. Instead, machines are relational artefacts that work for users as much as users do for them—something that is increasingly evident in the case of GPS-based mobile applications.

Revisiting relationships between technology and bodies in space empowers researchers to use posthuman figurations that break down preconceived notions and leave room for new postulations. Such is the case of the 'computer as mother', for instance, a figuration that dually enables analyses of technology as a nurturing entity and as a fiercely hostile other.¹³⁹ This attests to the formation of the subject in that particular figurative space (mother and offspring). Similarly, the figuration of the boy is descriptive of a type of twenty-first century digital subject that engages with mobile technologies in non-normative ways; his mode of performing puts him in a category of otherness. Son of the motherboard, he is localised in space and situated in knowledge, aware of his singular position as an embodied subject. In an effort to understand the current relationship between body, space and technology, the boy, in each chapter, addresses a set of spatial practices with corresponding digital traces, foregrounding how GPS-based mobile applications enable the production of new spatiotemporal constructs, material embodiments and transpositional relationships.

¹³⁹ See Rosie Braidotti "Cyberfeminism with a Difference" as she discusses the monstrous feminine, particularly through *Alien*. In the film, a master computer that controls the spaceship is called 'Mother'—an agent that works against the heroine of the plot. See Gena Corea *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs* (1986), Lynda K. Bundzten "Monstrous Mother: Medusa, Grendel, and now *Alien*" in *Film Quarterly* 40.3 (1987), Film Rhona Berenstein "Mommie Dearest: *Aliens*, *Rosemary's Baby*, and Mothering" in the *Journal of Popular Culture* 24.2 (1990), Thomas Vaughn "Voices of Sexual Distortion: Rape, Birth, and Self-Annihilation Metaphors in the *Aliens* Trilogy" in the *Quarterly Journal of Speech* 81.4 (1995) and Robbie Davis-Floyd and Joseph Dumit *Cyborg Babies: From Techno-Sex to Techno-Tots* (1998).

Chapter 2

Method/System

The boy and I head down to the nearest coffee shop to interview a Waze user. As the boy gets his participant a cup of coffee, I overhear them chit-chatting.

“So you designed an app?” the participant asks the boy.

“No. No...” Puzzled, the boy continues, “You do use Waze, don’t you?”

“Oh.

No.

I thought we were going to talk about an app you designed. I’m sorry.”

“That’s okay,” the boy replies. “At least you got free coffee.”

“The phrase ‘cultural phenomenology of embodiment’ denotes an attempt to gain purchase on the understanding of culture and self from the starting point of our bodies as being-in-the-world, and requires recognition that our bodies are at once the wellspring of existence and the site of experience. In effect, embodiment is our fundamental existential condition, our corporeality or bodiliness in relation to the world and to other people.”

-Thomas Csordas, 2011

Introduction

‘Methods/System’ discusses this dissertation’s methodology. Throughout several months of bibliographical research, written papers and literature reviews, the study’s early stages—primarily constituted by an interest in how digital spaces shape the experience of physical space by looking at the mobile phone—began taking focus. The wide research field was narrowed down to what could arguably be the smallest components of Internet-based mobile technologies: the mobile application. By focusing on Grindr, Mappiness and Waze, this research explores the spatiality of the selected apps and provides a descriptive critique of their interface, performance and user-experience, through a spatial and situated perspective.

Constituting the sections of the chapter, the research is divided into three phases guided by a Cyberfeminist approach to the analysis of the body/space/technology triad. Each phase is responsive to the different performative practices and voices present in the dissertation. The first phase, ‘The Boy’, involves personal empirical research of GPS-mobile apps. To analyse and study the apps, they are each critically dissected: their visuals, sounds, interfaces and designs are placed under study. Phase two, ‘The Interviews’, involves gathering data from every-day app users, with the aim to increase the study’s depth. Interviews with 20 Grindr Guys, 14 Mappiness Participants and 15 Waze Drivers were carried out to compare how and if personal empirical observations were recurring themes for the apps. Finally, the third phase of the research, ‘The Avatars’, emerged as a product of the interview analyses’ anonymous nature, manifesting in a set of images for each participant. The written codes for each interviewee’s name—a series of letters and numbers that replaced each name—granted a strong sense of anonymity. In this way, as research

participants, their privacy and confidentiality is assured. However, to recover a sense of embodiment lost in their quoted responses within the text, each participant's interview is recoded in a graphic manner to show a reconstructed persona.

Phase One/The Boy

Combined, Grindr, Mappiness and Waze are used by millions of users.¹ For most, the apps might represent an end to a means, with users habitually flicking through the screen's interface without critically thinking about their movements, partly because apps are often thought of as jovial, helpful tools, designed to make life easier. However, beyond what they evidently offer, apps present socio-spatial and affectional properties that shape and mould users' identities. They are individual, yet collective; digital, yet material; localised, yet global. In *Virtual Methods: Issues in Social Research on the Internet* (2006), virtual ethnographer Christine Hine, writes:

[...] the Internet is both cultural context and cultural artefact. The Internet as cultural context is established as we saw earlier, through application of ethnographic methods to online settings. That the Internet is also a cultural artefact is apparent from the extent to which it is manifested as a varying and variably used set of technologies that have different meanings for different groups of people. In this sense, using the Internet is a culturally located experience.²

Because of the dissertation's focus, the methodology most suitable to engage, observe and analyse the nuances in subjectivities and embodiments fostered by apps is ethnographic, qualitative research. To grasp an in-depth understanding of the apps in relation to the space/body/technology triad, it is necessary to engage with them in a personal manner. Each app is therefore approached as a material object studied from different perspectives, taking into account their 'form' and particularities: Grindr is approached through the queering of urban

¹ At the time this chapter was revised (autumn 2015) Grindr reports two million active users on a daily basis (sourced from their website). Mappiness discloses an approximate cypher of 63,304 participants who have reported a total of 3.5 million responses (sourced by Mappiness's creator George MacKerron, on a Twitter post). Waze's last public report in *Forbes* magazine discloses a total of 50 million users. Waze was contacted to enquire about the number of users, but they responded saying, "Sorry that's top secret info!"

² Hine, Christine. *Virtual Methods: Issues in Social Research on the Internet*. Oxford and New York: Berg, 2006. 9.

spaces, particularly through the act of cruising; Mappiness' discussion is heavily based on theories of affection as well as Braidotti's ideas on attractors; and Waze is discussed through theories on the embodied practice of driving, while relating its body representations with Cyberfeminist figurations of others/difference.

To conduct the research, each app was downloaded and studied for a period of six months, approaching them as both a researcher and a new user. Questions of subjectivities, embodiments, identities and their relation to space first arose through this phase of personal immersion within the object of study, when it became possible to become a user, get to know each app, and obtain substantial insight into how they work in terms of sociability and space. Analysing apps while also being a user allows the researcher to understand them from their core, which in turn grants insight to their limitations and brings up questions about the data they generate. Through this reflexive and performative method, the embodiment and subjectivity of the researcher becomes a crucial agent within this project.

With Haraway discussing situated knowledges and Braidotti focusing on nomadism, both theorists elaborate on the importance of embodied approaches to the production of knowledge. Similarly, with Braidotti and Hayles's call for new figurations on the posthuman, the figuration of the boy—as discussed in the first chapter—provides a way for the researcher's experience to be made evident, while attesting to the rigour of the methodology and highlighting the dissertation's key relation to embodiments, sexual difference, performance and temporality. Anthropologist Roger Lancaster states:

In anthropology today, autoethnographic techniques have become more or less conventional, whether through the placement of the author in the text by writing in the first person in the ethnographic narrative; reflection on how points of biography have shaped the author's research questions; or queries about how one's positioning as a social subject affects both the interpretation and shaping of data.³

Located in the beginning of each chapter, the narrations about the boy can be read as interruptions of the dissertation's tone, echoing the way that the mobile apps studied here

³ Lancaster, Roger N. "Autoethnography: When I Was A Girl (Notes on Contrivance)." *A Companion to the Anthropology of the Body and Embodiment*. Ed. Frances E. Mascia-Lees. Massachusetts, Oxford and West Sussex: Wiley-Blackwell, 2011. 47.

perform.⁴ Although apps are intended to be integrated as seamlessly as possible in the user's every-day life, the technologies cause disturbances in their habitual patterns—a sort of disconnection in states of mind as they cognitively and affectively navigate between digital and physical peripheries. In this same way, the narrations are italicised and inset, as well as separated from the rest of the text, creating pauses in between the in-depth accounts and discussions of the dissertation's chapters. Written in a humorous tone, the active voice's rhetoric creates resting points for the reader, while still marking the researcher as both subject and other.

In "Cyberfeminism with a Difference", Braidotti lays the foundations for new and creative forms of theorising about the impact of media and technology within everyday life. Braidotti upholds that as embodied subjects, we are also situated, "capable of performing sets of (inter)actions which are discontinuous in space and time. Embodied subjectivity is a paradox that rests simultaneously on the historical decline of mind/body distinctions and the proliferation of discourses about the body."⁵ Braidotti then goes on to discuss three topics dealing with embodiment: difference, technology and performance.⁶ This last element of performance, she discusses by using a theoretical voice incorporating the use of intellectual irony and parody.⁷ The use of parody is part of this dissertation's methodology, manifesting through written insertions narrated by shift of voice—an alter ego of sorts—that complements—and perhaps even interrupts—the academic, passive voice in the thesis. This performative persona resonates throughout the

⁴ In this way (and through the narration in third person), performance theorist Ute Berns's writing in "Performativity" in *The Living Handbook of Narratology* (2015) helps explain how this performative writing fits into theory. He explains that there are different categorisations of performativity, depending on the method in which they take form. The dissertation's narration of 'the boy' perhaps fit best under Berns's category 'performativity I.ii'. In this category, the performance consists in the presentation of a story by a narrator or presenter, "His or her voice, body or actions rather than those of individually embodied persons or characters form the core of the performance, which allows for different degrees of impersonation." Researcher 'impersonates'—in this case a non-human, non-organic other—the thesis itself, and gives it a voice. This voice then gives an account of the behaviour of the boy in regards to the apps. Berns writes, "This story tells of changes in the situation, attitude or behavior of the narrator. [...] Performativity in this sense is often used synonymously with self-conscious and reflexive or with metanarrative and metafictional." The thesis's voice serves as a method of reporting on the experience of the researcher, as well of his specificity as a subject with a situated knowledge.

⁵ Braidotti, Rosi. "Cyberfeminism with a Difference." *New Formations*. No. 29 (Autumn 1996): 9-25. Reprinted in: *Zones of Disturbance*. Ed. Silvia Eiblmayer.

⁶ Kathy Acker in *In Memoriam to Identity* (1990), also discusses her multiple becomings throughout different situations and people, while evoking a capacity to impersonate and mimic across 'others'. For further references on difference and performance, see Rosi Braidotti "Discontinuous Becomings: Deleuze on the Becoming-woman of Philosophy" in *Journal of the British Society for Phenomenology* vol.24 (1993) and "Re-figuring the Subject" in *Nomadic Subjects* (1994), Lucille P. Fultz *Toni Morrison: Playing with difference* (2003), Sara Ahmed *Queer Phenomenology: Orientations, Objects, Others* (2006), Judith Butler *Senses of the Subject* (2015).

⁷ Braidotti discusses parody in feminist theory, through what she calls the practice of 'as if', which consists in recognising and denying certain attributes or experiences—as she mentions in page 5 of "Cyberfeminism with a Difference". Through the practice of 'as if' the subject is capable of ethic and moral agency, which resonates with Judith Butler's ideas on parody and repetition as methods that place the subject in a politically empowering position. Also, Irigaray's strategy of 'mimesis' is particularly related to this, as it addresses identity, identifications and political subjectivity.

thesis, as a co-author, and it comes to life to narrate the experience ‘the boy’ has while using each mobile app. Through this, an element of humour and playfulness is inserted in the chapters, all the while echoing and referencing theories of nomadic subjectivities in which the thesis is grounded.

The figure of the boy and the thesis’s active, performative voice—as an embodied other, observing the boy’s use of the app—resonate with Braidotti’s theories on language and voice as modes for becoming subject, as well as her ideas on the practice of ‘as if’. She writes that this practice “is as if some experiences were reminiscent or evocative of others; this ability to flow from one set of experiences to another is a quality of interconnectedness that I praise highly.”⁸ The practice of ‘as if’ is a method of writing and thinking which affirms the fluidity of boundaries through the element of repetition, the use of parody and impersonation.⁹ Through it, Braidotti finds potential for opening up a critical consciousness that aims at engendering transformation and changes. Similarly, through the use of a non-academic style of writing allowing for creativity and imagination, Braidotti actively attempts to resist pre-established ideals in formal bodies of research:

A related feature of this style is the mixture of speaking voices or modes: I deliberately try to mix the theoretical with the poetic or lyrical mode. These shifts in my voice are a way of resisting the pull toward cut-and-dried, ugly academic language. In the philosophical circles in which I was trained, a certain disregard for style is conventionally taken as a sign of ‘seriousness’ or even of ‘scientificity’, as if writing beautifully were the expression of a ‘soft,’ i.e., nonphilosophical, mind.¹⁰

Along this line, the active voice in the dissertation is used as a tool to challenge the idea that researcher should be objective and removed from the discussion’s narrative. Though, here, the researcher never marks himself through the use of the pronoun ‘I’, he does so through the figuration of the boy, as narrated through the active voice. Performance and cultural studies theorist Della Pollock, in “The Performative ‘I’”, attempts to think beyond the use of the first person to find ways of writing of the abject self. She writes that ‘I’ finds itself excluded by systematic reproduction of sameness. Through the fragmentation of personal embodiment and mimicking a non-organic other to give it a voice, this research—picking up from Braidotti, Haraway and Pollock’s ideas—acknowledges the importance of the body and subjectivity within research, while finding fictional and imaginative ways of writing about it. Though this first phase of the research method is indispensable to this dissertation, it became important to take into account the use and

⁸ Braidotti, Rosi. *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*. 2nd ed. New York: Columbia UP, 2011. 26.

⁹ Braidotti, *Nomadic Subjects*, 28.

¹⁰ Braidotti, *Nomadic Subjects*, 66-67.

experience of the apps' general population of users. In this way, the research and the theories elaborated in the first part would be strengthened, contested or modified through data obtained by conducting interviews with anonymous participants.

Phase Two/The Interviews

Phase two of the research involved gathering qualitative data from a larger group of people. To do this, interviews with a number of Grindr, Mappines and Waze users were conducted to compare how/if personal empirical observations were recurring themes for other users of the apps. Each question of the interview process was conceptualised after the thesis's focus on the body/space/technology triad and responded to either matters of use/experience, location or identity/interface. The questions were designed to be understandable and open, allowing a variety of answers without leading participants to be biased.

During Spring 2013 the UCL Research Ethics Committee's assigned this thesis with Project ID Number 4659/002, and they approved the 38 Mappiness questions and the 31 Grindr questions that would be asked to approximately 40 participants, who were at least 18 years of age. According to the university website, UCL requires that:

All research proposals involving living human participants and the collection and/or study of data derived from living human participants undertaken by UCL staff or students [...] requires ethical approval to ensure that the research conforms with general ethical principles and standards.¹¹

The aim of ethical review is to protect participants as well as the researcher. By obtaining ethical approval researchers demonstrate to have adhered to the accepted ethical standards of a genuine research study which could increase recruitment potential. Having already been given approval for interviews for the first two apps, during February 2014 a third set of questions was designed for the third app, Waze. These 38 questions were based on the previous approved set. Each question was designed to be easy to understand and open-ended, to allow for a variety of answers without leading participants to a biased answer. The interviews,

¹¹ "Research Ethics at UCL." *UCL Research Ethics Committee*. Web. 14 July 2015. <<https://ethics.grad.ucl.ac.uk>>.

which averaged 35 minutes per app, began in Summer 2013 with Grindr as the main focus. Mappiness followed during Autumn and Winter 2013, and they finalised during Spring 2014 with Waze.

Looking into a digitally-focused field of research can, at times, bring questions regarding the suitability of interviews as methodology. The mere mention of the word ‘cyborg’ and ‘apps’ are loaded with technofetishistic baggage. But the understanding of a technologically-enhanced subject and their performance of identity in urban space presents an ethnographic field site, charged with subtle nuances and ambiguous—if any—delimitations/boundaries between the technological and organic. As Hine states, “We might suggest, then, that a methodological shift, the claiming of the online context as an ethnographic field site, was crucial in establishing the status of Internet communications as culture.”¹² Although it is agreed that these Internet-based, mobile technologies are appropriated while also producing alternate cultural practices and mentalities, this study’s findings dispute Hine’s claim that “Any difference between the ways that people present themselves online and offline is also a potential methodological drawback for the generalizability of research findings.”¹³ To consider the differences in participant behaviour—regarding offline versus online behaviours—is to uphold a humanistic view of the subject as a unified, universal self. This research upholds that differences in offline and online modes of performance attest to the fluid nature of identity, exemplifying the subject’s multiple modes of being.

Interviews provide a method for obtaining data through oral narrations by means of unedited accounts about the participants’ use and experience with Grindr, Mappiness and Waze—although depending on the participant and on the question, self-censorship is an inevitable factor. Media theorist Shani Orgad states, “The face-to-face accounts depict the role of the Internet in informant’s lives in more subtle ways. They were primarily stories about oneself, rather than the Internet, and so the experience of using the Internet is embedded in the story, most of the time in implicit ways.”¹⁴ Orgad’s statement is particularly relevant here; the research participants at times state that, having seen the topic of the research, they tried to anticipate questions that might be asked, because they were unable to clearly see a link between their use of the app and its relation to architecture. By being asked simple, open questions, the participants rely on impromptu story-telling.

¹² Hine, *Virtual Methods*, 8.

Also see Martyn Hammersley and Paul Atkinson *Ethnography: Principles in practice* (1983), Steve Woolgar “The Turn to Technology in Social Studies of Science” in *Science, Technology and Human Values* 16 (1991), Patricia Ticineto Clough *The End(s) of Ethnography: From realism to social criticism* (1992), Christine Hine et al. “Ethnography and Human Computer Interaction” (1993) and Stephen Linstead “From Postmodern Anthropology to Deconstructive Ethnography” in *Human Relations* (1993).

¹³ Hine, *Virtual Methods*, 18.

¹⁴ Orgad, Shani. “From Online to Offline and Back: Moving from Online to Offline Relationships with Research Informants.” *Virtual Methods: Issues in Social Research on the Internet*. Ed. Hine Christine. Oxford and New York: Wiley-Blackwell, 2006. 63.

In order to reach a wide audience in the London area, the call for participants was sent via a UCL email service called UCL Announce, through which researchers who need participants could send their proposals to different people across the university. It is understood that due to the nature of the research, a degree of selectivity was inferred during the recruitment process, as the participants would by default need to belong to a demographic of people who own a smart phone—and in the case of Mappiness, the participants must be particularly be iPhone users. This involves a level of literacy and perhaps even economic background. Similarly, using UCL as a forum to disseminate the call meant that the research would primarily circulate among an educated sample.

Where Grindr users were very responsive to the Call and seemed eager to participate, Mappiness users were far more elusive. This could be because of two reasons: Grindr has over 444 thousand users in London alone, comparing to Mappiness's reported 55 thousand users, who are spread throughout the whole United Kingdom. Also, Grindr is inherently a social network, whereas Mappiness is a non-sociable, introspective tool, so both platforms perform differently in terms of communication with others. Similarly, perhaps because not many UCL students (or staff) do not commute regularly by car, only four Waze Drivers responded to the UCL Announce email, so alternative methods to find more participants were used. Social media platforms Twitter and Instagram were also used to get in touch with UK-based app-users who might want to partake in this study. For this reason, the 20 Grindr interviews were completed by autumn 2013, the 14 Mappiness were finalised in winter 2014, and the 15 for Waze were finished in spring 2014.

Each participant was provided with a consent form and were asked to read it; this form included the note that they would not be compensated for the study. If they were still interested, after having read the form, they would proceed to schedule an interview date and time. To ensure the anonymity of the participants, their identities will not be revealed in the dissertation, and their individual physical traits and names will be kept confidential and coded. The coded names have a mechanical constituent, reminiscent of machines created in series. Apart from maintaining a cohesive style with the tone of the dissertation, this also ensures that absolutely no character traits can be traced back to each participant, such as using their initials. Similarly, because of the playful nature of mobile apps, it was decided to maintain a very rigorous, formal way of assigning each participant their identity, and so the code for each Grindr Guy uses G#G#, Mappiness Participants are labeled as M#P# and Waze Drivers as W#D#.

When each user was contacted to take part of the study, it was agreed that the interviews would take place wherever the participants felt was best and more comfortable for them, whether it be due to proximity to their home, work or job, or whether it was for matters of privacy or security. The UCL Research Ethics Committee is put in place to ensure the protection of research subjects and labels them as either vulnerable or non-vulnerable. Because

queer men were interviewed and their sexual orientation played a key part in the research discussion, the participants were categorised as vulnerable, and so it was important to ensure their anonymity even when some of them found it unnecessary.

The Grindr Guys all either live, work or study in different areas of London, so it was easy to set up meetings to meet each of them individually. All of the Guys were interviewed at a public location, primarily at coffee shops and juice bars in Central London, with the exception of G1G8's interview which took place in his university campus. Similarly, G0G4 suggested that the interview take place over coffee at his flat, but a small coffee shop was chosen as the venue instead. Only seven of the Guys suggested a specific location to meet, and the other 13 preferred to be told where to go. Out of all of the Guys, only one of them chose not to disclose his full name under any circumstances.

Similarly, 11 of the Mappiness Participants live, work, and/or study in different areas of London. Three of the subjects that took part in the Mappiness interview had also been interviewed for Grindr; it was through this research that they became interested in Mappiness and wanted to contribute to the Mappiness interviews as well. One of them, M0P9, at the time of the Mappiness interview, was no longer living in London and had moved to Portugal. The other two, M0P2 and M0P3 were interviewed for Mappiness on the same day that they were interviewed for Grindr. Similarly, at the time of the interview, M0P7 lived in Sweden and M1P0 lived in another city in England. Nine of the interviews took place in a public location, all at coffee shops, and due to matters of distance, three of them took place via Skype, with the remaining two taking place in the participants' homes. With the exception of the two participants who preferred to meet at their home, the rest of the participants preferred to be told where to meet. Similarly, Waze had the largest variety in gender, with six females and eight males.

The Waze interviews participants were scattered throughout different cities in the UK, and many of them did not involve a face-to-face meeting. Eight of the 15 interviews were conducted in person, two of them were video calls on Skype, three were audio calls and two were email interviews. This means that apart from the avatar on their Twitter account, five of the Waze Drivers remain almost completely anonymous. None of the interviews took place in a private location, with the exception of W0D2 who booked a private room at UCL. The rest of the participants were interviewed at their work place's coffee shop, at a public UCL space, or at coffee shops around whatever part of London the user was based. All of the participants were interviewed individually, except for W0D8 and W0D9 who had a joint interview at their work place. The first 14 participants were males, W1D5 was the only female participant.

Whenever an interview took place, the participant was given a copy of the Consent Form—though they had already read it prior to the meeting—and were read each of the points.

The interviewees then proceeded to sign the form, as an iPhone 4S was placed in front of them to record the audio. An issue that was contemplated during the transcription of the interviews was the matter of whether their ethnic background would be coded as well, whenever they verbalised a city or country they were native of. However, because their use and experience of the apps—particularly in the case of Grindr—is conditioned by the location of where they use it, as well as their cultural differences, their ethnic background is not omitted, while only specifying the city they refer to when they spoke.

Out of the 20 Grindr Guys, 13 of them are born or raised in the United Kingdom—although some of them came from non-British ethnicities—and the other half had diverse backgrounds, ranging from North America, South Asia, Europe and Eastern Europe. Out of the 14 Mappiness Participants, eight of them were born or raised in the United Kingdom, and the other six had diverse backgrounds, ranging from Europe, Eastern Europe, Asia, and North/Latin America. Lastly, most of the Waze Drivers were born or raised in the United Kingdom, but several others had diverse backgrounds—one from the Middle East, two from South Asia, one from Eastern Europe and one from Africa.

Although each app's participants were asked the same set of questions on each of their interviews, it was interesting to see how much some of them opened up, giving a longer interview, where others were much more concise and seemingly introverted. The participants were told that if there were any questions that they would prefer not to answer, they could skip it. Similarly, they were told that if they were unsure of what any particular question meant, they could ask for it to be explained. To ensure that the participants were not biased, prior to the interview, they had not read any of the questions that would be asked nor were they made familiar with any of the discussions formulated in this dissertation's theoretical framing. Though interviews were expected to last approximately 30 minutes, however time each participant spent talking varied, especially in the Grindr interviews. Following in the next page are the interview duration times for each Grindr, Mappiness and Waze interview, along with their longest and shortest interview lengths.

<u>Grindr Guy</u>	<u>Duration</u>	<u>Grindr Guy</u>	<u>Duration</u>
G0G1	42:10	G1G2	25:43
G0G2	28:21	G1G3	21:30
<i>G0G3</i>	60:00	G1G4	26:46
G0G4	18:55	<i>G1G5</i>	13:04
G0G5	28:15	G1G6	15:30
G0G6 + G0G7	44:46	G1G7	53:32
G0G8	35:54	G1G8	38:18
G0G9	23:10	G1G9	52:27
G1G0	42:30	G2G0	34:51
G1G1	21:57		

<u>Mappiness Participant</u>	<u>Duration</u>	<u>Mappiness Participant</u>	<u>Duration</u>
M0P1	13:01	M0P8	39:05
M0P2	36:10	M0P9	32:40
<i>M0P3</i>	9:45	M1P0	32:05
M0P4	29:54	<i>M1P1</i>	57:25
M0P5	26:15	M1P2	39:55
M0P6	21:50	M1P3	26:25
M0P7	25:03	M1P4	30:15

<u>Waze Driver</u>	<u>Duration</u>	<u>Waze Driver</u>	<u>Duration</u>
W0D1	28:49	W0D8 + W0D9	53:48
W0D2	35:17	W1D0	25:24
W0D3	25:11	W1D1	27:03
W0D4	24:09	W1D2	—:—
W0D5	—:—	<i>W1D3</i>	42:24
W0D6	28:48	W1D4	28:16
W0D7	23:58	<i>W1D5</i>	19:25

Meeting the participants in person was beneficial to the research in the sense that it was possible to not only engage more directly with them but it also guaranteed that the conversation could be steered if it ever went off course. There are times when the participants answered a question in a manner in which they thought they needed to, in regards to what they felt was expected by the nature of the research topic. Meeting or having oral conversations with them ensured that the question could be asked again, modified or rephrased in order to get a new perspective on the answer.

In the interviews that were conducted by email, some of the answers were very brief, as is to be expected; oral conversation can flow more naturally rather than having to sit down and ponder the answers to write them down. This has to do with various reasons, one of them having to do with trust-building. Several of the participants chose to stay in touch after the interview process; these participants were all people who were either interviewed in person or via video chat. None of the audio interviews or email interviews showed interest in staying in touch. Another factor that plays a part in the differences between in-depth, longer interviews and shorter written interviews is the time factor. The quality, depth and length of the oral conversations takes up less time than if the participant would have written down the same answers, in the same depth.

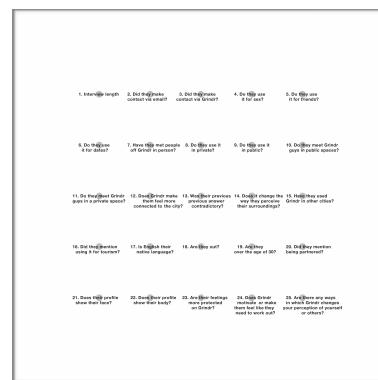
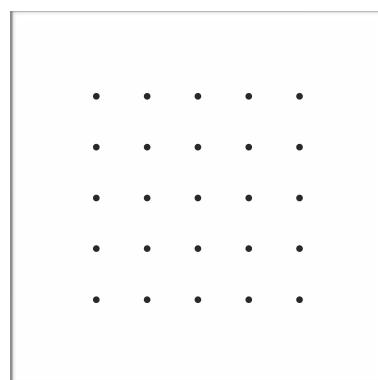
Appearing in italics and indented throughout the chapters, the quotes obtained from the interviews act as interruptions in the text's structure—echoing the interruptions the case studies' notifications cause to users. Rather than seamlessly integrating them within the paragraphs, the quotes are intended to read as voices in conversation with the interviewer. Although each quote is strategically placed to sustain the dissertation's discussions, they are intended to visually behave as a conversation belonging to an embodied individual. Just like the active, performative voice in the thesis—narrating the experience of the boy—the voices of each Grindr Guy, Mappiness Participant and Waze Driver are intended to create a shift in the style of writing, giving the dissertation a texture of voices in conversation with each other.

Phase Three/The Avatars

Upon finalising the interview process, their transcription and analyses began, and the final phase of the research emerges. The written codings for each participant—a series of letters and numbers that replaced each name—grant a strong sense of anonymity, while presenting difficulties in distinguishing each participants' stories. To recover a sense of embodiment lost in their quoted responses within the text, each participant's interview is recoded in a graphic manner to show a reconstructed persona. Similarly, this reconstruction of each participant holds a strong correlation to how subjectivities are fragmented and then reconstructed through their use of technology. As a response to this, a set of avatars are designed, abstract enough to not show each user's identity, but unique enough to return a sense of embodiment to each individual. In this way, the avatars act as a sort of QR code, where information is unreadable, instead coded onto a geometric graphic element.

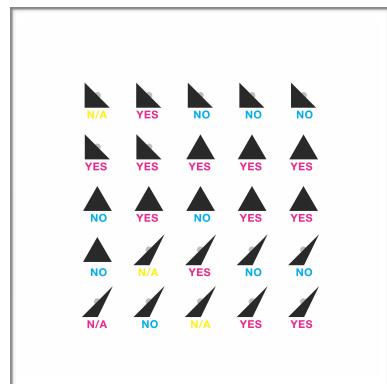
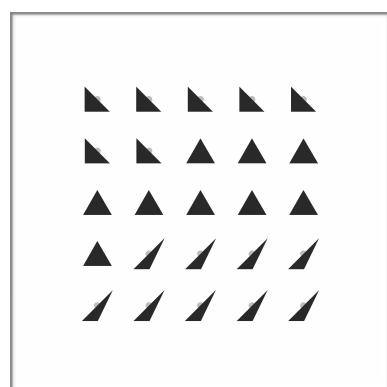
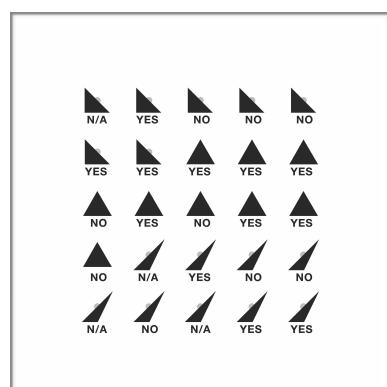
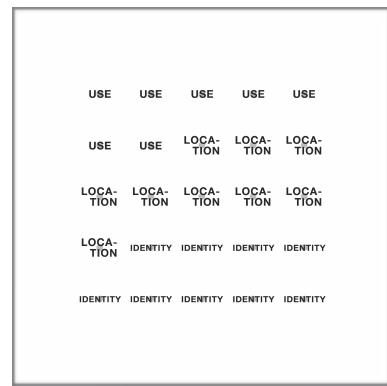
The avatars are the result of a design *exercise*—the result of the boy playing. Their design is intended to help think about new figurations, while finding new ways to represent and discuss embodiments in relation to technology and ethnographic research. The design of these avatars is approached in a rigorously structured form through a series of iterations. The proposed identities are assembled by geometric codes relating to their individual interviews, and these representations/impressions of interviewees are designed almost spatially, by using basic design composition elements, such as symmetry, hierarchy, repetition and juxtaposition. The primary element for the design of these identities is each of the participants' interview answers, responding to three different categories—'Use', 'Location' and 'Identity/Interface'. To begin creating the visualisations for each participant, each avatar set uses three different geometric figures to code the interview questions' answers. To do this, the design process was carried out in ten steps, illustrated on the right using Grindr's structure. Depicted here is G0G1's interview.

Step one (image on top right) involved setting a primary organisational structure, and in the same manner that Grindr users are displayed on the app, a 5x5 grid was laid out. In step two (image on bottom right, previous page),



one interview question was placed in each point of the grid, giving a total of 25 interview questions. The third step involved coding each question, according to what category they belonged to (Use, Location or Identity), and so, for the fourth step, the right triangle was used to represent questions about the Guys' Use and Experience, an equilateral triangle would represent questions dealing with Location, and an isosceles triangle would code those questions that had to do with Identity. Since each triangle represents a coded interview question, the most relevant interview questions were selected and modified to fit a 'yes or no' answer format. This made the large amount of complex data more manageable and easily transferred to graphic form. Step five then involved adequately answering each question for each Guy's grid, so that every question would either have a 'yes', a 'no' or an 'n/a', which would be used for questions the Guys didn't directly give an answer to. The list of questions that were asked to each participant can be found at the end of this chapter.

To continue the process of creating visual representations of the interview, step six was intended to codify the answers by assigning each of them a different colour. Due to their role as the basic colours that allow digital images to become physical objects upon printing. Taking into consideration the parallelisms between the overlaps of the digital and physical, the CMYK colouring format would make up the colour system for these graphics. And so cyan, magenta, and yellow were selected to respectively represent 'no', 'yes' and 'n/a' (image on bottom left). The dots expressing the grid's points of intersections would remain black—the 'K' in CMYK. Consequentially, step seven assigns each triangle (question) a colour (answer), depending on the particular Guy's response. The resulting graphic depicts a combination of 25 cyan, magenta, and yellow coded triangles, arranged on a grid demarcated by black dots, giving a clean, clear picture of the Guy's overall

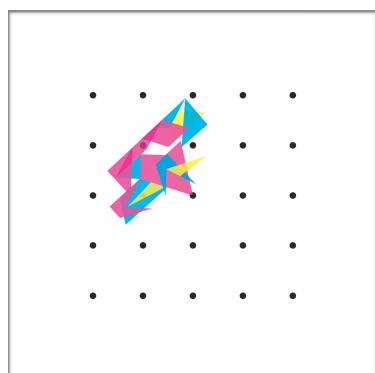
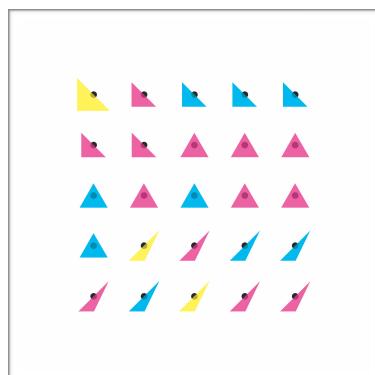
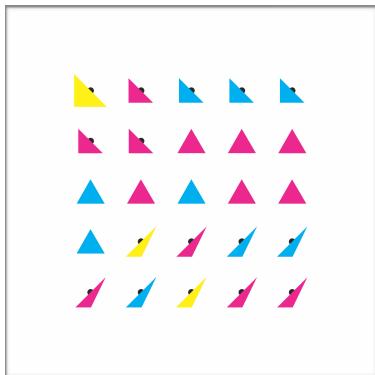


responses on the use and experience of Grindr, as well as its relationship to location and to identity.

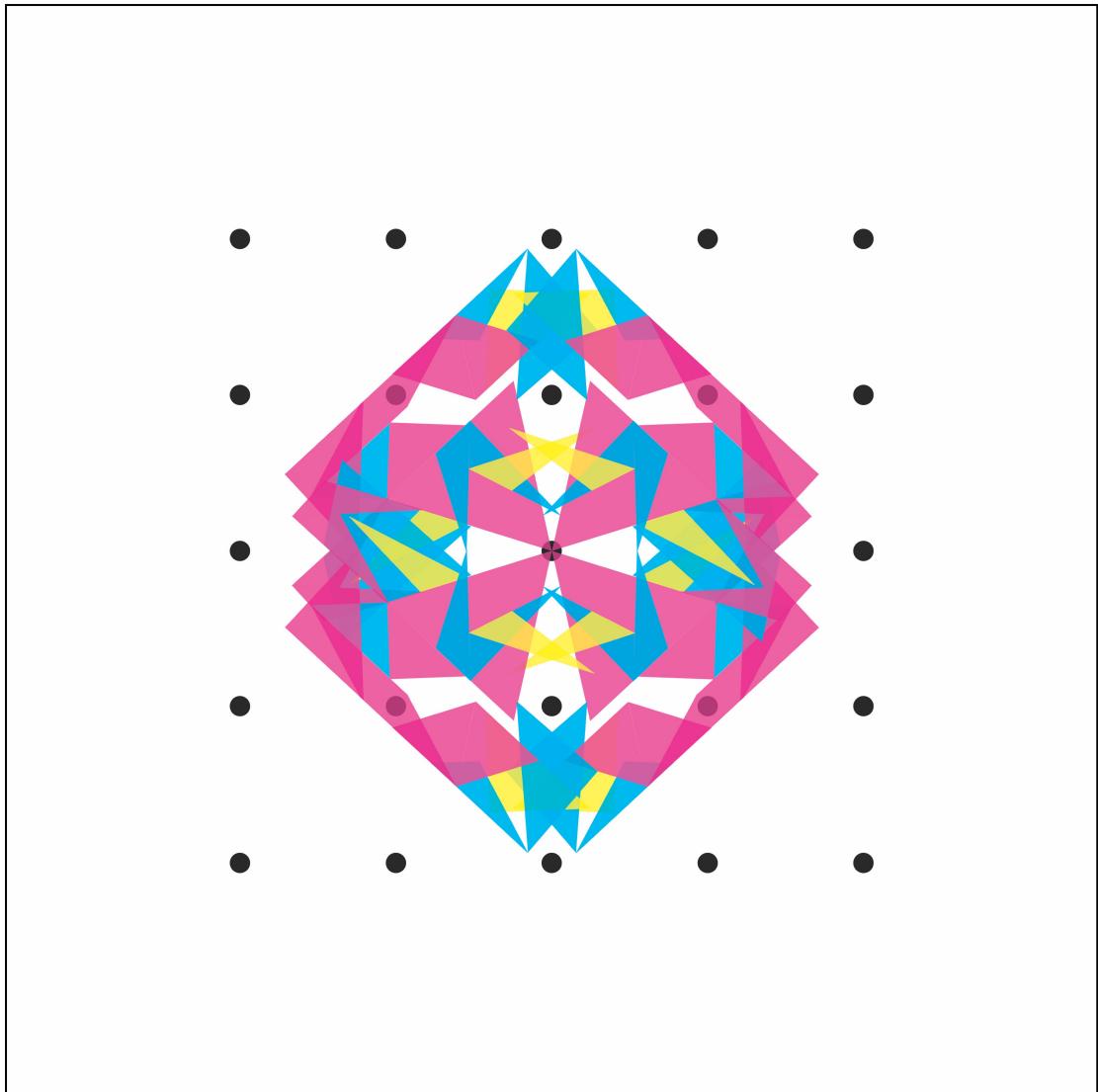
But these new identities that Grindr is producing, along with other mobile apps, are anything but clean, clear, and simple, nor are they solid and fixed in place and time. These new identities are entangled, they overlap amongst their different strata, they have different levels of transparencies, they are complex and transformative. Step eight begins to respond to these volatile conditions of identity, by dissolving the solidity of the bright cyan, magenta and yellow triangles, and making them slightly more transparent.

The ninth step created spatial, formal and colour relationships between each triangle—it attempted to construct a set of assemblages to make them whole. The pieces were reconfigured, their positions altered, their orientations rotated and some fragments began to merge together, while others clashed. Their transparencies allowed their different strata to be appreciated, and suddenly the bidimensional, fixed original pieces transformed into a complex set of parts with varying depths. Like shards of glass within a kaleidoscope, each colourful triangle created a unique composition based on the particular sets and combinations of initial triangles and their respective colours.¹⁵

Like the mobile phone's screen, the kaleidoscope has a unique relationship to the body, where the eye and the glass work together—a relationship that is further strengthened by the kaleidoscope's inherent condition of needing the eye to focus directly into a piece of glass, illuminated by light. The pieces within the the kaleidoscope are colourful, geometric fragments dealing with a constant state of reconfiguration caused by human agency. No two people can ever create the same composition, and no two compositions will ever be the same; they are transformed by the person and by the nature of the device. Fragments clash onto and with each other, in a delicate play of disorder and balance—much like the shifting identities that this research explores. But the beauty of the kaleidoscopic image is not only due to its colourful shards and their illumination by light; from a design perspective,



¹⁵ The Mappiness and Waze avatars were also designed with this structure in mind, while allowing a degree of variation to differentiate themselves.



the harmony of the image is found only when each composition is repeated in a set of two mirrored images: step ten.

Architectural and design composition tools were then further employed by the use of symmetry and repetition, taking the unique triangular compositions and mirroring them vertically and horizontally (image above). Placed in the middle of the grid—with the black dots in the background, giving reference, stability and coordinates—the reconfigured, kaleidoscopic image becomes a metaphorical representation of the Grindr Guy’s identity, rooted on the particular answers he gave during the interview. Resembling a Rorschach test—where inkblots are analysed through psychological interpretation and complex algorithms—each kaleidoscopic identity leaves an impression on the viewer’s mind—a floor plan, a flower, an axonometric, a piece of origami, a 3D perspective.¹⁶ These impressions gave a ‘face’ to the participant while still

¹⁶ The introduction to Gillian Rose’s *Visual Methodologies: An Introduction to Researching with Visual Materials* (2001) sustains that interpretation of images is not necessarily a matter of searching for the truth, but rather looking for justifications of the interpretation. As such, Rose looks to discuss the methodology of interpretation.

respecting their anonymity, due to the abstract nature of the image and to the structure of the methodology.

These avatars can be read as a set of relations depicting nuances between subjects that are constructed through GPS apps. Through each avatar, the interview findings for each participant are given a colourised, geometric codification that enables its construction and assemblage, while allowing multiple readings of the image. Here we can find overlaps with Lefebvre's ideas on decoding the function, use and meanings of spaces, as he writes:

They correspond to a specific use of that space, and hence to a spatial practice that they express and constitute. Their interrelationships are ordered in a specific way. Might it not be a good idea, therefore, first to make an inventory of them, and then to try and ascertain what paradigm gives them their meaning, what syntax governs their organization?¹⁷

In this way, by designing individual series of avatars for Grindr, Mappiness and Waze, the exercise results in an abstract catalogue of embodiments, opening up conversations about figurations and fluidity of the subject. Rather than being a concrete design solution, the avatars are instead a way for the researcher to visualise, comprehend and engage with theories of embodiments as proposed by Braidotti, Hayles and Haraway—a thinking technology, as Haraway might propose. Attesting to an aggregate of embodied and subjective performances and processes—which in turn constitute a codified fragment of the participant's identity—the importance of the avatars lays in their potential for proposing new methods to theorise about the body's relation to space and technology.

As visual, graphic conversations, the avatars provide snapshots in time and fragments of identities, and Mitchell writes in *What Do Pictures Want?: The Lives and Loves of Images* (2005), “To get the picture is to get a comprehensive, global view of a situation, yet it is also to take a snapshot at a specific moment...”¹⁸ He explores images and pictures through phenomenological, psychoanalytic, semiotic and socio-historical modes of interpretation, and argues that images, pictures and visuals are worthy of the same scrutiny as the realm of language. Although this research's central focus does not deal with visual culture, it is important to acknowledge the

¹⁷ Lefebvre, Henri. *The Production of Space*. Translated by Donald Nicholson-Smith. MA, Oxford, & Victoria: Blackwell Publishing, 1991. 16.

¹⁸ Mitchell, William J. *What Do Pictures Want?: The Lives and Loves of Images*. Chicago and London: University of Chicago, 2005. xvii.

See also William J. Mitchell *Iconology: Image, Text, Ideology* (1986), Edward Tufte *Envisioning Information* (1990), Jonathan Crary *Techniques of the Observer: On vision and modernity in the nineteenth century* (1990), William J. Mitchell *Picture Theory* (1995), Edward Tufte *The Visual Display of Quantitative Information* (2001), Gillian Rose *Visual Methodologies: An Introduction to Researching with Visual Materials* (2001) and Sarah Pink *Doing Visual Ethnography* (2001).

correlation between his ideas and the avatars in this dissertation. Mitchell sustains that pictures must be understood as complex assemblages of virtual, material and symbolic elements. As such, images are not mere two-dimensional, inert objects representative of a meaning, but rather Mitchell argues that they are animated—having their own desires, needs, appetites, demands and drives; images too are others.

The avatars in this dissertation are not intended to be illustrations or caricatures of the subjects they represent, but rather embodied pictures meant for reflection of the nature of embodiment itself—something Mitchell would denominate a ‘metapicture’: “Any picture that is used to reflect on the nature of pictures is a metapicture.”¹⁹ The avatars are metapictures in the sense that their aim is to create a critical space in which the images/pictures could function as cases that speak of transformations; they themselves are sites of theoretical discourse rather than captioned figures depicting an idea. Through Mitchell’s idea that images can be animated entities, the Grindr Guys, Mappiness Participants and Waze Drivers acquire an active embodiment, not only on the apps’ interfaces, but also in the pages of this dissertation.

Conclusion

The qualitative methodology for this research results in approximately 22 hours of recorded audio from the interviews and 49 avatars that go along with each of the participants. This data then becomes the source for the key themes that were developed as part of the three case studies, which will be discussed in the subsequent chapters. Similarly, because this dissertation is constructed through Cyberfeminist theories, particularly the work of Haraway, Braidotti and Hayles, the relation between physical/digital and organic/artificial in the production of identity and embodiment within spatialised subjects is of central importance to the research.

Through the three phases of the methodology, the intersection of these states of being and becoming are explored by giving the body agency within the production of theories in the text. There is a conscious effort to explore ways of representing embodiments within qualitative research, whether it is by narrated fiction (the boy), transcribing fact (the interviews) or

¹⁹ Mitchell, W.J.T. “Metapictures.” In *Picture Theory: Essays on Verbal and Visual Presentation*. Chicago: U Chicago P, 1994. 35-82.

speculating visual representations (the avatars), and proposing figurations. The position of the researcher and of the research participants are all portrayed, narrated and depicted as embodied and situated knowledges—as fragmented posthuman experiences with a relation to space and time.

The fluidity of identity and performance become particularly relevant in this dissertation's interviews, as there has been speculation regarding the validity of interviews as research methods when assessing online behaviours. Of this, cyberpsychologist Adam N. Joinson writes, "Clearly, if people behave differently online compared to offline, this may well have implications for social scientists who use the Internet as a research tool."²⁰ But this view of the subject is also problematic, as it can lead to the wrongful assumption that digital and physical behaviour must—for each participant—have common ground. If the Internet is a culture, then an individual's online behaviour must be seen as valid, despite any discrepancies with the physical behaviour.²¹

Physical, corporeal performance does not discredit online performance of the subject; they are both equally valid, both attesting to the adaptability of identity in different environments. The interviews provided in-depth conversations, narrations and oral accounts of the use of technologies by a number of different perspectives, each contributing data through a situated form of knowledge. These conversations in turn revealed a set of key themes in relation to the space/body/technology triad, attesting to Hayles's call for more sophisticated versions of the posthuman. These themes, which will be discussed throughout the subsequent chapters, provide the answers to the dissertation's research questions, while opening up the doors for original ways to think about and question the role of space in relation to embodiments and mobile apps.

This dissertation's research participants embodied states of being, represented by the avatars. Similarly, these avatars give a sense of materiality to the individuals, resonating with Braidotti and Hayles's postulation that body cannot be excluded from conversations related to the digital. Additionally, although the avatars have an element of subjectivity and how these shape/are shaped by the digital sphere, they draw attention to the individual and to their body, representing a retention of the person's materiality. The avatars do not presume to depict a holistic portrayal of the interviewees nor do they attempt to produce an accurate representation of their identities. Instead, they provide the reader with a coded, graphic representation of their unique interview answers, in an attempt to restore a sense of embodiment to the participants.

²⁰ Joinson, Adam N. "Internet behaviour and the design of virtual methods." *Virtual Methods: Issues in Social Research on the Internet*. Ed. Hine Christine. Oxford and New York: Wiley-Blackwell, 2006. 25.

²¹ In his chapter "Doing anthropology in cyberspace: fieldwork boundaries and social environments" in *Virtual Methods*, anthropologist Mário J.L. Guimarães Jr states that culture is a process, a flux of facts embedded in a web of meaning. This web gives way to social relations, extending the concept of local culture onto different groups that inhabit cyberspace.

Though his focus is on space and not on images, the design of the avatars are related to Lefebvre's theories on space codification. In his book, Lefebvre brings up an important point in his discussion when he asks, "To what extent may a space be read or decoded?"²² He argues that without additional, supporting and background information, it is difficult if not impossible to trace a space's origins. He continues, "the fact remains, however, that an already produced space can be decoded, can be read. Such a space implies a process of signification."²³ Here is where one could argue that if a space can be decoded through reflection of its meaning and complex contextual relationships, such as Mitchell does as well, then a space too is an image.

Upon first inspection, the avatars proposed here do not seem to allow the reader to decode their actual, interview information by looking at them. This is true in the sense that the avatars are not intended to act as readable maps, and although there is a systematic legend in their colours and shapes, there is a degree of arbitrariness in the design decisions—in the series of procedures and operations that inform their assemblage. Each participant's story is contained within the avatar, deconstructed and reassembled to grant them anonymity. However, and according to Lefebvre, a spatial code is not merely a means of reading space, but rather a means of understanding and producing it.²⁴ In this way, a code is composed of both verbal and non-verbal signs, while holding an inherent relation to the meaning a viewer assigns to them. In a similar note, Mitchell writes:

If we are indeed 'preparing subjects' for this brave new world, perhaps we are simply doing our job, especially if the preparation involves the development of new skills of critique, interpretation, and evaluation of images, based on a clearer sense of what they are and how they introduce new forms of value into the world.²⁵

These kaleidoscopic images—as avatars—have a direct, visual relation to the embodiment of their individual subjects, but they are also metapictures in the sense that they help explain the spectrality of digital embodiments as transformative, dynamic states of becoming; they encourage new methods of critiquing, theorising and interpreting embodiment and subjectivity. These images are responsive and unfixed, resonating with Mitchell's ideas that the study and critique of images "take into account what are sometimes called 'lower' forms of consciousness—mere sentience, for instance, or sensuous awareness, responsiveness, as well as

²² Lefebvre, *The Production of Space*, 17.

²³ Lefebvre, *The Production of Space*, 17.

²⁴ Lefebvre, *The Production of Space*, 47.

²⁵ Mitchell, *What Do Pictures Want?*, 97.

forms of memory and desire."²⁶ This anthropomorphic and animistic view of images holds a correlation to Haraway and Braidotti's call to include non-humans into the discussion of difference, embodiment and ethics, and to Hayles's anthropomorphically discussing the computer as a maternal entity. Through the use of the embodied figuration of the boy, the collection of interviews with participants and the analysis of the answers turned into a set of avatars, the research methodology of the dissertation seeks to provide new ways of thinking about the way we understand, conceptualise and represent the spatial practices, embodiments and subjects GPS-based mobile technologies are cultivating.

²⁶ "What Do Pictures Want? Interview with W. J. T. Mitchell." *W. J. T. Mitchell: What Do Pictures Want?* CVS_Center for Visual Studies. Web. 16 July 2015. <<http://www.visual-studies.com/interviews/mitchell.html>>.

Chapter 3

Strolling/Scrolling

I watch the boy fill out his Grindr profile after uploading a picture of himself on a beach lounger, wearing his favourite pair of sunnies. His 'About Me' says, "Puerto Rican social butterfly with quick wit, charm to match & a great pair of legs to take me places." He continues:

Profile name: REX..

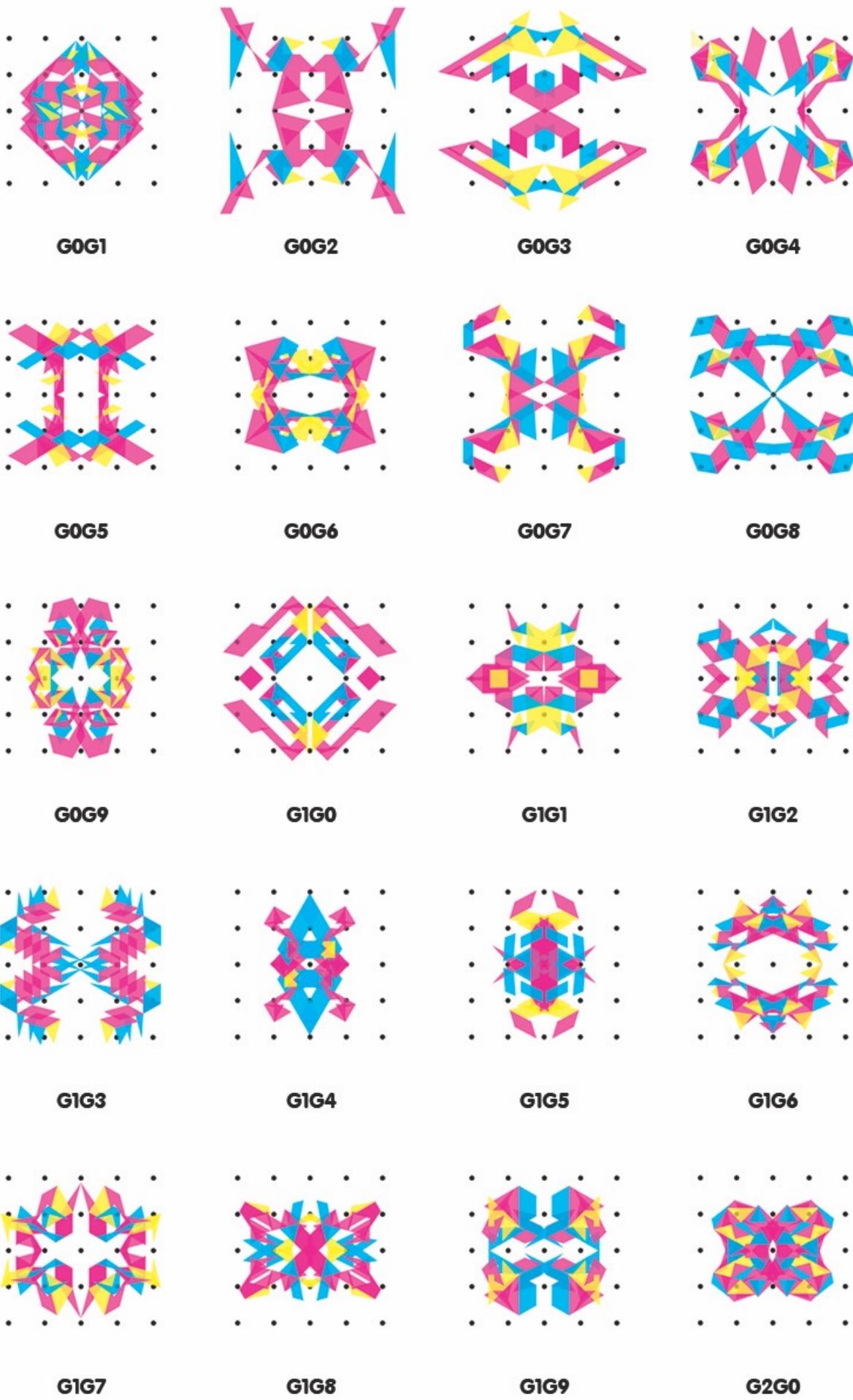
Age: 27.

Ethnicity: Latino.

Relationship Status: Single.

Height: 5'8".

Weight: ... "Maybe leave that one blank," he decides.



"One reason the city is so accommodating for the exploration of identity is that it is a place of doubles, where the individual can be both self and other, where he can become an underground man and go unnoticed, and where his secrets can remain secrets."

-Mark W. Turner, 2003

Introduction

Released in the United States in March 2009, Grindr is advertised as the world's largest and most popular all-male location-based social network. In the gay community, Grindr is known to be used as a digital substitute for cruising—the act of walking or driving in particular areas looking for a sex partner. Since its launch, the app has had over 10 million downloads in 192 countries. The US is reported as the most active country, with 2.97 million users, and is followed by the UK with 1.23 million users. London currently ranks as the city with most active users per month (947.3k), making the app an appealing subject of study for this dissertation, particularly because of its relation to urban space and histories of gay culture in London.¹

Referencing urban histories of men who partake in sexual or intimate activities with other men is important to this study, and so, the chapter looks to gay culture and queer practices in the city to help situate the use of Grindr and its impact on spatial practices.² Queer theories by architectural critic Aaron Betsky in his book *Queer Space: Architecture and Same-Sex Desire* (1997) as well as gay cruising theories by media studies researcher Sharif Mowlabocus in his book *Gaydar Culture: Gay*

¹ These figures are based on the reports the company has posted on their website's 'Press' section, where a fact sheet is downloadable. The data being quoted in this dissertation is current as of July 2013, which is the last report Grindr made public.

² It is necessary to clarify that the subjects involved in this study cannot be marked as gay, bisexual or transgender merely because they use Grindr. Although several of them labeled themselves as gay throughout the interviews and others spoke about having sex with other men, it would be incorrect to, as a group, label them as homosexual or bisexual (furthermore, asking them to disclose their sexual identity was not a part of the interview process).

Although none do it in term of the use of Grindr or mobile technology, there is a body of literature that has already studied the histories and spatial practices of queer men in London and other cities. See Matt Cook *London and the Culture of Homosexuality, 1885-1914* (2003), Matt Houlbrook *Queer London: Perils and pleasures in the sexual metropolis, 1918-1957* (2005), Johan Andersson "Consuming Visibility: London's New Spaces of Gay Nightlife" Ph.D. diss. (2008), José Esteban Muñoz *Cruising Utopia: The Then and There of Queer Futurity (Sexual Cultures)* (2009) and Matt Cook and Jennifer V. Evans (Eds) *Queer Cities, Queer Cultures: Europe since 1945* (2014).

Men, Technology and Embodiment in the Digital Age (2010), provide place-based, situated ideas to understand non-heteronormative behaviour of men in cities—particularly in London. Their understanding and discussions on the male body and queering of space, similarly, inform the construction of the arguments in the chapter. The term ‘queer’ will be used throughout ‘Strolling/Scrolling’ to discuss subjects that are either non-heterosexual or partake in activities that are non-heteronormative.³ The use of Grindr, in this chapter, is considered a queering of space. Understanding that the term is loaded with a wide range of complexities, ‘queer’ here is proposed as an umbrella for sexual identities and subjects which deviate from heteronormativity and patriarchal norms.⁴

By conducting in-depth interviews with 20 Grindr users, the evidence helps to revise the highly sexualised connotations the app possesses, showing that it instead facilitates a variety of ways of using, experiencing and relating to public space, as well as giving insight into how users relate to its interface and technology. Though not all gay subjects are the same in terms of class, ethnicity and gender, historically, they have found themselves to be placeless; Grindr constructs alternate spatial relations between these users and the city by enabling them to explore new ways of performing a queer identity in physical and/or digital space.⁵

In the chapter’s first section, ‘Get ready to Grindr’, a brief introduction to Grindr is presented. It acknowledges the spatial relevance of Grindr, framing it as an app that holds a pivotal relationship to time and space. The second section, ‘Placelessness’ aims to situate Grindr within a larger historical and social context. By referencing Mowlabocus and Betsky’s theories on the emergence of cruising spaces, cottaging and digital cruising, it briefly addresses queer histories in the city, discussing them as placeless identities that have always appropriated strategic spaces and tools in order to perform.

³ It is important to clarify that the term ‘queer’ may be appropriated by men and women who are heterosexual. In this sense, ‘queer’ is not an indication of a particular sexual inclination. Similarly, as previously stated, the participants themselves have not and may not identify as queer; none of the participants were asked to label themselves according to their sexual preferences.

Also see Adam Green “Gay But Not Queer: Towards a Post-Queer Study of Sexuality” in *Theory and Society* 31 (2002).

⁴ Queer theory builds on feminist, lesbian and gay studies as a way to challenge and interrogate hegemonic structures. See Eve Kosofsky Sedgwick *Between Men* (1985) and *Epistemology of the Closet* (1990), Teresa de Lauretis *Queer Theory: Lesbian and Gay Sexualities* (1991), William B. Turner *A Genealogy of Queer Theory* (2000) and Mimi Marinucci *Feminism is Queer: The Intimate Connection Between Queer and Feminist Theory* (2010).

⁵ The acts of cruising and cottaging will be discussed later on as key urban, place-based queer performances. These will then be correlated to how they translate, adapt and differ when the Grindr interface is at play.

From the early 1990s, queer theories provided new frameworks for studying architecture and space, particularly through the work of Beatriz Colomina in her book *Sexuality & Space* (1992) which has informed a series of key texts looking at architecture, gender and sexuality from a queer perspective such as Aaron Betsky *Building Sex* (1995), Diana Agrest et al. *The Sex of Architecture* (1996), Debra Coleman et al. *Architecture and Feminism* (1997), Jane Rendell et al. *Gender, Space, Architecture* (1999) and Louise Durning and Richard Wrigley *Gender and Architecture* (2000).

'Use and Experience', introduces the conversations with the Grindr Guys—the participants interviewed for this research. Although Grindr is an app intrinsically related to cruising, the section discusses the different functions its users have assigned to it. The section also details a descriptive account of the app's interface. The following section, 'Density/Saturation', counterposes Grindr CEO Joel Simkhai's description of Grindr with journalist Jaime Woo's discussion in his book *Meet Grindr: How One App Changed the Way We Connect* (2013). The section discusses the app's relation to user-density, how it creates alternate mental constructs of space and distance, and how social and cultural variations begin to show through.

'Cruising/Grindring', the following section, contrasts and compares the visual play between bodies in movement and bodies which are immobile. The power of the gaze is pivotal to both practices, and queer theorist Mark W. Turner's idea of the 'backward glance', in *Backward Glances: Cruising the Queer Streets of New York and London* (2003), as a form of confirmation of queer identity is contested as Grindr provides a 'downward glance'. The section then goes on to problematise what it means to be seen on Grindr, using sociologist Erving Goffman's theories on stigmatisation as discussed in *Stigma: Notes on the Management of Spoiled Identity* (1963).

'Body/Screen' discusses Mowlabocus's theories on 'cybercarnality'. By portraying the process of choosing a digital body as an act of self-assessment and introspection, the discussion makes reference to Hansen's theories of image-filtering. The following section, 'Biographies', explores embodiment beyond depictions of the body via an image. Parting from the question 'How do I want to be perceived?', it discusses how embodiment on Grindr is not solely visual but multilayered—from the construction of a blurb, to the voice a Grindr Guy uses while interacting with others. The section uses Goffman's idea of 'misrepresentation' and subversion as a form of constructing an identity, with varying degrees of empowerment for the user, while discussing what happens when both 'biographies' clash upon a Grindr meet-up.⁶

The element of reward is then discussed, as 'Gamification' explores the qualities of Grindr's interface and design that make the user experience it as game-like and 'addictive'. The gamification of Grindr is also fortified by the displaying of users on the grid who are not online any longer—the primary focus of next section, 'Trails/Residue'. The section discusses how this splitting of embodiments enhances the potential for establishing connections with others, increasing the chance for spontaneous interactions, while creating problems regarding privacy. The section then makes a

⁶ See also Erving Goffman *The Presentation of Self in Everyday Life* (1959), Kenneth J. Gergen *The Concept of Self* (1971), *Gender Trouble: Feminism and the Subversion of Identity* (1990) and "Imitation and Gender Insubordination" in D. Fuss (Ed) *Inside/Out: Lesbian theories, gay theories* (1991), Stephen David Ross *The Ring of Representation* (1992) and Chris Brickell "Masculinities, Performativity, and Subversion" in *Men and Masculinities* vol.8 (2005).

correlation between Grindr and the ephemerality of queer spaces in urban settings, as described by Betsky.⁷

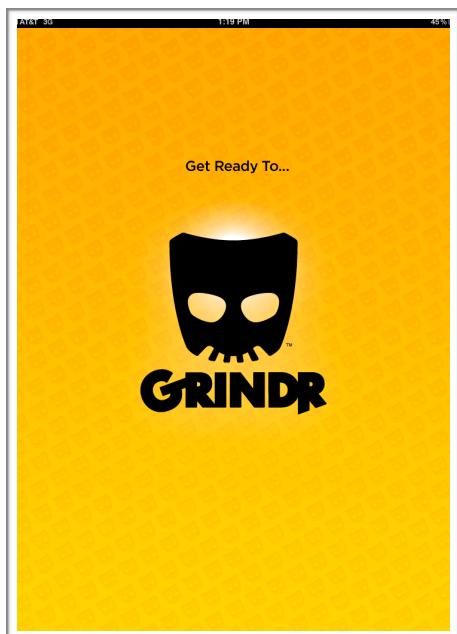
Expanding on the idea of community, 'Finding Others/Digital Citizenship' discusses how the presence of other bodies on the app's interface helps users construct a sense of self-acceptance and communal belonging. Finally, in line with Braidotti's call for the construction of figurations, the section then highlights how new terminology and definitions must be brought forth in order to accurately represent the new socio-spatial constructs enabled by apps like Grindr.

⁷ Queer spaces here are discussed through Aaron Betsky's definition, as described in the introduction of his book *Queer Space* (1997). He writes that a queer space is "a space of spectacle, consumption, dance, and obscenity. It is a misuse or deformation of a place, an appropriation of the buildings and codes of the city for perverse purposes. It is a space in between the body and technology, a space of pure artifice."

'Get ready to Grindr'

Stated on their website, Grindr advertises itself as “the world’s largest gay social network.” The app, however, is also used by bisexual, ‘bicurious’, transexual and transgender men. From a spatial perspective, the most important quality of Grindr is that it is a completely place-based form of interaction, where GPS satellites track one’s location to then reveal which other Grindr users are nearby. Upon opening Grindr, a grid of 100 users appears, each placed in order of proximity on a grid. There, on the digital screen, faces, bodies and pictures crafted by each user align on a grid, as images to be viewed—and consumed (see image on bottom right).

Grindr functions in relation to synchronicity between time and space, reverting to previous modes of interaction where synchronous communication was indispensable: users have to be nearby and simultaneously online (or relatively close to each other’s online periods) to interact. Although Grindr attempts to minimise physical distance between bodies and bring guys face-to-face—in an effort to bring men ‘Zero Feet Away’, according to the company’s slogan—it reinforces the importance of the visual within gay male culture. The Grindr grid brings together an assortment of people and, on its own, attempts no curation of any kind. These users are simply passersbyers, neighbours and at times friends or colleagues—who wish to come in contact with other like-minded users for a variety of reasons.



Placelessness

Grindr raises issues related to queer identities and the built environment, when one considers gay history's correlation with spaces, or rather, lack of.⁸ Because there has been a historical placelessness within the built environment for non-heterosexual or queer citizens, the condition of being spaceless has found a way to spatialise itself by immersing itself in cyberspace. Sharif Mowlabocus's book, *Gaydar Culture*, based on the popular UK dating/cruising site *Gaydar* gives insights to the historical and social displacement of gay men, to situate and help explain why the Internet has played such an important role in the formation of contemporary gay identities.

Mowlabocus notes that, after homosexuality was decriminalised, throughout the years gay men have set out to claim specific zones within certain cities, turning them into queer spaces. This is the case of London's Soho and Vauxhall, New York City's Chelsea and Greenwich, Sydney's Oxford Street, and Madrid's Chueca. Other cities may be added to the list but there is still a great number of countries in which homosexuality remains perceived as an illegitimate expression of normal sexuality, meaning that the public manifestation of queer identity is discouraged and remains placeless. Being cast aside by the law, expressions of homosexuality were left to be manifested in private, and spaces like the public bathroom or toilet, according to Mowlabocus, became:

[...] a symbol of oppression and contained within its walls is a history of queer desire, covert negotiation, fear and entrapment. The cracked tiles and filthy porcelain, scuffed concrete and scribbled walls all operate as signifiers of pre-liberation homosexuality, a time of agent provocateurs and watch queens, of silent fumbling in lunch hours and guilty pleasures stolen on the way to and from work.⁹

⁸ See Larry Knopp and Michael Brown "We're Here! We're Queer! We're Over There Too! Queer Cultural Geographies" in Kay Anderson et al. (Eds) *The Handbook of Cultural Geography* (2002) and "Queer Diffusions" in *Environment and Planning D: Society and Space* 21 (2003), Larry Knopp "Ontologies of Place, Placelessness and Movement: Queer Quests for Identity and Their Impacts on Contemporary Geographic Thought" in *Gender, Place & Culture* Vol 11 (2004) and Sheila Cavanagh *Queering Bathrooms: Gender, Sexuality, and the Hygienic Imagination* (2010).

Mowlabocus argues that cruising—physically and digitally—opens up transitory spaces that articulate homosexual desires and identifications. This acts a response to the placelessness queer people experience in societies that privilege heteronormativity. Similarly, in page 129 of "Ontologies of Place, Placelessness and Movement" Knopp writes, "We [queer people] are keenly aware of the hybrid nature of our existences, and of the highly contingent nature of both our power and the constraints on it. Hence our ambivalent relationships to place and identity, and our affection for placelessness and movement."

⁹ Mowlabocus, Sharif. *Gaydar Culture- Gay Men, Technology and Embodiment in the Digital Age*. England: Ashgate Publishing Limited, 2010. 139.

Because of this, different researchers in queer studies, such as anthropologist William Leap, have visualised the public toilet space as a source of information for gay men—as is the case of the graffiti inscriptions in high school restrooms. Writer of sexuality and eroticism, Patrick Califia, argues that one of the ways gay men have dealt with their oppression has been by eroticising the symbols that have oppressed them as a minority and giving them new meanings.¹⁰ In the case of physical, urban spaces for gay men to congregate, such as gay bars, their physical locations would sometimes be difficult to find unless the visitor knew exactly where to look. Finding another man to have a sexual encounter with was often an act contained and limited to these—as Michel de Certeau would label them in *The Practice of Everyday Life* (1988)—strategic spaces, through the sexual practice of ‘cottageing’—the British term for having casual gay sex in public toilets.¹¹ As opposed to cottageing—which is linked to toilets—‘cruising’ offers men the ability to engage in sporadic, intimate encounters with different men in the area, in multiple spaces in the city such as bars, alleys and parks. Both practices rely on the gaze and surveillance of other men located in the same strategic spaces.

Grindr has changed the way that gay cruising works by making surveillance a digital, rather than a purely physical act. The parallelisms between Grindr, cottageing and cruising have a close relationship, and one could speculate that Grindr used queer practices to feed its design. However, Grindr’s creator and CEO, Joel Simkhai, has stated that the app’s idea came from necessity:

I always wondered who’s gay around me, and I’ve always wanted to find a way to figure that out. That’s largely what’s driven it. As a second piece to it, I’ve also used online dating sites throughout my whole life, and location isn’t quite a priority on them. You go in, put in a mile or kilometre, and that’s quite far. I always look: who are the guys in my building, in my block, right around me? That’s always been the nagging question for me. I looked for a way to solve that and it just wasn’t there.¹²

¹⁰ Mowlabocus, *Gaydar Culture*, 93.

Also see William Leap *Public Sex, Gay Space* (1999) and Patrick Califia *Public Sex: The culture of radical sex* (1994), particularly chapter three, ‘Sluts in Utopia: The Future of Radical Sex’.

¹¹ In chapter three of *The Practice of Everyday Life* (1988), Michele de Certeau discusses the most influential aspect of his book: the concept of strategy versus tactics. According to him, strategies are linked to institutions and power structures (producers) who predefine the ways in which these products (in this case, spaces) should be used. Tactics however, have to do with the manner in which “consumers” appropriate the product (space) and perform in their own ways. On page 40 of his book, De Certeau writes, “Tactics are more and more frequently going off their tracks. Cut loose from the traditional communities that circumscribed their functioning, they have begun to wander everywhere in a space which is becoming at once more homogeneous and more extensive.”

¹² Salerno, Rob. "Twenty Questions for Grindr Creator Joel Simkhai." *Daily Xtra*. 27 July 2011. Web. 17 July 2015. <<http://www.dailyxtra.com/canada/news-and-ideas/news/twenty-questions-grindr-creator-joel-simkhai-51750>>.

However, the similarities between historical cruising practices and use of Grindr, are more complex and hold a stronger relation to each other than Simkhai states. In *Queer Space*, Aaron Betsky engages in a brief account of how queer spaces have found physical manifestations throughout the centuries. Through its discussion, the relationship between the emergence of queer spaces in the city and the spatial implications of Grindr become more obvious than in Mark B. Turner's *Backward Glances*, as Betsky attempts to foreground the clandestine nature of queer spaces and how gay men sought to appropriate urban locations historically. He writes:

The first queer spaces of the modern era were the dark alleys, unlit corners, and hidden rooms that queers found in the city itself. It was a space that could not be seen, had no contours, and never endured beyond the sexual act. [...] What makes this space of cruising so important is that it shows that you don't have to make spaces to contain and encourage relations between people, because they will just appear exactly at the moment where they are least expected—or wanted.¹³

For Betsky, the queer space is a space of liberation—at times amoral and sensual—that lives only in and for experiences. As such, it is characterised by a deformation of the coded use of the space—‘misused’ and reappropriated for non-heteronormative purposes. The manner in which queer spaces spontaneously appear echo the way Grindr performs, where each user can turn on the application anywhere and at any time, to be able to see a spatially-limited network of other men. Dating back to at least the seventeenth century, cruising spaces according to Betsky, are “a network of routes queer men (and sometimes women) use as the physical expression of their community. It makes a real space that is essentially invisible, but that acts as a ‘counterspace’ to the emerging transactional space of the middle-class city.”¹⁴ In a similar manner, Grindr is a digital space whose contours and delimitation are imposed by the software’s grid, not by physical boundaries themselves. Grindr opens up a space that is invisible to the naked eye, perceptible only through the app’s interface.

In *Backward Glances*, Turner engages with archival research to conduct a detailed account of cruising practices in London and New York throughout the past three centuries, and he does so by assuming the role of a kind of detective—often citing pieces of literature and newspaper articles that have incomplete or open-ended city tales which he suspects have a queer undertone. Turner conducts a queer reading of historical documents. Careful in the claims he makes, he never states that his interpretations are factual tales of queer activity in the city but rather that they *might* be; his interpretation merely suggest that these practices and readings can

¹³ Betsky, Aaron. *Queer Space: Architecture and Same-sex Desire*. New York: William Morrow, 1997. 141.

¹⁴ Betsky, *Queer Space*, 142.

be contested through a queer lens, disrupting heteronormativity. Turner sets out to “look to the past to help me understand something about cruising, and our cities, and sexuality, and the ways we have of representing all of these, in the present, now.”¹⁵ Today the backward glance is a sentimental notion. It is perhaps more appropriate to talk about a ‘downward glance’, as Grindr users look down on their mobile phones to cruise the grid.

Despite the similarity between queer spaces, cruising and the app, Grindr—as a company—has been particularly careful at *not* defining, branding or advertising it as an app for cruising. Even though its reputation is embedded within gay hook-up culture, Simkhai has stated:

For us, this is a tool to meet other men. That's what we're about. It's not necessarily about being gay. It's about someone who's into other men. Some people don't take to the description of gay or bi. I think it's not much of a distinction with guys who would say that they're straight but have been with guys before. We're less about labels, but we're about ‘Hey, I'd like to meet another guy.’ We're not putting any labels on it. That's the practicality of it.

Some are for sex, some are just to meet people. From our own research, the number one thing people are looking for is friendship. Eighty-five percent of users have made a friend off of it. I'm less concerned with how people are using it. We're quite comfortable with our users using the app in any way that's lawful and safe. If they are going to have sex, I just hope it's safe sex.¹⁶

On the one hand, Simkhai is acknowledging the multiplicity of the uses of Grindr and the fact that it is a versatile tool appropriated by different men in different ways. This avoids generalisations and often reductive views of the app. But somehow Simkhai's carefully selected, detached words read more as a marketing strategy by a businessman than that of an individual who is conscientious and—in some ways—even responsible for how the app is making an impact on the gay community. Rather than addressing the sexually charged nature of his app and the reverberations it is having on the construction of queer identities and spaces, Simkhai absolves himself of any cruising practices of the app—in this interview, at least. Simkhai relies on claiming that 85% of users have made a friend off of the app, but he does not clarify if these are sexless

¹⁵ Turner, Mark W. *Backward Glances: Cruising the Queer Streets of New York and London*. London: Reaktion, 2003. 8.

¹⁶ Salerno, “Twenty Questions for Grindr Creator Joel Simkhai” *Daily Xtra*. 17 July 2015. <<http://www.dailyxtra.com/canada/news-and-ideas/news/twenty-questions-grindr-creator-joel-simkhai-51750>>.

Since then, Grindr has rebranded the app as an app for gay men, whereas before it was an “all-male” app for men to meet men.

friendships or even if they are hook-ups that resulted in a friendship. Simkhai, in the quoted interview, treats sex facilitated by Grindr as an anomaly rather than as commonplace.

'Hoping' for Grindr users to have safe sex is not enough. At the time during which this chapter is being finalised the media is beginning to focus on a health issue that has recently surfaced and is of growing concern particularly among queer culture: chemsex. Although the topic will not be discussed in the subsequent sections nor was it discussed in the interviews with the Grindr Guys because it was not a public topic at the time, it is important to address the phenomenon's relation to Grindr.

International Business Times defines chemsex as "the act of having sex for hours or even days at a time while under the influence of drugs."¹⁷ During chemsex sessions—which often last up to three days, with men averaging five sexual partners per session—mephedrone, crystal meth and GHB are the most common substances. Their effects facilitate sustained periods of arousals while also inducing a feeling of instant rapport with sexual partners. Researchers at the *British Medical Journal* are concerned for an increase in sexually transmitted diseases—in part caused by frequent unprotected sex—as well as mental health problems involving drug dependence, particularly because the drugs are believed to help users manage lack of confidence, internalised homophobia, as well as stigma in the case of HIV positive men.¹⁸

According to *The Guardian*, London-based sexual health clinic, 56 Dean Street, reports having 100 new patients with chemsex addiction per month, and claims to have been approached by 33 healthcare organisations across different European cities seeking advice on how to cope with the endemic.¹⁹ Similarly, David Stuart, substance abuse lead at the clinic, reveals that five gay men in London are diagnosed with HIV every day.²⁰ This growth in statistics began two-to-three years ago, around the same time chemsex started rising, leading the clinic's researchers to suspect a correlation between the two.

It would be inaccurate to characterise Grindr as being solely responsible for the problem of chemsex. There are multiple gay bars, clubs and saunas throughout London which are known for being drug and sex hotspots, and the issue precedes the arrival of the app. But in light of the alarming rate of substance addiction and infection, film directors William Fairman and Max Gogarty

¹⁷ Palmer, Ewan. "What Is Chemsex? Rise of 72-hour Crystal Meth Orgies Worrying Sexual Health Experts." *International Business Times*. 4 Nov. 2015. Web. 18 Dec. 2015. <<http://www.ibtimes.co.uk/what-chemsex-rise-72-hour-crystal-meth-orgies-worrying-sexual-health-experts-1527151>>.

¹⁸ Palmer, "What Is Chemsex?" *International Business Times*. 18 Dec. 2015. <<http://www.ibtimes.co.uk/what-chemsex-rise-72-hour-crystal-meth-orgies-worrying-sexual-health-experts-1527151>>.

¹⁹ Flynn, Paul. "Addicted to Chemsex: 'It's a Horror Story'" *The Guardian*. 22 Nov. 2015. Web. 18 Dec. 2015. <<http://www.theguardian.com/world/2015/nov/22/addicted-to-chemsex-gay-drugs-film>>.

²⁰ Roberts, Scott. "Chemsex and Gay Men: Has the Issue Been Overblown?" *PinkNews*. 7 Apr. 2014. Web. 18 Dec. 2015. <<http://www.pinknews.co.uk/2014/04/07/chemsex-and-gay-men-has-the-issue-been-overblown/>>.



have recently created a documentary—appropriately titled *Chemsex*²¹—which among other topics, shows how Grindr is used as a forum to facilitate quick meetings for sex among men who are high on drugs.

Turning on Grindr throughout any given day—particularly late night and early mornings—reveals a number of profiles making reference to chemsex. These profiles code their message by using abbreviations and emojis to point out they are looking for people to join the session or to have sex with—phrases like ‘chillin’, ‘h&h’ (high and horny) and ‘p&p’ (party and play) being the most common ones. Part of the problem is that although Grindr does not actively propagate the chemsex agenda, it makes the topic visible to every user—whereas previously men would have to venture out to a particular location to engage in drugged sex with strangers.

Grindr is relatively unregulated and although there has been an increase in pop-up notifications within the interface stressing the importance of safe sex and regular STI check-ups at clinics, it does nothing to moderate or edit profiles making references to chemsex. An article in *Dazed* claims that the app is also used by dealers to sell their merchandise in coded language, while also writing that “Grindr is as integral a stimulant to chemsex as any drug, a 3G signal is this scene’s invisible lifeblood.”²² Because any person can download Grindr, it is exposing an increasing number of men to the dangers of chemsex, particularly teenagers. Stuart states, “it’s not just older HIV positive men, it’s 15-year-olds, the first time they have sex is on drugs. I’m working with people like that in the clinic.” Problematically, Grindr—along with other apps—is normalising chemsex, especially with impressionable, young queer men who are using Grindr as a way of introducing themselves to the gay scene, as a manner of creating a sense of self and as a tool for experimenting with identity and sexuality.

²¹ *Chemsex*. Dir. Max Gogarty and William Fairman. Peccadillo Pictures, 2015. Film.

²² Faye, Sean. "How Are Drugs Changing the Way London's Gay Men Have Sex?" *Dazed*. 10 July 2015. Web. 18 Dec. 2015. <<http://www.dazedsdigital.com/artsandculture/article/25431/1/how-are-drugs-changing-the-way-london-s-gay-men-have-sex>>.

Use and Experience

At the time when this research began, the Grindr logo featured a black, skull-like mask over a vivid, orange background. Since then, Grindr has redesigned its logo to make it less like a skull and more like a contoured, stylised mask (shown in the previous page). It is smoother and less aggressive, while maintaining its air of mystery—it has gone from mask to masquerade. Simkhai's intentions in terms of the app's original branding are summarised below:

The word 'Grindr' comes from a coffee grinder. We're mixing people up together, a bit of a social stew. It is a little bit rough—not to mix, but to grind. Our design, logo, colouring—we wanted something a little bit tougher, rough. It's also very masculine. It's a masculine word, sound. We wanted something that wasn't necessarily about being gay. It could be anything. We looked at this notion of meeting people and the idea is very much a basic human need to relax and to socialize. I went back to primitive tribal arts in Africa and Polynesia. One of the things I saw was these primal masks. It brings us back to basics, primal needs. Socialization is the basis of humanity.²³

Simkhai's muted description of the app's branding could be interpreted in different ways. The Grindr mask can be correlated to discretion, a provisional identity queer men might feel forced to partake in before they 'come out of the closet'. Although the mask floats on its own over the background, without a face behind it—perhaps with the intention of stating that the mask comes off the man as turns on the app—there is still a reaffirmation that with homosexuality comes a false front, a need to portray a certain appearance. In fact, the company's official website stated in 2012, "Grindr is quick, convenient, and *discreet*."²⁴ The relation of the discretion, secrecy and masks has strong links to queer spaces in the twentieth century. Betsky has remarked:

The only thing that distinguished many gay bars until the 1970s (and still sets them apart from straight gathering places in many small towns) was a sign that announced a name. The only way queer men often know to go into such a space is through an invisible spatial network, that of rumor and hearsay, which is sometimes codified in gay travel guides. The entrance is often in the rear, to allow greater

²³ Salerno, "Twenty Questions for Grindr Creator Joel Simkhai" *Daily Xtra*. 17 July 2015. <<http://www.dailyxtra.com/canada/news-and-ideas/news/twenty-questions-grindr-creator-joel-simkhai-51750>>.

²⁴ "Learn More." *Grindr*. Web. 23 Jul 2012. <<http://grindr.com/learn-more>>.



degree of anonymity. The queer bars wear a mask that only fellow wearers can read.²⁵

Whether Grindr's branding is intended to use society's negative labels and appropriate them through the use of irony or whether it is done unconsciously—contradictorily giving the queer community a space to manifest itself while still reaffirming the need to wear a mask²⁶—Grindr's logo marks a relation to histories of gay culture, linking it to particular spatial and social practices in the city. The logo, however, is only the first encounter with the app. Beyond it, it is necessary to delve into the particularities of the interface and the manner in which the app performs.

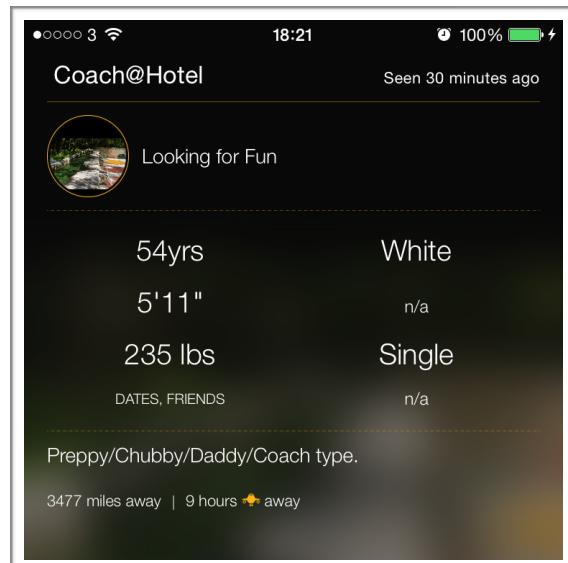
Once the app is opened, the main screen shows a grid of pictures, most of them with user names (see image above). In the majority of the cases, users select a nickname to match either their personality, their location or sexual role—such as 'top' or 'bottom'. The user's personal profile is shown at the top left, and the guys displayed on the screen are shown in order of proximity—the first profile on the right being the closest one. The further away they are on the grid, the further they physically are as well, and as such, the interface is a reflection of physical proximity without showing a map. Profiles displayed are users who are either currently online or were online within an hours time; at any given time of the day, the grid changes as users appear and disappear, scrolling left and right—depending on whether they have gotten closer or farther. Echoing a stroll down a street or park, the profiles and faces visible on Grindr are dynamic and changing, with a relation to movement.

When a user wants to chat with someone, they simply have to tap the profile's square twice. Tapping once will take them to the user's info (see image in following page), which shows a variety of stats, depending on what the user chose to disclose: name, photograph, headline, description/blurb,

²⁵ Betsky, *Queer Space*, 159.

²⁶ Masks in gay culture also have a link to fetishes. However, there are other cruising apps such as 'Scruff' and 'Recon' which have are distinctly aimed for for 'bears', leather, rubber and other kinds of fetishes.

online/offline status, distance, how much time it takes to reach their location (by foot, car or airplane), height and weight, relationship status, ethnicity, what they are looking to find on the app (chat, dates, friends, relationship or networking), and lastly, the category or 'tribe' they place themselves in (bear, clean-cut, daddy, discreet, geek, jock, leather, otter, poz, rugged, trans or twink). From this screen, various other options are available, including a button for chatting, a star to mark the person as a 'favourites', a block button and a flag to report abusive behaviour or content. Although Grindr is heavily charged with sexual connotations, the reasons for using the app range from issues of identity, desire, location and entertainment.



-Why do you use Grindr?

G1G1: *Curiosity of who might be nearby, or maybe some sort of desire for attention.*

G0G2: *Meeting people to go for dates, or probably for time-wasting, to be honest! Primarily, just chatting to people. If you calculate the amount of time I spend on it and the amount of people I've actually met... the reality is that I'm just sitting there chatting and looking at people or having a laugh or whatever.*

G0G3: *Really, confidence, actually. I know it might sound weird. I could come up with something like 'friends' or 'relationships', which would be nice, but what it all comes down to is confidence.*

However seemingly set in stone Grindr's use might appear, the way the app is used is as varied as the people who download it, and it is worth examining closer what cruising actually entails. For Turner, in *Backward Glances*, sex is not always the purpose of cruising. He explains that "cruising is a *process* of walking, gazing, and engaging another (or others), and it is not necessarily about sexual contact. Sex may be the point of cruising for some, but cruising and have sex are different

interactions.”²⁷ Cruising has its own rewards, such as pleasure, excitement and affirmation. In several of the Grindr Guys’ interviews, they expressed that one reason they use Grindr has to do with wanting some form of social contact; for some, it is an act similar to looking at strangers strolling down the street. For others, what they desire is to be desired.

Density/Saturation

In a remarkably limited selection of books that insightfully look into Grindr, Jaime Woo’s book *Meet Grindr*, provides the most detailed account of the app.²⁸ Throughout the book, Woo elaborates his discussion through personal engagement with the app. His arguments are primarily sustained solely by his personal experience—although he does provide an interview with Joel Simkhai that proves insightful. Woo’s book is detailed in its description, taking readers through an elaborate account of the uses of Grindr, its interface’s properties and its relation to location. In this way, Woo shares similar concerns to this chapter, such as his account of Grindr’s relation to time. However, *Meet Grindr* has a series of weaknesses that stem from the fact that although Woo engages with interesting topics he fails to delve into them, scratching on the surface and coming across almost frivolously.

Perhaps most exemplary of this are the set of ten rules he formulates which state superficial facts, such as rule number seven, “You don’t need to tell the truth on Grindr.” In this way, Woo fluctuates between moments of innovative insight and unfortunate staleness, as he navigates around the perimeter of a discussion centring on the creation of alternate embodiments or identities, while never really engaging with the topic. Particularly problematic is the fact that despite what his sixth rule states, “You can use Grindr for any reason”²⁹, Woo is unable to escape the sexual aspect of Grindr throughout his book, discussing it (and sex) in a trivial manner.

²⁷ Turner, *Backward Glances*, 60.

²⁸ At the time of writing this dissertation, there is a limited number of books exploring Grindr from an academic or research perspective. The selection consists of titles such as *How To MAGNETIZE Your Soulmate on Grindr (Even if you don't have a sixpack): The Step-by-Step Guide For Automatically Meeting your Soulmate*; *How to Avoid Catfish and Get DATING on GRINDR: The Grindr Experiment: Adventures with the App that has changed the game for gay men*; and lastly *Cocktails and Cockpics: A Grinder Love Story*. The sheer nomenclature for these books attest to the reductive portrayal of the app and the lack of serious research that has been invested into understanding how Grindr is changing queer culture. There is undoubtedly a lack of seriousness surrounding the topic, one that ignores the app’s reverberations on identity formation and spatial practice due to its heavy focus on sex.

²⁹ Woo, Jaime. *Meet Grindr: How One App Changed the Way We Connect*. Marston Gate: Amazon.co.uk, 2013. 33.

Throughout the chapters, he makes sweeping generalisations about the sexualisation of Grindr and its uses for cruising to the point of propagating taboo. Woo writes, “on the app, the majority of users upload the one photo that they feel best encapsulates their sexual self.”³⁰ This generalisation portrays the app in a reductive way. The issue is that Woo presents his data as factual—at times camouflaging it as significant research by the inclusion of references and statistics—misleading the reader into bias. Similarly, when sustaining his arguments, part of Woo’s research method involves citing his friends.

There are moments where his ideas are on borderline substantial and insightful, such as when he taxonomises the type of subjects on Grindr. However, instead of going deep into the richness of the topic, Woo uses clichéd categories and skims above the surface: time-wasters, endless chatters, down to business men, etc. Similarly, his interest in role-playing is based solely on superficial sex, rather than on the fluidity of the subject or the recrafting of embodiments. Disappointingly, amidst a number of books that show no promise, *Meet Grindr*—perhaps the one with the most potential—universalises the use of the app, equating it to a vapid portrayal of sex.³¹

Despite these weaknesses, Woo makes an interesting argument when he states that part of what makes Grindr so compelling is the sheer volume of men available within a relatively small area, proposing that urban saturation holds a direct relation to how popular Grindr is in the particular location.³² Parting from the idea that what makes Grindr successful, in comparison to traditional gay dating sites, is the fact that who one sees on the grid are men within walking distance—and able to meet up quickly. Similarly, Simkhai claims, “As humans, I think we value proximity. It's part of who we are. If somebody's 200 feet away from you, then go meet them, go say hi for five minutes. There's no need to have e-mails back and forth, SMS's back and forth.” Along these lines, Woo writes, “North Dakota, for example, is the least populous Grindr state with only 353 users. How users approach Grindr must change depending on the density of men in the area, because quick encounters are unlikely.”³³ London, on the other hand, with its approximated 263 thousand monthly Grindr users, has a different proportional relationship between density and space.

³⁰ Woo, *Meet Grindr*, 79.

³¹ There is a small number of academic texts in journals which conduct rigorous or in-depth analysis of Grindr in terms of embodiment and spatiality. See Jed R. Brubaker “Departing Glances: A sociotechnical account of ‘leaving’ Grindr” in *New Media & Society* (2014), Chad Van De Wiele and Stephanie Tom Tong “Breaking Boundaries: The uses & gratifications of Grindr” in International Joint Conference on Pervasive and Ubiquitous Computing Proceedings (2014), Mark Handel et al. “Grindr-ing Down the Walls between Physical and Virtual: Location-Based Social Enablers” in iConference 2014 Proceedings (2014).

³² Woo, *Meet Grindr*, 15.

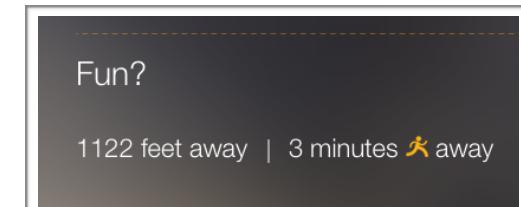
³³ Woo, *Meet Grindr*, 18.

-Does Grindr change the way you perceive your surroundings?

G0G5: *I dunno. I suppose in a way. If a guy tells you he's a mile away, you'd go to him. But if you didn't have Grindr, you normally wouldn't walk a mile for any odd reason. There's a good perception of what's close and what's far away. "Oh, they're 4km away! That means they're at the end of the road!"*

G0G9: *I think it made me feel more connected to my area. I noticed that certainly, compared to Gaydar. When Gaydar started, it kind of made you travel all over the city. Suddenly you'd be going to Streatham, West London, everywhere, because that's the way that software worked. It wasn't geographic. When Grindr started, your world kind of shrinks right in, and you go, "Oh, I'm not getting a bus." You start measuring in how many hundred metres apart you are, and things became very, very local. I've also used Grindr in rural Spain, where the first half of the screen would be in the town that I was. By the time you got to the second half of the screen, guys were 300 miles away. It was quite odd, suddenly Grindr expands to this huge geographical area.*

The more dense a city is in Grindr users, the smaller the radius the app will use to locate Grindr Guys nearby; in turn, the less dense a city is, the larger the radius Grindr uses in order to fill up the 100 slots on its grid. In 2015, after the interviews with the Grindr Guys had concluded, Grindr introduced a new feature into their interface: instead of just displaying how far away a user is (a feature which is entirely optional for each user to use) in terms of physical distance—be it feet or miles, metres or kilometres—Grindr started providing an approximate measure of distance measured in time (minutes and hours). The interface now automatically calculates how much time it should take two users to reach each other. If the user is close, the interface displays how many minutes it takes to walk to their location; if they are slightly farther away, it will measure the time it takes to drive to them; if the user is nowhere near, it will measure how long it takes to fly to them by airplane



(see previous image).³⁴ In this way, Grindr's relationship to space and time acquires visibility on its interface, offering different ways for users to construct a notion of distance and of location. All this done in attempt to bring guys 'Zero Feet Away'.

Simkhai and Woo attribute lack of Grindr meet-ups in rural locations to the inability for users to get to each other easily or quickly. In fact, Woo writes, "Men in less-dense areas, like North Dakota, probably adapt Grindr for their own scenario using the app more like a traditional online dating service with chatting and a greater need for verification online before investing in a longer commute to meet, if at all."³⁵ However, proximity is not always enough for guys to want to take the next step and meet in person; assuming so ignores the cultural and social factors that surround the appropriation of Grindr depending where one is. Though the the use and social dynamics of Grindr vary from city to city vastly and would need extensive study in order to arrive to any trends as conclusions, it was nevertheless a matter of conversation in the interviews conducted for this research.

It becomes important to question if and how Grindr varies from city to city, and attempt to discuss whether these changes were cultural and/or spatial. Because most of the interviewed Grindr Guys grew up in various cities, not just London, they each had anecdotes and observations comparing London to other locations. Similarly, it is also very common to use Grindr while abroad on a trip, which also added to the conversation. In some ways, the Grindr Guys' answers related to matters of density, but they also provide a rich description that relates to sociability and what they call 'local rules of etiquette'.

-Have you noticed any changes in the way guys use Grindr depending on which city they're in?

G1G1: *Hmm. I'm not really sure, but I think people are less friendly in London than in some other cities. I guess it's about choice; if there's hundreds and hundreds within two kilometres you might be a bit more rude and choosy. If there's hardly anyone around, you might go, "I'll give this person a shot and we'll hang out."*

G0G9: *There's certainly local etiquette, yeah. The main one I've noticed is blocking. In some places, the way you tell a guy you're not interested is by not replying. But in other places I've noticed that if you don't reply,*

³⁴ In London, this last option would not be displayed due to the density of gay men and the saturation of users on the grid, but it would be possible in less dense cities, like G0G9 stated above.

³⁵ Woo, *Meet Grindr*, 18.

people send you rude messages saying, “You should say that you’re not interested.” So, in some places, people will block you instantly and in others that’s perceived as being rude.

G1GO: [...] *The way [guys] interact on Grindr relates to how they interact with people on the street. What I think is different is the kind of photos people post. In Brazil there’s a thing with glamour shots. Everyone does it. So you get these beautiful, high-production quality photos. In Korea there’s a lot of Asian stuff that gets thrown on there, and you’re like, “Why are there music notes next to your face?” To block out a friend, they don’t just crop the photo, they just put a panda’s face over the friend. So there’s something about cultural presentation that’s very different.*

From the interview answers, the differences in Grindr-appropriation start to show through, particularly when participants speak about how physical proximity in Grindr affects the way users interact. This it to say, some of the Grindr Guys believe that if there are fewer guys around them in a city or town, the norms of digital, social etiquette appear to be different, and the guys are expected to be less dismissive than they would be in a larger city like London. Through its simple interface, the straightforwardness of its design and the reductive portrayal of each man’s identity, Grindr enables a gamma of variations to take place.

Cruising/Grindring

Cruising is a strategic act rooted in waiting patiently, not in speed, so although Grindr holds a connection to cruising, it is undoubtedly of a different kind. The twenty-first century is about lightning-fast connections and exchanges of goods and information, and this is the what Grindr responds to. It enables a form of social and sexual interaction, in which the tap of a button displays a grid of men any time, anywhere, many of which might be looking for fast, effortless instant gratification. But cruising, firstly, gives a pivotal importance to the act of looking and being looked at

in a public space.³⁶ Whether while walking or standing at a particular location, the act involves the cruiser to wait for another man to act—or gaze—in a responsive manner. Cruising is heavily reliant on eye-contact, with a pivotal need of being aware of one's environment and those around. According to Turner:

As I interpret it, cruising is the movement of visual exchange that occurs on the streets and in other places in the city, which constitutes an act of mutual recognition amid the otherwise alienating effects of the anonymous crowd. It is a practice that exploits the fluidity and multiplicity of the modern city to its advantage.³⁷

Turner refers to these acts of recognition as the 'backward glance'—the moment where a man walks past another man, looks at him, sees something that piques his intrigue and curiously looks back to see if he is still being watched. This brings out another characteristic of cruising; it involves the a set of performed codes and signs by bodies in movement and bodies which are stationed in a particular place. In this way, the idea of 'connecting' with a gay man while cruising is more uncertain, embellished and time-consuming than the cruising provided by an app like Grindr. Turner states, "The combination of an understanding of a specific place with an understanding of a specific urban practice allows for—in fact, enables—cruising to take place."³⁸ Where cruising entails a particular knowledge of secret codes for queer performance in the city, Grindr disrupts these signifiers while adding new ones. Queer signs and symbols—often displayed in the form of articles of clothing such as handkerchiefs and bandanas—were of key importance prior to the arrival of technologies such as Grindr. For this reason, Turner's interest in urban cruising practices lies in "the uncertainty of it all—the difficulty we now have in locating them, in recognizing them, in seeing them in our own backward glance at the past."³⁹ But if this was once a difficulty, it is one that is very close to be overcome—in cities like London, at least—because of the technology that is now available.

Though Simkhai proclaims that Grindr is a tool for men to meet men, it remains an app mostly used by queer men who are unaware that the app is *not* a 'gay, cruising app'. For many of

³⁶ Eye-contact is considered a marker of one gay person's perception of another person's gay identity, and it can be enhanced by other body signals such as gestures and smiles. See James Chesebro (Ed) *Gayspeak: Gay male and lesbian communication* (1981), Ken Plummer "Symbolic Interactionism and the Forms of Homosexuality" in Steven Seidman (Ed) *Queer Theory/Sociology* (1996), Paul Baker *Polari—The Lost Language of Gay Men* (2002) and Cheryl L. Nicholas "Gaydar: Eye-gaze as identity recognition among gay men and lesbians" in *Sexuality and Culture* Vol.8 (2004).

³⁷ Turner, *Backward Glances*, 9.

³⁸ Turner, *Backward Glances*, 52.

³⁹ Turner, *Backward Glances*, 8.

these users, homosexuality is the norm, and anyone who appears on their grid is stamped with a preconceived idea of sexual orientation. On Grindr, each user is boxed into the category of 'gay' or 'bisexual' due to association. Erving Goffman, in his book *Stigma: Notes on the Management of Spoiled Identity* (1963), discusses 'stigmatised' identities by association.

Goffman's definition of stigmatised identity is wide, ranging from a person with a physical deformity to someone with a stammer, but it is certainly one which can be grouped to subjective or embodied difference. He states, "The issue is that in certain circumstances, the social identity of those an individual is with can be used as a source of information concerning his own social identity, the assumption being that he is what the others are."⁴⁰ Difference on Grindr is reverted—those who are not queer are seen as different. As a spatial phenomenon, this differs to the queer or gay zones in the city, where heterosexual men and women who visit a gay club, for instance, are not necessarily labeled as according to the identity of those around them. However, whenever someone turns on Grindr, the users displayed on the grid automatically challenge and reverse heteronormativity in a way that a gay club cannot—in turn, they become marked, or 'stigmatised'.

-Does using Grindr make you feel more connected to the city?

G1G3: *Yeah. We're told that 10% of the population is gay, probably higher in London. It's assumed that most people are straight, so straight people have an assumption that they can flirt with someone of the opposite gender; and there's a possibility of talking in a flirtatious way. I think, for gay men, it's harder to do that in public, in this coffee shop, for example. I can't just walk up to him, sit next to him and start to flirt, because the likelihood is that he's straight. So I think Grindr provides gay people in any location that same opportunity, in a different way.*

Why do you use Grindr?

G0G2: *[...] It's an easy way to talk to people. Everyone's there for a reason, and there's nothing wrong with saying 'hi' to somebody. While if you're on the street, you don't know who's gay and who isn't gay. It's always awkward saying 'hi' to somebody.*

In effect, Grindr helps identify—and at times misidentify—other queer men without the awkwardness associated to verbal affirmation.⁴¹ Both G1G3 and G0G2, in the above narration, are

⁴⁰ Goffman, Erving. *Stigma: Notes on the Management of Spoiled Identity*. Englewood Cliffs, N.J.: Prentice-Hall, 1963. 64.

⁴¹ Sutter, John D.. "CNN." *With new GPS dating apps, it's love the one you're near.* 6 Aug 2010. Web. 23 Jul 2012. <<http://edition.cnn.com/2010/TECH/innovation/08/06/gps.dating.apps/>

speaking about Grindr being a solution to the difficulties in interpreting confusing markers of sexual orientation and identity in London. The differences in cruising and in Grindr-use are not meant to despatialise the former but rather to provide clarity that both practices are related, but should not be equated. If anything, the spatiality of Grindr—more than the sexualised aspect of it—is what links the two together. Cruising is a geo-localised practice, as is Grindr. The strategic aspect of communicating with other men on Grindr does not rely on wearing a particular a bandana or standing on front of a storefront window, like in past cruising practices. Precisely because there are many other men being displayed, the strategy of being a valued commodity lies in the digital portrayal of the self. The glance is unidirectional on Grindr; you can look at a guy on the grid, but it would be impossible to lock eyes with them in the way that Turner's backward glances suggest. Therefore, on Grindr, the importance of the visual, as a consumable product and as an advertisement, is key.

Body/Screen

According to Mowlabocus, being seen in gay spaces plays an important role within the formation of a gay identity.⁴² Previously, queer spaces were often hidden from plain sight—secrets of this particular subculture. While the spaces provided a cloak to shield queer men from being found out, the interior space was—and still is—designed to showcase the male body and be looked at. Betsky states, “These interiors facilitate social relations within the group by using mirrors and stages to allow the inhabitant to display himself or herself, but also throw together queer people in social relations that do not directly rely on sexual acts.”⁴³ Now, online spaces are appropriating these spatial and architectural tactics; like items on a shop’s shelves, Grindr Guys are carefully arranged within their respective boxes, displayed neatly.

Visibility in digital spaces has to do with self-surveillance and introspection, in order to create a virtual identity to be displayed on the digital forum. The self becomes fragmented and reconstructed into bits and data, making each user the architect and designer of his virtual persona. Creating a profile in any social network, as easy as it is, requires an unspoken act of self-reflection or even of fantastic imagination. As Mowlabocus argues, “To look at a profile is to see the subject *from his own position*—imagined or otherwise.” If Donna Haraway was right upon stating that the development of writing and the visual organisation of life gave way and made possible the discovery

⁴² Mowlabocus, *Gaydar Culture*, 69.

⁴³ Betsky, *Queer Space*, 143.

of individualism and introspection,⁴⁴ then technologies make vital the fragmentation of the subject through a process of introspection and digital-identity-reconstruction in online spaces. In the case of apps like Grindr, the process of surveillance and identity reconstruction is taken even further because the app has not merely to do with the user being presented as *sociable*, but as *desirable*.

-Have you ever had someone off Grindr come to your house and then had to send them back?

G1G9: Yes, once. [He laughs] *The thing is, that person wasn't very honest.*

That's the thing with this app, you can't see the person. When you meet someone [in person], you decide instantly whether you fancy them or not.

This was my first experience with Grindr; what I should have done is asked for more pictures. Facially he looked fine; I'm sorry, I don't mean to be nasty, but he was really big, and I just don't fancy that. I only saw his profile picture, and I thought, "Oh, fuck it, I'm new to this, whatever."

He lived around the corner actually.

Opening up Grindr provides a constant flow of images ranging from chiseled faces to suggestive torsos. Self-assessment plays a crucial role in the way that users construct a body image of themselves. Mowlabocus states, "Whether cruising for sex or maintaining and updating his profile, the gay man is continually involved in a process of surveying, regulating and controlling both his own identity, and those of being looked at, are intrinsic to gay male culture."⁴⁵ Mowlabocus uses the term 'cybercarnality' to describe the process of identifying the 'translation' of the gay male body into digital spaces, as well as the specific techniques of representation that are deployed by gay men themselves in this translation. Rather than being a universal theory for the construction of identity, cybercarnality is a lens through which ethnographers can look at these queer spaces by identifying two tropes: the pornographic remediation of the gay male body and the technologies of self-surveillance and corporeal regulation.⁴⁶ Through Grindr, the gay male body is exposed in a grid of scores of men, each contesting in a survival-of-the-fittest. The primary and most important factor in

⁴⁴ Haraway, Donna. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century" in *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991.

⁴⁵ Mowlabocus, *Gaydar Culture*, 81.

⁴⁶ The trouble with cybercarnality is that it approaches the visual display of identity as something separate from subjectivity, not as a fluid process of becoming. Becoming an embodied subject in cyberspace is no different to the daily cognitive processes of determining how to fluidly shift through the self's many states of being/performing. The subject is capable of these various manifestations, and attempting to compartmentalise one of these states and giving it a name is useful to understand it as an isolated phenomenon but detrimental when understanding the multiplicity of a subject's nature.

the Grindr grid is a display picture, and it is precisely this condition—dictated by the software—that highlights the extreme importance of a body.

-What do you take into account when selecting your profile picture?

G1G2: *That it's a decent face shot, so that if you do meet someone, they have a clear idea of what you look like. I want it to be something that's a little bit representative of me or what I'm interested in, so my picture shows me when I was in Mexico. Hopefully that says a certain thing—that I have an awareness of the world outside Grindr; which in turn says I'm not just interested in one thing. I did have a torso shot on there before, but then I started to think that I was not getting the kind of guys that I wanted, so I changed it. I put some clothes on.*

G1G3: *Well I want to look good, but I also want to convey my personality and sense of humour a bit. Also, I want to give something to talk about. My picture has a rubber ducky with me; that's something that comes up in every conversation. "Can I play with your duck?" Stupid things like that. I'm looking angry in the picture, some people say, "What's the duck done wrong?" Something to start a conversation. It works most of the time.*

To successfully identify, look at and socialise with other guys on the Grindr grid, each user has to undergo self-surveillance and create their digital identity, deciding which picture is best or most flattering, as well as which assets are to be highlighted and what pose should be assumed. The profile picture, however, is not only intended to act as bait. It is also done so in the hopes of getting noticed by the right type of man for each individual user.⁴⁷

In the interviews above, the Guys mention wanting a picture that makes them look attractive, that represents crucial aspects of their personalities, as well as one they hope will attract certain types of men. Others interviewees say that they hope their blurbs—with song lyrics, for instance—will act as filters, either encouraging or discouraging interaction. In *New Philosophy for New Media*, Hansen's theories of affectivity are helpful in this discussion. He states, “rather than

⁴⁷ See Hugh Miller “The Presentation of Self in Electronic Life: Goffman on the Internet” presented at the Embodied Knowledge and Virtual Space Conference (1995) and Graham Brown et al. “Your Picture is Your Bait: Use and meaning of cyberspace among gay men” in *Journal of Sex Research* 42 (2005).

selecting preexistent images, the body now operates by filtering information directly, and through this process, creating images.⁴⁸ Hansen argues that the way a body filters information is by storing that which is relevant and meaningful to the viewer's particular subjectivity, and discarding that which is not. In the case of G1G2, by presenting himself as worldly and educated, he is looking to send and communicate an image while also expecting that the message is received, deconstructed and processed by the viewer. But because the process of filtering information and construction of an image is individual, not prescribed, each user will interpret the information differently, creating multiple readings of the subject they are looking at in the grid. Through a posthumanist approach, technology does the opposite of making the body irrelevant: it recognises imperfectability and the disunity of the human subject—one which is able to understand things from various, disparate perspectives—while also acknowledging the body as the centre for the filtering of information.

Biographies

While there are some users who want to provide an accurate representation of themselves, others choose to maintain certain anonymity, whether for privacy or deception. In fact, it is common for Grindr users to not post a picture of their face, this is especially the case in cities or countries where homosexuality is taboo or illegal. In relation to stigma, identity and self-disclosure, Goffman writes:

The stigma and the effort to conceal it or remedy it become 'fixed' as part of personal identity. Hence our increased willingness to chance improper behaviour when wearing a mask, or when away from home; hence the willingness of some to publish revelatory material anonymously, or to make a public appearance before a small private audience, the assumption being that the disclosure will not be connected to them personally by the public at large.⁴⁹

The idea of personal disclosure varies on Grindr from user to user, and it is important to note here that there are two components that make up the Grindr embodiment: one composed of

⁴⁸ Hansen, Mark B.N. *New Philosophy for New Media*. First MIT Paperback Edition. Cambridge, Massachusetts: The MIT Press, 2006. 10.

⁴⁹ Goffman, *Stigma*, 84.

a profile (picture and statistics) and the other made up of an active voice that speaks. Degrees of personal disclosure can range from not showing one's face, not revealing one's name or choosing to modify or recraft any other marker of identity, including one's voice.⁵⁰ Recrafting identities is referred to as 'misrepresentations' by Goffman. Of these, he defines two kinds: social and personal: "an upper middle class businessman who takes off for a lost weekend by 'dressing down' and going to a cheap summer resort misrepresents himself in the first way; when he registers in a motel as Mr. Smith he misrepresents himself in the second way."⁵¹ On Grindr, identity recrafting can be a misrepresentation of the self, for instance by using a Photoshopped picture or using an older image that makes the app-user look younger. These are used to deceive the spectator into assuming a false reality. But the recrafting of one's identity can also be one that is empowering, for instance choosing what part of the body to display or how much to hide. By framing the self in a specific, edited manner, the user attempts to control their identity and the messages it sends out, in a way that is not possible to do in person.

-What do you take into account when selecting your profile picture?

G0G7: *I would prefer mine not to give entirely the way I look. My eyes are closed in the photo. I kind of like to play with it. You can approximately see me, but you can't. This is intentional, for privacy.*

With G0G7, the conscious choice to not show his eyes is intended to protect his facial identity from being entirely exposed. It is not a choice rooted in being 'closeted' or one of not wanting to be seen on Grindr; it is a decision aimed at controlling how much of his identity he wants to be available to a group of people whom he does not know, but yet have access to him without him knowing. Hiding his eyes is an attempt to maintain a degree of control. Goffman states, "It also seems that in order to handle his personal identity it will be necessary for the individual to know to whom he owes much information and to whom he owes very little—even though in all cases he may be obliged to refrain from telling an 'outright' lie."⁵² Indeed G0G7 is not lying about his eye colour or maintaining them a mystery to hide a deformity. Essentially, he has no reason to fear being judged or stigmatised for his eyes, but his decision mirrors his understanding of the level of information the Grindr audience *needs* to know about him, raising the issue of

⁵⁰ Subversion of identity traits will be discussed farther along in the section.

⁵¹ Goffman, *Stigma*, 82.

⁵² Goffman, *Stigma*, 83.

privacy on the app. For a user who wants to maintain a level of control over who he is visible to, he might choose to disclose less information than others.

-What sense of privacy, or of being in public, does the app give you?

G0G4: *No privacy. Especially when people recognise you; you feel fairly invaded, especially if they're quite near you. So if you have someone who's four metres away, it's quite invasive.*

-Has any random Grindr guy come up to you to say hello?

G0G4: *Yes. It makes me feel awkward. It's quite nice that they come to say hello, but at the same time it's a bit uncomfortable.*

G0G4's interview shows that with social networks and communication technologies there is a blurring of physical sociability versus digital sociability conventions. Both forums have subjects that perform in and through them, which in the case of Grindr leaves users unsure of how to approach each other spontaneously. Each Grindr Guy has their own assumptions of how the app is used, what it is for and how people should approach each other—both online and in physical spaces. G0G6 and G0G7's joint interview lies on the opposite end of the spectrum in relation to G0G4's notion of privacy between physical and digital space:

-What sense of privacy, or of being in public, does the app give you?

G0G6: *The only weird privacy things I've encountered is sometimes you'll get these retrospective messages where people are like, "Were you at this cafe earlier today?" It's a bit creepy.*

G0G7: *I got very annoyed a few times that the people felt more comfortable sending a message, after 10 minutes or something, and then I'm like, "If you saw me why didn't you come and say hi?" They say, "No! Because I wasn't sure!" And all that bullshit. It kind of kills romantics, and I'm kind of an old school guy. [...] I prefer them to stand up and approach me, instead of being stupid and send me a message.*

-What would you do if someone came up to you and said that they'd seen you on Grindr?

G0G8: *I wouldn't mind, but they are two separate lives, and he'd need to create the bridge between the two.*

-Do you see your Grindr identity as something independent to your persona?

G1G3: *No, I think they are connected.*

-So if someone saw you on Grindr and came over to say hello, you'd be okay with that?

G1G3: *Yeah.*

As posthuman subjects, Grindr users experience multiple states of being rather than just one, and this is evidenced through the above interviews. The connection of online and offline personas belong to one subject but whether the subject desires active compartmentalisation of these identities, it is up to them. According to Turner, "One reason the city is so accommodating for the exploration of identity is that it is a place of doubles, where the individual can be both self and other, where he can become an underground man and go unnoticed and where his secrets can remain secrets."⁵³ Goffman writes about the fluidity of subjectivity and personal histories and states, "The first point to note about biographies is that we assume that an individual can really have only one of them, this being guaranteed by the laws of physics rather than those of society."⁵⁴ The nature of cyberspace allows for a multiplicity of biographies to emerge. Whether completely fictitious or not, it is a space in which users can experiment with the flexibility of their identities and test their boundaries.

-What are you primarily using Grindr for?

G0G6: *To amuse myself. My personal Grindr profile is mocking what other people write; it's not serious. I write stupid shit that I basically see other people write, because I'm always amazed at how people craft their identities through Grindr regarding what they can fit in their 300-character blurb and how it goes along with their photo. Everyone's a caricature of themselves and it's interesting to see how they choose to distill themselves as a person, between one photo, a headline and a little blurb.*

⁵³ Turner, *Backward Glances*, 126-127.

⁵⁴ Goffman, *Stigma*, 81.

-What information does your profile give?

G0G6: *Mine is bullshit. It's mocking what other people write, so right now mine says, "Born in the Faroe Islands, raised in Patagonia and Hong Kong." It's all crap. I hate when people boast through their little blurbs, so mine is just bullshit, but no one really realises that. They think that what I've written is totally real. So I get Norwegians saying, "Can I speak to you in Norwegian? Will you understand?" They have no idea that it [the blurb] just sounds so ridiculous; to them it's real. They're taking what they see not even with a grain of salt. People don't even ask if it's true, I've never been asked that. They take it, and they believe it.*

-So do you question what you read on others' profiles?

G0G6: *Absolutely. I don't think that all the claims are false, but I definitely think that everyone's little blurb is framed in a very specific light.*

By Goffman's definition, the biography G0G9 provides on his profile is a personal misrepresentation of himself. However, G0G9 does not seek to 'misrepresent' himself for the purpose of deceiving others and gaining something from it. Instead, his fictitious blurb is a conscious act to destabilise fact/fiction constructs, through the use of parody and satire—in a manner which resonates with Braidotti's figure of the riot girls.⁵⁵ G0G9 believes that the far-fetchedness of his description should be enough in itself to raise others' suspicions. His concern lies in user's lack of questioning what they see and read on the app, and his blurb is his critique. By adopting an alternate biography and making it his own, it becomes part of his identity, not because of what it explicitly states but because it represents his opinion/perspective in the crafting of identities on the app, resonating with Goffman's statement opposing the view of a subject's singular biography:

Note that this embracing singleness of life line is in sharp contrast to the multiplicity of selves one finds in the individual in looking at him from the perspective of social role, where, if role and audience segregation are well

⁵⁵ Braidotti, Rosi. "Cyberfeminism with a Difference." *New Formations*. No. 29 (Autumn 1996): 9-25. Reprinted in: *Zones of Disturbance*. Ed. Silvia Eiblmayer.

The riot girls are a feminist group of the nineties who, through artistic practice, attempted to produce alternative forms of female subjectivity and affirmative representations of women. Braidotti describes them as being an important aspect of the contemporary relocation of culture and the struggle over representation. Using parody, the riot girls put up active resistance while 'having fun'.

managed, he can quite handily sustain different selves and can to a degree claim to be no longer something he was.⁵⁶

Performance of identity on Grindr finds many manifestations. Equally as crafted as the profile picture and the blurb, the user's active voice can also undergo a conscious shift with some users restyling their words and expressions to fit certain 'attractive' or 'desirable' qualities, such as appearing to be 'straight-acting'. Though misrepresentations and editing of the self can be easily upheld in digital spaces, they present complications if users come face-to-face. For instance, along with other qualities or ethnic backgrounds, being effeminate is often stigmatised and reprimanded, with many users writing messages in their blurbs intended to keep 'fems' away. Though at times effeminacy can be visible through physical markers in one's appearance, any effeminate man who is able to hide these traits when photographed, becomes a more desirable user by the majority. However, interaction on Grindr occurs through a set of stages, and the visual is only the first one. The second stage is the profile information, which can filter out people from attempting a conversation. The third stage is the actual conversation that emerges through the interface, and although femininity may not be visible through conversation on Grindr, it is perceptible.⁵⁷

-Do you act differently on Grindr than in person?

G0G1: *I don't act completely differently, but I think I tone certain characteristics of myself down. I am aware of the fact that there's this sort of growing trend in homosexuality—with people who use these types of apps—that there's this fear of remotely feminine people. And I think that's portrayed as an undesirable trait to have; not that I'm ashamed about it, but I'm aware of the fact that you can consciously mould certain characteristics of yourself to feed other people's wants.*

⁵⁶ Goffman, *Stigma*, 81.

⁵⁷ In "Masculinities, Performativity, and Subversion" in *Men and Masculinities* vol.8 (2005), Chris Brickell uses Butler and Goffman to discuss subversion and argue that though it is suggestive in its potential to challenge hegemonic forms of masculinity, it might be better understood as 'Frames' and 'gender schedules (following Goffman's theories). He states, "The masculine self can be understood as reflexively constructed within performances; that is, performances can construct masculinity rather than merely reflect its preexistence..." Brickell upholds that subversion is related (not reducible) to a range of effects such as repetition, proliferation, replication, parody, displacement and resignification. Performances of subversion are performed by someone in reference to others and to the social structures put in place by a particular culture.

See Erving Goffman *The Presentation of Self in Everyday Life* (1956), John Stoltenberg *Refusing to Be a Man: Essays on Sex and Justice* (1989), Judith Butler *Gender Trouble: Feminism and the subversion of identity* (1990), David Buchbinder *Performance Anxieties: Re-producing masculinity* (1998), Bob Pease *Recreating Men: Postmodern masculinity politics* (2000) and Judith Kegan Gardiner "Men, Masculinities and Feminist Theory" in Michael Kimmel et al. *Handbook on Men and Masculinities* (2004)

Using certain words while avoiding others can make a Grindr user appear to be more masculine, making this reconstructed subject more appealing to whomever he is talking to. However, the final threshold in Grindr interaction involves meeting in person; if there is a certain stigmatised quality that has been subverted through the previous thresholds, it is more difficult to hide it when meeting someone face-to-face. There exists a point of tension—in terms of these disparate voices of each user—when the digital persona overlaps with the physical one. This tension is a product of the collision between two people with two identities, one physical and one digital, as well as a result of the collision between the two spaces where these identities were produced in the first place.

-What's the least successful part of the Grindr app?

GOG1: *The first 10 seconds of meeting someone I just find painful. And on the three occasions I've met them, it's all been awful. [...] The problem with Grindr; particularly with someone who's not sort of straight-acting, is that you sort of commodify as this neutral person that's normal, easy-going or whatever; and after a while, the cracks begin to show. So in the initial 10 seconds you're trying to maintain the veneer, and then they begin to realise that you're just, like, a massive power bottom.*

Haraway claims, “Cyborgs might consider more seriously the sometimes partial, fluid aspect of sex and sexual embodiment. Gender might not be global identity after all, even if it has profound historical breadth and depth.”⁵⁸ With effeminacy considered a negative quality among an already stigmatised group, it is important to revise the value masculinity and femininity are given in queer culture. Visiting the space of Grindr often means that effeminate or ‘camp’ men must keep performing, moulding themselves to be something they are not in order to be desirable or considered attractive. This is a worrisome problem, particularly amongst a group of men born in societies where heteronormativity forces them to act according to patriarchal models of behaviour, leaving them little choice but to live ‘in the closet’. Grindr is not as liberating as it seems to be if gay men to have to keep performing under patriarchal conceptions of masculinity, when this is not necessarily a condition of all gay or queer men.

This, however, is not necessarily a problem Grindr is propagating as much as it is a tangible reflection of the current state of gay culture. Although Grindr’s interface is quite ‘masculine’ in its appearance—an attempt from its creator and designers to steer away from the glossy, flashy stereotypes of homosexuality—it is by no means an app that promotes hyper-masculinity. The men

⁵⁸ Haraway, “A Cyborg Manifesto”, 27.

who are considered attractive and desirable on Grindr are usually still slightly feminine: lean, athletic, smooth bodies, well-groomed, with soft faces. In fact, certain gay parties such as London's 'Room Service', hire photographers to take pictures of their most attractive guests, heavily airbrushing them and placing neon lights around them on Photoshop to make them look like Ken dolls or advertisements. These pictures are quite often found displayed as users' profile pictures on Grindr. On the app, the most 'attractive' men are reminiscent of the models in fashion shows and magazine advertisements. They are not ruggedly brawn, contrasting to other apps like 'Scruff', who have a different concept of what is sexually appealing and attractive: there, husky, beefy, hairy men are the canon of beauty.

Apart from this issues of stigmatisation and marginalisation, Grindr users can also be hostile in their manner of interacting. This might be because, as discussed previously, experimenting with identities and wearing masks also enables the user to act outside the structure of ethics. Because the screen protects Grindr Guys from being held physically accountable for what they say or do, Grindr is known for the harsh and at times rude environment it fosters.

-Do you get the impression your feelings are more protected by talking to guys on Grindr instead of in person?

G1G1: *No, I think that people are more likely to treat you a bit nastily if it's not in person. They treat me not very nicely online, compared to in person. People might be more direct or demanding and less polite than in person.*

-Do you think it's easier to talk to guys online than it is in person?

G0G9: *Yeah, I think so. Again, because there's less a fear of rejection and almost because you can adopt various different personalities on Grindr. I think that's quite liberating, because you can experiment with that a little bit, both sexually and socially.*

-What's the main difference between interacting with guys on Grindr and interacting with a guy in person?

G0G9: *I think you've got much less of a sense of responsibility towards the other person. It's very transactional, you don't really care about the other person. There's always a few exceptions, people you get to talk to and establish some sort of connection, but in most cases it's just purely transactional. They're not really real people, even when you meet them,*

they're not really real people, because it almost carries on from the app into real life.

Being present in an a cyber-environment such as Grindr means that users are exposed to an relatively uncontrolled environment, and although it has rules of guidance, the consequences of one's actions are virtually nonexistent. Because of this, a user can construct an identity that can at times gravitate towards being negative to other users who might be more sensitive. The detachment offered by a digital screen and the transactional exchanges contribute to an unwelcoming and hostile environment for users who—among a group of men already marked by difference—look and act different from the status quo.⁵⁹

Gamification

Mentioning that users on Grindr are “not really real people”, as G0G9 does in the previous quote, may be pointing to users seeing others on the grid as characters. The app is approached by some as a game to be played, one where the ultimate prize varies depending on what each guy’s intention is—whether it is succeeding in having sex with someone off the app or it is boosting their confidence by receiving attention or compliments. Even though Grindr’s mission is to bring guys ‘Zero Feet Away’, most of the Guys claim to having met only a small number of men in comparison to the amount of time they spend online.

Users find themselves opening the software whenever they are bored or want a break, simply to look at other guys and see if they have received any messages. The gamification of Grindr has to do with various elements of it, such as the app’s relation to urban space and the fact that users get a whole new list of men—an embodied ‘set of cards’—whenever they turn on the app in different locations. In a manner similar to pulling a lever in a casino’s slot machine, whenever a user taps on the main gridded screen and scrolls their finger downwards, the app refreshes and updates itself to reveal any new men in the area (or reconfigure the tiles depending on whether any guy moved). Grindr becomes a place-based game in the sense that where one is affects who one will be able to see—and who one is visible to as well. In this way, opening Grindr when a user has changed locations is

⁵⁹ This contests the idea of a community of users and will be discussed later in the chapter in ‘Finding Others/Digital Citizenship’.

embedded with an element of surprise, ensuring that with a wider range of men comes a wider range of possible interactions.

-Have you used Grindr in other cities?

G2G0: *I've used it in other parts of the UK, occasionally, when I'm travelling or going on conferences. I turn it on, because there's always a curiosity when you arrive somewhere else, to see what Grindr looks like when you arrive in another place, because you're aware that it has the location-specific quality. It's always interesting and fun to arrive in a small town or village and then turn it on to see what's going on. I went to a wedding in a little village in North Wales and there was nobody there on Grindr, nobody for like 20 miles. I always find that quite interesting. [...] Everyone wants a piece of you and wants to get there first.*

Rewards, on Grindr, come in different forms. There are no ranks, prizes nor ways of winning in the traditional sense, but there is indeed a sense of validation that makes it an appealing app to use—although the exact opposite is also true, as was discussed at the end of the previous section. For some, the amount of attention gathered from guys while one is online on Grindr contributes to wanting to spend time on it. The app, through its objectified portrayal of the human embodiment, not only provides satisfaction in terms of the possibility of sex for those who are cruising, but it also provides a sense of validation for those who crave attention and desirability.

-What are you primarily using Grindr for?

G0G3: *It's mainly just for attention, because before moving to London, I wasn't particularly popular; I was always criticised for the way I dressed, blah blah blah. Wales is a small-minded, traditional, conservative, rural place, so moving to London, I find I'm really popular; it's great. I just get all these compliments all the time.*

-Are there any which in which Grindr changes the way you perceive yourself?

G0G6: *I think Grindr may give positive reinforcement in things I think about myself. If I think I'm attractive, then every time I turn on the fucking application, I have like 10 new messages from different people.*

[...] I guess you are getting some type of feedback from an audience. Whether or not you're willing to admit it, it does change you to a certain extent.

-What persuaded you to use Grindr?

G0G9: *I think they designed in such a way that it's like an addictive video game. I mean, the main thing is obviously the phone is handier than going on Gaydar or Manbunt or whatever, but there is something in the way that the photo comes up and you tap on them. There's something very instinctive about it and quite addictive as well.*

The act of tapping and scrolling as means of shifting through Grindr profiles, fosters a mutual, playful interaction between body and screen. Though the pleasure of being validated and found attractive or desired takes place online, it flows on to the physical space, changing some of the Guys' perception of themselves. In *E-Topia*, Mitchell writes, "As a result, our actions in physical space are closely and unobtrusively coupled with our actions in cyberspace. We become true inhabitants of electronically mediated environments rather than mere users of computational devices."⁶⁰ In this way, mobile apps and technologies can recraft subjects' identities in a fluid manner that goes from physical to digital and from digital to physical.

Trails/Digital Residue

Further contributing to the element of gamification, Grindr users also have a particular relationship with time and being online. Like machines displaying a light when they are active, online users are marked with a small green circle on a corner of their profile, while offline users are left unmarked. Although Grindr is meant to show users who are nearby—bringing people together through spatiotemporal synchronisation on its grid—there is a quality in the software itself that provides a time lag: when a Grindr user closes the application, their profile remains visible on the grid for a certain amount of time. Depending on the grid's saturation, a user will be visible on Grindr for a minimum of one hour after they have closed the app (Grindr displays how long ago the user was

⁶⁰ Mitchell, William J. *E-topia: Urban Life, Jim-But not as we know it*. Cambridge/London: The MIT Press, 1999. 43.

online). This means that even though the user may no longer be physically present in the space, Grindr still registers them as being present in the location they were last online at. Thus, whenever a user opens and closes Grindr, they leave an imprint in space, detectable by other users' digital devices via the Grindr app—an act this research terms as 'digital residue'.

This invisible imprint makes a user's embodiment split into two: their digital embodiment is shown as present in a given space in the city, while their physical body is present elsewhere. On their website, Grindr states that Grindr users spend an average total of 54 minutes online a day—throughout various points, out of habit.⁶¹ Part of the 'addictive' nature of the app that makes users check it sporadically has to do with the digital residue. Because one's profile is visible for an hour after closing, it is possible that upon open it again there might be new messages from users who—detecting you in your absence—have made contact before the time of expiry.

Digital residue enables spatiotemporally displaced bodies to come in contact with each other, increasing the number of potential interactions. Once the volume of online Grindr users increases in the particular zone or when the 60 minutes expire, the Grindr Guy disappears from the grid. A Grindr profile can also disappear off the grid before the 60 minutes are over, when and if a user opens the app in a new location; then, Grindr will update their location automatically moving the user from the previous location to the new one, showing that the act of Grindring is as physical as it is digital.

-Have you used Grindr in other cities?

G2GO: *Quite a funny thing to do is to leave it on when you're on a train, because then as you go past places, people say 'hello', and by the end of the train journey you've got about twenty 'hellos' from various people, and they're always slightly annoyed when they realise you've been on the move.*

Mitchell talks about the impact of technology and the ability for people to have chance encounters. As was discussed in chapter one of this dissertation, he upholds that telecommunications are diminishing the frequency and potential for chance encounters, threatening citizens with the loss of public life.⁶² But by Grindr allowing temporally asynchronous subjects to find each other Mitchell's argument is annulled. On Grindr, every encounter is a chance encounter, and in this way, the richness of public life and sociability is reinterpreted and reimaged in a digital space. Synchronisation in time and place is indispensable, but with the software's feature of imprinting a user and displaying them even when they are inactive, the potential for encounters between strangers

⁶¹ "The United States of Grindr." *Grindr*. 13 July 2015. Web. 4 Sept. 2015.

⁶² Mitchell, *E-topia*, 94.

and the ability to come in contact with them is magnified to a level which would not be possible without the aid of technology.

Haraway, in *A Cyborg Manifesto*, writes that communication technologies are crucial for recrafting our bodies. "Technologies and scientific discourses can be partially understood as formalizations, i.e., as frozen moments, of the fluid social interactions constituting them, but they should also be viewed as instruments for enforcing meanings."⁶³ Indeed these residues left behind by Grindr users represent embodiments trapped in a particular moment in time, allocated to a specific place in the urban fabric. Furthermore, although this feature of leaving trails and imprints might be a tactic the company uses to give the illusion of a competitive market—like filling shelves in a shop with empty products—it has a strong link to the presence and appropriation of queer spaces in cities: according to Betsky, "Its most fundamental characteristic is its ephemerality: it is a space that appears for a moment, then is gone, only to reappear when the circumstances are right."⁶⁴ He goes on to state, "These more ephemeral apparitions serve to remind the cruiser of both their own restrictions and the bodies that find themselves lost in the urban grid."⁶⁵ On Grindr, these restrictions are mitigated, as the presence of the residue on the digital grid amplifies the possibility to be viewed and cruised. But of course this leaves Grindr users vulnerable in terms of privacy.

The ability people have to physically leave places and avoid detection is suppressed by the fact that on Grindr, their presence leaves residue. Their urban history is recorded, exposed and displayed on the interface for a significant amount of time—in a given hour, there are scores upon scores of users that might be able to see, favourite, contact or block a profile without the user ever being aware of it. Goffman raises a point related to privacy which can be applied to Grindr. He uses the example of a known (and stigmatised) ex-mental patient being recognisable on the street, even when his stigma is no longer visible or perceptible. "More importantly, perhaps, he must face the unknown-about knowing, that is, persons who can personally identify him and will know, when he does not know they know, that he is 'really' an ex-mental patient."⁶⁶ Because the gaze on Grindr is unidirectional, a user has no way of knowing when they have been seen or identified on the grid. And although the digital residue feature may be a favourable quality for some, by not being

⁶³ Haraway, "A Cyborg Manifesto", 13.

⁶⁴ Betsky, *Queer Space*, 142.

⁶⁵ Betsky, *Queer Space*, 145.

⁶⁶ Goffman, *Stigma*, 86.

synchronised in space and time to the Grindr Guy's physical embodiment, it leaves their body in a state of vulnerability.⁶⁷

The embodiments produced by Grindr's technology are inherently related to Haraway's figure of the cyborg and Braidotti's nomad. Perhaps Haraway said it most succinctly when she wrote that we are "hybrids of machine and organism; in short, we are cyborgs. [...] The cyborg is a condensed image of both imagination and material reality, the two joined centres structuring any possibility of historical transformation."⁶⁸ Not only are Grindr Guys subjects which navigate, perform and exist in the inbetweenness of the digital and the physical, the machinic and the organic, they are also subjects that exist in constant negotiation between spatial practices of the past and those of modernity. The embodiments produced are both material and imagined, physical and represented.

The residue left behind by Grindr users leave them vulnerable to be discovered by others, which is desirable for those who want to be found. This element of discoverability is not a novel consequence of modernity; it has always been the condition of the queer man to have to set out to either actively find other queer men or allow himself to be found. In his interview, G0G5 stated, "...everyone's after the same thing: everyone's lonely; they want mates. We're all different, but we are all the same." This is reminiscent of Haraway's statement, "Cyborgs [...] are wary of holism, but needy for connection..."⁶⁹ When she references the figure of the cyborg, she is referring to a subject who is politically empowered, one who exists in a hybrid state of being, negotiating in in-between, dual realities.

⁶⁷ See David Lyon *The Electronic Eye: The rise of surveillance society* (1994), Louise Barkhuus and Anind Dey "Location-Based Services for Mobile Telephony: A study of users' privacy concerns" in the Proceedings of the INTERACT 2003 9th IFIP TC13 International Conference on Human-Computer Interaction (2003), Daniel Solove *The Digital Person: Technology and privacy in the information age* (2004), Sunny Consolvo et al. "Location disclosure to social relations: Why, when, & What People Want to Share" in the Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (2005) and Anders Albrechtson "Online Social Networking as Participatory Surveillance" in *First Monday* 13 (2008).

⁶⁸ Haraway, "A Cyborg Manifesto", 2.

⁶⁹ Haraway, "A Cyborg Manifesto", 3.

Finding Others/Digital Citizenship

Through Turner's research, it becomes evident that cruising has been an important spatial practice because it appropriates spaces in the city and subverts their heteronormativity through the use of codes and symbols imparted with pre-established meanings. Mowlabocus writes that throughout history queer people send signals "whether it be through the handkerchief code, the rainbow flag, the (appropriated) pink triangle or any one of a number of other symbols, gay men have been signalling their sexualities to anyone 'in the know' for centuries."⁷⁰ The city has been crucial for the performance of queerness to unfold. But in *Backward Glances*, when Turner focuses on the past in an attempt to understand present cruising practices mediated by technologies, he states, "Although for my purposes cruising may have arisen out of the modern city, with its public spaces available for multiple uses and its anonymous multitude, it is certainly no longer a specifically urban contact."⁷¹ During the time when Turner wrote his book, the technology which was available for cruising was limited to online dating sites, mediated by a computer interface. Internet-based mobile technologies were not yet available to the public. But now, Grindr constructs new spatial relations between users and the city, enabling new ways of creating a sense of place within urban environments and allowing men to find each other more easily than ever before. In this process of finding others, a sense of collective digital citizenship conditions the way some Grindr users experience community.

-Does using Grindr make you feel more connected to the city?

GOG7: *Definitely. In terms of tourists, newcomers and even locals, it's just like you're standing in the border control, and you can actually screen people constantly. In such an active city with so many people moving around, what are the chances that you're going to see the same person twice? And Grindr kind of makes you feel familiar. When I'm home I know that the first four or five lines of pictures are all my neighbours, and I recognise them, and I become surprised when I see one of my neighbours somewhere else. It's kind of a community without really taking part of one.*

⁷⁰ Mowlabocus, *Gaydar Culture*, 93.

⁷¹ Turner, *Backward Glances*, 165.

The ability to recognise certain Grindr users—even if they are strangers—changes the relation between user and city; London, seemingly so vast, becomes compressed. Contrasting to Mitchell's claim that technology hinders social encounters, Turner remarks that “urban world defined increasingly by density of population—of people who remain essentially anonymous and who encounter others mostly as strangers—required new ways of understanding the fleeting moments of modernity.”⁷² Therefore, in agreement with Braidotti's call to define new subject positions, concepts and theories, the socio-spatial transformations brought about by technologies must encourage theorists to rethink what it means to be a citizen and a community.⁷³

There has been much written about communities and whether the Internet is indeed producing them. Theorists like Turkle argue that there is no community mediated by technology, while communications theorist Steve Jones in *Virtual Culture: Identity and Communication in Cybersociety* argue that “community relies on what I previously referred to as ‘inhabitance’, as being not just in the same place at the same time in interaction with others but as being a part of that place, as if one is a part of the landscape.”⁷⁴ Grindr is a community in the sense that it is geo-locational and is constituted by a group of users marked with difference in term of sexual orientation. Similarly, it is composed of a social unit that share preferences, needs and risks. But as was discussed in the section on ‘Gamification’, the transactional interaction, low-level of personal investment and the at times derogatory interactions that take place through the app all attest to an alternate understanding of community which does not involve the group's members necessarily working towards a common goal, sharing common values nor supporting each other. This is the case when—in the previous quote—G0G7 states he does not feel like he is partaking in a community but it has qualities of one, as do the following statements from G0G9 and G1G6.

-Do you get the impression your feelings are more protected by talking to guys on Grindr instead of in person?

G0G9: *If someone says they're not interested or doesn't reply, it's kind of like 'whatever'. In some ways that's better, but on the other hand people are much ruder than they would be in normal life—I would not answer and be just as rude as other people. If you had met them at a bar you would be slightly nicer. I suppose you could just turn your shoulder, but I think people are ruder on Grindr than in real life, but somehow that doesn't matter as much and isn't as insulting.*

⁷² Turner, *Backward Glances*, 57.

⁷³ Braidotti, Rosi. Rosie Braidotti Seminar. The Bartlett School of Architecture, UCL. Foster Court, London. 21 Mar. 2012. Seminar Response.

⁷⁴ Jones, Steve. *Virtual Culture: Identity and Communication in Cybersociety*. London: Sage Publications, 1997. 16.

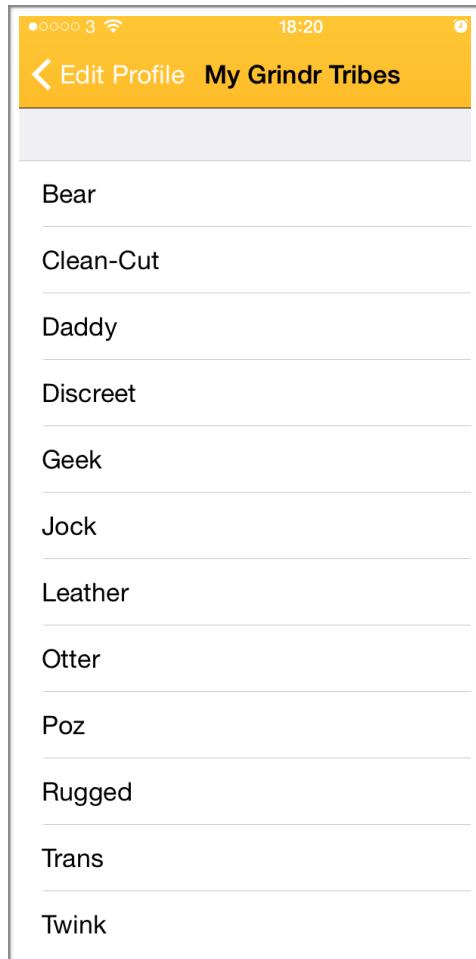
-Why do you think that is?

GOG9: *You end up doing the same thing to everyone else. I suppose because there's not a lot of face-to-face interaction. I don't expect people to be polite.*

The traditional notions of community come charged with a sense of having a collective set of ethics and a degree of responsibility for the wellbeing of its members—something that is strongly lacking on Grindr.⁷⁵ In a space where offensive behaviour is prevalent, the idea of a community is destabilised. Environments where racism, marginalisation and discrimination are common cannot use ‘community’ loosely, as a macro description of the social group (in this case Grindr), but rather it must be a term appropriated by each user individually. Perhaps in an attempt to fortify this feeling of community, Grindr has added the ‘tribe’ function, which allows users to taxonomise themselves within categories of gay culture—labels that are dependent on body type and sexual interests, not of common values.

Questioning and rethinking the definition of community becomes increasingly important, particularly in a context where a social group with common preferences and desires actively marginalise others. The ‘community’ on Grindr is often one where ethical and social values are disrupted, if not nonexistent. The connections made are commonly ephemeral, detached and transactional, and as such, it is difficult to see them as meaningful or worthy of investment. At the time this chapter is written, Grindr’s interface allows users to search for and only display members of a particular ‘tribe’ (see image on right). This creates an edited visual representation of the men on the grid and has a similar effect to visiting gay zones for niche groups (such as visiting a club for ‘bears’).

This could be loosely interpreted as a fortified feeling of communal bond, though one that is based on aesthetics and preferences rather than on substantial



⁷⁵ See Howard Rheingold in *The Virtual Community: Homesteading on the Electronic Frontier* (1993), William J. Mitchell *E-topia: Urban Life, Jim—But Not as We Know It* (1999), Peter Blundell Jones et al. *Architecture & Participation* (2005), Clay Shirky *Here Comes Everybody: How change happens when people come together* (2009), Paula Geyh *Cities, Citizens, and Technologies: Urban Life and Postmodernity* (2009), Daniel Miller *Tales From Facebook* (2011) and Sherry Turkle *Alone Together: Why we expect more from technology and less from each other* (2011).

interests. However, in actuality, what the function does is reinforce marginalisation on the app, enabling the active separation of queer men. In an already invisible space, tribes further hide any user falling outside the margins of what they each deem desirable and worthy. The original Grindr grid's settings, only able to display the nearest 100 users in order of proximity, provided an honest and inclusive mapping of bodies, in which users were forced to come in contact with each other, even if only by being visually present. Feminist theorist Sara Ahmed's ideas on how the closeness of objects and bodies play a part in the construction of identity are particularly relevant to this. She states that it is not just that bodies "are moved by the orientations they have; rather, the orientations we have toward others shape the contours of space by affecting relations of proximity and distance between bodies. Importantly, even what is kept at a distance must still be proximate enough if it is to make an impression."⁷⁶ The erasure of bodies that fall outside certain standards of beauty or desirability does nothing but actively divide the queer community by creating a digital extermination of the subject, in an already marginalised group. However, it must be noted that the community that might exist in Grindr, does so through a sense of personal, individual digital citizenship: it is through the presence of others on the grid that individuals begin to construct a feeling of belonging and of acceptance.⁷⁷

-What's the most successful part of Grindr?

GOG3: *I would say that the most successful part of it—especially in London—is when I look at the closest boy to me, he'll be a few hundred metres, and in Wales [the closest guy] will be like 11 kilometres [away]. So I would say that sense of community, that sense of belonging [is the most successful part of Grindr]. Before I moved to London, I felt 'gay' was something odd, unacceptable, and I think Grindr's really helping me to come to terms with my sexuality. Although it's not very community-orientated, the most successful part of it is feeling there's gay men out there, I'm not alone, and that I'm now in an urban, liberal environment. I do feel like I can message people without being scared of rejection or feeling rejected, even when I am getting rejected. Someone did block me*

⁷⁶ Ahmed, Sara. *Queer Phenomenology: Orientations, objects, others*. Durham & London: Duke University Press, 2006. 2-3.

⁷⁷ See Mary L. Gray *Out in the Country: Youth, Media, and Queer Visibility in Rural America* (2009), Sharif Mowlabocus *Gaydar Culture- Gay Men, Technology and Embodiment in the Digital Age* (2010) and Courtney Blackwell and Jeremy Birnholtz "Seeing and Being Seen: Co-situation and impression formation using Grindr, a location-aware gay dating app" in *New Media & Society* Vol. 17 (2015).

the other day, but it didn't feel so bad as I think it would have felt like at a bar, if someone had turned their back on me.

G1G2: *It's always so much work to actually meet people. The most successful part of it is that to me, it's still amazing that you can have access to all these people on a proximity basis. If you actually think how much technology has changed it's just incomprehensible really. I could step out of Euston station, and there's a screen full of gay men within 500 metres, you know? If I think back to when I was a teenager living in a village, thinking, "Oh my God, I am actually the only gay man in the world"... how far it's come in not that long. It's been maybe 10 years since I left home? So I think that's the thing that surprises me and I enjoy, really.*

Cities offer the possibility of escaping narrow-minded forms of community, while also multiplying and extending new meanings to them. As literary theorist Paula Geyh states, it is in cities in which citizens are able to find "among the immense diversity of urban inhabitants, new communities of those who are one's multiple affinities."⁷⁸ These accounts attest to how Grindr enables the construction of identities, doing so through the presence of a 'community', not as singular bodies in a digital space. A strong desire for connection and sociability is evidenced on Grindr.

Because the introduction of Grindr in queer culture changed *where* men meet, it also changes *how* they meet. Through Grindr it is evident that men have appropriated a tool to satisfy a desire for connection with others marked by difference—in terms of sexual orientation—redefining the urban act of cruising. The creation of the new forms of localised and spatial interpersonal ties, mediated through technology, attest to the need to understand them. They must be carefully perused and not be discarded because of their seemingly ephemeral nature. In this way, existing ideas of cultural community are contested through apps like Grindr and call for new understandings of them in a more cosmopolitan sense.

⁷⁸ Geyh, Paula. *Cities, Citizens, and Technologies: Urban Life and Postmodernity*. New York & London: Routledge, 2009. 182.

Conclusion

By focusing on a particular piece of technology and studying how Grindr is constructing new embodiments, ‘Scrolling/Strolling’ rethinks subjectivity and identity and their relation to space. Grindr is designed to use a person’s location to display them on a digital grid of users who want to connect with each other, and the way it performs is representative of cruising practices in cities, particularly by subverting the normative codings of urban spaces and providing an invisible space for queer men to perform their identities in. Through proximity in physical space, Grindr brings men together even closer on its grid which, for a software that aims to liberate men, is curiously rigid. Perhaps it is because of this formal rigidity that difference is subverted and the queer becomes the norm on Grindr. Ahmed writes, “Spaces and bodies become straight as an effort of repetition.”⁷⁹ As each profile is repeated next to each other on the grid, a sense of equality is granted to each user, while still regulating a set of codes and symbols that make the non-heterosexual orientations not seem queer anymore. On Grindr sexual ‘deviance’ is the norm.

The diversity in replies from the 20 Grindr Guys provide rich answers, where a number of possible ethnographic observations can be made. The interviews conducted evidence that the boundaries between digital and physical have been blurred and that sociability finds itself in a state of transformation due to the very nature of the technology and the ease of which digital interaction can take place. However, even though Grindr was conceived by the designers and creators as an app to find and meet up with men who are nearby, it is evident that this same piece of technology has been appropriated differently by its users, enabling a plethora of ways in which it becomes a tool to find and connecting with others. Furthermore, the use of Grindr is heavily influenced and guided by the cultural/geographic context of its users, where they impart a set of rules of local etiquette on the app, meaning that the physical behaviour moulds the digital behaviour, and vice versa.

As a company, Grindr does not advertise itself as a cruising app or as a tool for sex, insisting that its main goal is to connect men with other men. But the correlations between Grindr’s performance/design and that of cruising are too close to be ignored. From their historic origins, cottaging and cruising involve the need to be in a specific place, on the lookout for potential partners. Being seen, while also being discreet, was indispensable, and in order to be seen by the right people, men had to go to certain locations. It was the combination of body and place that would be the identifying marker for non-heterosexual identities looking for sex in the city. It is understood that Grindr redefines this idea and digitalises it through its interface’s qualities. By placing scores of men in such close proximity to each other—and ordering them on a grid—it

⁷⁹ Ahmed, *Queer Phenomenology*, 92.

dehumanises the users and presents them as objects on a catalogue page. Through its interface, Grindr is partially responsible in increasing gay culture's reliance on the importance of a desirable physique, not on any values or substance.

The desire to be desirable, along with the curiosity to experiment with sexuality and embodiments, influences the way Grindr Guys construct a sense of self as well as how they choose to portray themselves online. This attests to how the twenty-first century subject is able to fluidly navigate through different environments and situations by a performance of different identities. Exemplifying this are those Grindr Guys, like G0G7, who made up a fictional biography for his profile as a critique towards non-skeptical approaches to the app. Also, G0G1 was particularly relevant to this when he spoke about subverting certain effeminate traits in order to be more desirable. By modifying the narrative voice, editing one's picture or pose and framing it under a certain light, inherent parts of a user's identity are hidden, but the problem arises when these begin to show through in meet-ups. One of Grindr's positive traits is inclusivity—it is not targeted for a particular type of man—but although the software is open to all, it is the Grindr users who have set up boundaries for each other that prevent fluid interaction: an already stigmatised group, has created stigmatised categories within it, often defining Asians, older and effeminate men as undesirable.

Construction of identities, on Grindr, also takes places through the presence of a 'community', not necessarily just as singular bodies in a digital space. Therefore, the desire to find others demonstrates a need for connection, as well as a way to become a subject, by performing alongside and with others—even when these others remain strangers. It is true that the objectification and commodified display of the body makes the individual come across as decorporealised and 'not real'. This, in turn, leads to question if the importance of a physical body is key in the production of a personal sense of ethics. Grindr-behaviour can become a habit that might then be performed in physical spaces, making offline relationships equally as transactional as online ones. This does not come from a place of fear or nostalgia, but rather from a position of being mindful of ethics and social responsibility.

In essence, Grindr performs in a manner that resonates with Haraway's cyborg, as it embraces "the skilful task of reconstructing the boundaries of daily life, in partial connection with others, in communication with all of our parts."⁸⁰ But 'all of our parts' includes the task of being ethical, political beings who can be critical of these technologies and their effects on processes of becoming. These processes are each different. Through them, users have found a way to evade intense feelings of awkwardness, discomfort and rejection, because even though these feelings are still agents within the app, their effects are mitigated by the decorporealised interaction that takes place behind a glass screen.

⁸⁰ Haraway, "A Cyborg Manifesto", 27.

But although Grindr removes the user to a degree and helps dilute the feeling of rejection, especially public rejection, it brings up issues of privacy particularly through the digital residue which users leave whenever they use the app. The time lag when users open and close the Grindr leaves possibilities for their profile to be traced by other guys in the area, in moments where the user has already moved elsewhere. Even though Grindr is entirely digital, it still leaves a trail—a hybrid residue that responds to the presence of a physical body and the use of technology, which is then imprinted onto space.

The built environment and the physical boundaries that may obstruct a user from being able to see other gay men around him, are removed, dematerialising the built environment and visibilising its inhabitants on the Grindr grid. Although this creates greater chances for interaction, it leaves users exposed. As Mowlabocus writes, through cottaging and cruising, “men avoid State surveillance while all the time maintaining a surveillance of each other.”⁸¹ The act of physically leaving a space is not fully synchronised with Grindr as the digital embodiment/profile is left behind for any user to see and access. Being on Grindr is a spatial practice, and as Mitchell notes, “Not only have the configurations of our bodies changed—with their now endlessly multiplied, displaced and time-shifted speech and hearing organs—but also their relationships to the city’s spaces and temporal rhythms.”⁸² Through an enhanced, posthuman experience and via the constant play of gazing, surveillance and proximity, Grindr puts the user back in urban space even if they are physically present in a private one.

Its importance on location, the displaying of the male body and the ephemerality/transient nature of the digital space tie Grindr to cruising practices in urban histories. Like cruising practices, the act of looking and gazing are of paramount importance in Grindr, as a visually-driven software. Though there are a number of potential connections between users, on Grindr, the men are too often reduced to consumable objects. In this way, the glass, digital screen becomes a storefront display where users—like previous generations who appropriated and queerised certain locations in the city—cruise by to *find* and *be* found through the urban act of strolling/scrolling.

⁸¹ Mowlabocus, *Gaydar Culture*, 82.

⁸² Mitchell, William J. *City of Bits: Space, Place, and the Infobahn*. Fourth Printing. Cambridge and London: The MIT Press, 1997. 35.

Chapter 4

Striding/Sliding

I hear a soft and cheery ‘ding’ coming from the boy’s iPhone placed on top of the restaurant table—the boy dragged me along to lunch with one of his friends. The screen lights up showing the date and time, while a rectangular box floating over the background displays, “How do you feel? Please tell us as soon as you safely can.”

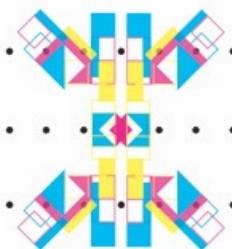
“What’s that?” the boy’s friend asks. He quickly starts fiddling around, sliding his finger left and right and replies, “It’s Mappiness.”

“What’s it do?”

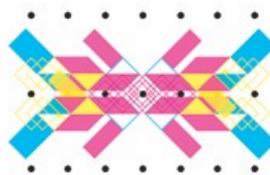
The boy explains that it’s an app used to measure one’s mood at random points of the day.

“And what’s the point?”

The boy rolls his eyes, puts his phone down and defeatedly says, “Honestly, I have no idea.”



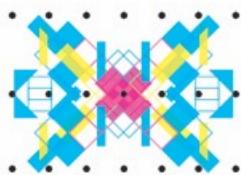
MOP1



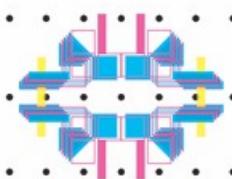
MOP2



MOP3



MOP4



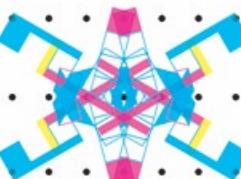
MOP5



MOP6



MOP7



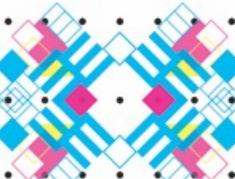
MOP8



MOP9



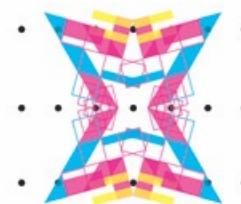
M1P0



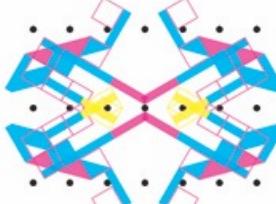
M1P1



M1P2



M1P3



M1P4

“...let there be granted to the science of pleasure what is granted to the science of energy; to imagine an ideally perfect instrument, a psychophysical machine, continually registering the height of pleasure experienced by an individual, exactly according to the verdict of consciousness, or rather diverging therefrom according to a law of errors...”

-Francis Ysidro Edgeworth , 1881

Introduction

Funded by the Economic and Social Research Council in light of the UK government’s focus on national wellbeing back in 2010 ¹—led by David Cameron—Mappiness is a digital survey designed as an iPhone app, and created by researchers at the London School of Economics. The app attempts to map how happy, relaxed and awake users are within different locations in the UK, and it gathers data from the reports of its participants—approximately 63,304 users who have contributed approximately 3.5 million responses to date.² For its participants, the app is a friendly and simple programme, but in reality Mappiness is more complex than its jovial design and appearance let on, performing tasks such as measuring noise levels surrounding the person and taking the weather into account.

Mappiness performs as an autonomous software, beeping its participants at random points of the day. Users then answer a series of questions with a combination of multiple choice answers and by sliding a button left and right on three, parallel digital scales (or bars). Their data is then uploaded and correlated with their physical location. The app fosters a sense of discipline in users, in which they embody autonomous mood-registering mechanisms, uploading their emotional states from different parts of the city when the app beeps and asks them, “How do you feel?”

In this chapter, the act of sliding the digital button on the app’s interface to attempt to give the most accurate answer possible is figuratively explored by comparing it to striding in a city, where

¹ “National Wellbeing.” GOV.UK. 17 July 2013. Web. 21 Dec. 2015.

² This cypher was revealed by Mappiness’s creator, George MacKerron, on his Twitter account in summer 2015.

each step is carefully decisive and headed towards a specified direction. The movement of the stride is intentionally rhythmic and its pace is purposely determined and assessed by the walker. In turn, through an introspective process of self-quantification—translated digitally by sliding their fingers across the interface’s scales—Mappiness users must take decisive steps in a particular direction to input and register their mood. This process of evaluating the length and distance of the stride (or slide) and its direction (left or right) allows the app to create a reading of the user’s happiness in that particular space.

Sociologist and cultural studies theorist Vincent Miller has argued, “Electronic culture promotes the individual as an unstable identity in a continuous process of multiple identity formation.”³ In agreement with this statement, the chapter aims to explore the relation between body, space and Mappiness, by focusing on interviews with 14 Mappiness Participants. The app is a purposed effort to extract data from the user, so they can input it into the interface and send it to LSE. In return, the app gives the user feedback, in the form of charts, maps and graphs, to help them assess their mood at different points of the week and in different places of the city.

In the chapter’s first section, ‘Paper Survey/Digital Survey’, Mappiness is counterposed with a brief account of survey research methodology (particularly in the UK), situating it among previous examples, such as Charles Booth’s poverty maps.⁴ Following this section, ‘How do you feel?’, begins by situating the analysis of Mappiness within the affectual framework discussed by Katherine Hayles. The section peruses through Mappiness’s basic functions and its interface, linking it to Hayles’s idea that how a person encounters a work changes how and what the work means.

‘Use and Experience’ introduces the first of the findings gathered by the interviews conducted with Mappiness users. With thousands of Mappiness users in their study, the section’s aim is to question what makes Mappiness an appealing study for people to want to volunteer. This then leads to the concept of ‘Gamification’. This subsequent section highlights the design decisions that make Mappiness a playful app differing from traditional, paper-based surveys.

The discussion centres on the app’s relation to the built environment, in ‘Spatial Awareness/Connection to Others’. As has been mentioned, Mappiness is a study which seeks to measure how the built environment affects people’s mood. However, the data generated by the researchers is inferred rather than explicit. Thus, the section seeks to expose the disconnection between the questions asked and the conclusions the researchers seem to want to generate. The section concludes by

³ Miller, Vincent. *Understanding Digital Culture*. London, California, New Delhi, Singapore: SAGE, 2011. 4.

⁴ See Charles Booth *Labour and Life of the People in London* (1891), John Stow *A Survey of London* (1908), Isadore Newman and Keith McNeil *Conducting Survey Research in the Social Sciences* (1998), Norman M. Bradburn et al. *Asking Questions: The Definitive Guide to Questionnaire Design - for Market Research, Political Polls, and Social and Health Questionnaires (Research Methods for the Social Sciences)* (2004), Robert M. Groves *Survey Methodology* (2009), Lesley Andres *Designing and Doing Survey Research* (2012) and George MacKerron and Susana Mourato “Happiness is Greater in Natural Environments” in *Global Environmental Change* 23 (2013).

discussing matters of transpatial connectivity, situating this within Rosi Braidotti's nomadic subject discourse, with a focus on how language and physical displacement offer inherent ways of becoming.⁵

'Language/Tactility' discussed the Mappiness Participants' pursuit for finding a language for assessing their mood with the app interface's limitations. It uses Mappiness's three scales—Happy, Relaxed and Awake—as the object of study, dissecting them and questioning the affectual properties of sliding a button on each scale. By giving users a limited tool for expressing a complex range of emotions, the app fluctuates between being a reductive piece of technology and a tool which empowers users to become their own mood-registering systems.

In 'Past Self/Digital Residue', the chapter focuses on matters of space, time and memory. To discuss cognitive processes of answering surveys based on memory, the section uses Robert M. Groves, Floyd J. Fowler, Mick P. Couper, James M. Lepkowski, Eleanor Singer and Roger Tourangeau's theories in their book *Survey Methodology* (2009). Mappiness creates spatiotemporal disturbances, as users introspectively revert back to past moods to attempt to make sense of the present. This process of constructing a sense of self (in this case, a self composed of a mood rather than a body) through technology, ties into new media theories, and the section contests Marshall McLuhan's theories in *Understanding Media: The extensions of man* (1964) on media's blockage of perception, by presenting Mappiness as a tool meant for self-evaluation.

'Companionship/Digital Care', the next section, elaborates on the Mappiness Participants' interviews, as they refer to Mappiness as an ephemeral, digital companion digitally 'caring' about its user's wellbeing. Particularly relevant to this is the work of Braidotti in *Transpositions*, Hayles in *My Mother Was a Computer* and Turkle in *Alone Together*.⁶ The final section, 'Digital Trust', exposes how the app provides a convergence point between the researcher and the participants, one that appears to be more confidential, as well as one that provides a space free of judgement. As such, a sense of trust begins to take shape with the app.

⁵ Language has been discussed in the first chapter of the dissertation.

⁶ The three thinkers, in their work, address the issue of maternity and motherhood through a cybernetic perspective. The section is careful to not portray Mappiness as a female entity due to simply showing 'care' Instead, it uses the figure of the mother as a tool to understand and critique the app.

Paper Survey/Digital Survey

Available for Apple's iOS only, Mappiness is a survey differing from traditional questionnaires in a variety of ways—perhaps the most evident being the contrast between physical and digital. Defined by Groves et al. in their book *Survey Methodology*, a survey is “a systematic method for gathering information from (a sample of) entities for the purposes of constructing quantitative descriptors of the attributes of the larger population of which the entities are members.”⁷ They are commonly used in the social sciences as a method to understand the way societies work to then formulate theories of behaviour. In the UK, the most well-known survey research conducted is arguably that carried out by Charles Booth, a shipping magnate who became passionately interested in the poverty and unemployment that was prevalent in 1875 London. Sociologist Lesley Andres, in her book *Designing and Doing Survey Research* (2012), asserts that Booth employed multiple methods of data collection—analyses of existing census data, qualitative topographical descriptions, detailed descriptions of people's behaviours, and their habits within the societal contexts in which they were affected. As such, Booth's methods were vast and time-consuming, naturally also incurring in costs.⁸ Nowadays however, due to time, efficiency and budget constraints, one of the most frequently used surveys is the mailed, paper survey.⁹

Paper surveys gather their responses by asking participants a several different questions, once. Such is the case of censuses, dating back to China over 4,000 years ago. According to Andres the collection of data on individuals was originally intended for reasons of taxation and military service.¹⁰ Mappiness, however, varies not only in its desired research outcome (it wants to find out how people's happiness is affected by their local environment) but also in the way in which it systematically collects its data. Rather than relying on a sample of answers to a large number of questions collected once, Mappiness asks the same, small set of questions multiple times per day, for as many days as users wish participate.

From August 2010 to February 2011, Mappiness gathered a reported 1,138,482 responses from 21,947 UK-based participants—a number that Mappiness's lead researchers, MacKerron and

⁷ Groves, Robert M., Floyd J. Fowler, Jr., Mick P. Couper, James M. Lepkowski, Eleanor Singer, and Roger Tourangeau. *Survey Methodology*. Second Edition ed. Hoboken: J. Wiley, 2004. 2.

⁸ Andres, *Designing & Doing Survey Research*, 7.

⁹ Newman, Isadore, and Keith A. McNeil. *Conducting Survey Research in the Social Sciences*. Maryland & Oxford: U of America, 1998. 25.

¹⁰ Andres, *Designing & Doing Survey Research*, 5.

Susana Mourato, believe to be the largest ever achieved by an Experience Sampling Method survey.¹¹ The immensity of these numbers, particularly being generated in a period of just six months, attests to the efficiency of the technology in terms of how quickly and easily participants can submit their responses. According to *Innovation Unit*, a website dedicated to using innovative techniques to solve social challenges:

[Mappiness] does not solve the issue of interpersonal comparisons but it does, to an important extent, make it irrelevant—by replacing the traditional research tactic of asking a lot of people the same question with one that asks the same people the same question over and over again. It does not really matter if we have not got a calibrated, baseline happiness level or a way to compare people's responses; what matters is the variation within each individual's own responses according to different inputs and internal and external factors. In short, whether your baseline happiness is a 4 or a 7, and what this 'means', is irrelevant—what matters is whether a sunny day pushes you a point higher, and if being in an area of urban deprivation drags it down.¹²

Because the amount of responses is so vast, Mappiness allows a degree of unreliable/inaccurate answers that will average themselves out. The benefit of this method is that although in theory, a paper-based survey could reach nearly every person within a country—giving data on a wide range of participants—asking participants the same question every day would be impossible. Limiting the participants to just iPhone users means that the research includes less people, but the amount of data it can generate from that selected group is paramount. Through answering these questions, people are led to become their own hedonometer—a device used to measure happiness or pleasure, coined by the economist Francis Ysidro Edgeworth in the late nineteenth century. Edgeworth is quoted in the *Journal of Economic Perspectives* (1881) stating:

[...]let there be granted to the science of pleasure what is granted to the science of energy; to imagine an ideally perfect instrument, a psychophysical machine, continually registering the height of pleasure experienced by an individual, exactly according to the verdict of consciousness, or rather diverging therefrom according to a law of errors. From moment to moment the

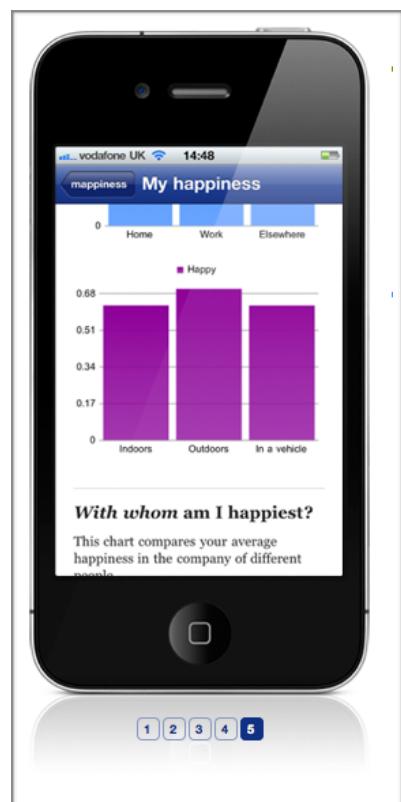
¹¹ Mackerron, George, and Susana Mourato. "Happiness Is Greater in Natural Environments" *Global Environmental Change* (2013): 994. Web. 18 July 2015. <www.elsevier.com/locate/gloenvcha>.

¹² Hampson, Martha. "Mappiness: Transforming wellbeing research one chirp at a time." *Innovation Unit*. The Innovation Unit LTD, n.d. Web. 7 Jun 2012. <<http://www.innovationunit.org/blog/201106/Mappiness-transforming-wellbeing-research-one-chirp-time>>.

hedonimeter varies; the delicate index now flickering with the flutter of the passions, now steadied by intellectual activity, low sunk whole hours in the neighbourhood of zero, or momentarily springing up towards infinity. The continually indicated height is registered by photographic or other frictionless apparatus upon a uniformly moving vertical plane ...¹³

In the 1870s, theories in economics were moving towards a neoclassical approach and being led away from classical theories of value based on labour or cost. The newer theories were interested in the mathematisation and formalisation of the field, and “the measurability of utility became a central topic.”¹⁴ It was through this idea of measuring utility that Edgeworth developed his idea for the hedonometer, stating that utility could be measurable and that the hedonometer could be made possible by new developments in physio-psychology—which he later developed as a device that took pleasure into account. However, by the 1930s, attempts to find ways to measure utility, taking happiness into consideration as well, were abandoned and were deemed as being outside the field of economics.

Happiness perhaps best relates to Edgeworth’s hedonometer through its unique relationship between technology, participant and built environment, providing a continuous flux of information sent back and forth between the three, unlike traditional, paper surveys. In return for their participation, the app gives the user feedback, in the form of charts, maps, and graphs (see image on right), to help them assess their mood at different points of the week and in different places of the city. Presently, what the built environment gets out of the research still remains unknown, as the data that is produced can be helpful in some ways but seems to be very general, lacking spatial criticality. While the data being produced by Mappiness is still questionable, particularly in terms of its end goal—whether it be for helping determine public policy or for helping create advances within designing and planning of the built environment—the method for extracting it is an effort worthy of attention.



¹³ "Meters." *Mappiness*. LSE, n.d. Web. 7 Jun 2012. <<http://www.Mappiness.org.uk/>>.

¹⁴ Colander, David. "Edgeworth's Hedonometer and the Quest to Measure Utility." *Journal of Economic Perspectives*. 21.2 (2007): 215-225. Web. 21 Sep. 2012. <<http://cat2.middlebury.edu/econ/repec/mdl/ancoec/0723.pdf>>.

'How do you feel?'

In her book, *My Mother Was a Computer*, Hayles addresses differences between text printed on a paper versus text displayed on a digital screen, which is particularly relevant amidst the discussion of the affectual properties of a digital survey, in relation to a paper one. Hayles's analysis goes deeper than stating the obvious differences between the physical properties of each; she explores the experiential qualities of each medium and questions how the reader navigates through the texts, perceives them and constructs an understanding of them. She writes:

A moment's thought suffices to show that changing the navigational apparatus of a work changes the work. Translating the words on a scroll into a codex book, for example, radically alters how a reader encounters the work; by changing *how* the work means, such a move alters *what* it means.¹⁵

Part of Mappiness's allure in drawing participants in has to do with the ease of its technology; Hayles's example of the changing meaning of a text depending on its medium can be applied here. By changing how the survey is carried out, what it means is changed as well. Users are not experiencing an active sense of being participants in a research study, they are users engaging with an app on their phone. Hayles asks, "if slight color variations affect meaning, how much more does the reader's navigation of the complex functionalities of this site affect what the texts signify?"¹⁶ In other words, if colouring a word such as 'danger' in blue has different affective properties than colouring it in red, it follows to question how much a message can change depending on the way that it is interacted with and the manner by which it unfolds/reveals itself. In the case of Mappiness, the survey is able to alter the way users make sense of themselves, their mood and their relation/construction of space.

When a user downloads Mappiness and uses it for the first time, the app requests demographic information such as age, income and marital status. In this sense Mappiness behaves similar to a receptionist at a doctor's office, where a patient's basic information needs to be registered and filed before any examination can take place. This has to do with the research aspect of the app, as each person who downloads it is not merely a user, but rather a key subject in the investigation. Instead of having participants come in to an office or laboratory, Mappiness does the opposite: users do not need to visit a particular location to have their moods assessed. That is precisely what the

¹⁵ Hayles, N. Katherine. *My Mother Was a Computer: digital and literary texts*. Chicago/London: The University of Chicago Press, 2005. 90.

¹⁶ Hayles, *My Mother Was a Computer*, 91.

methodology aims to step away from. Rather, Mappiness seeks to assess its users' mood at different moments during their day, wherever they may be, by sporadically sending a message asking, "How do you feel?"¹⁷

Upon opening Mappiness, the home screen displays a limited amount of options, which helps users become familiar with the app. The information is revealed in a sequential manner—like a slide show—where whatever the user clicks brings them to another page with limited options. The app reveals itself in parts, as the user engages with it. Contrary to paper surveys, Mappiness never visibly shows itself in its entirety. The first screen is a summary of the user's participation and interaction with the application, displaying how many times the person has participated, the percentage of how often the user has replied to the app's 'dings' and how timely these are replied to as well. Using the largest button on the lower part of the screen, users can voluntarily submit their mood by answering how they feel. However, data submitted this way might not be used for the research. What the researchers want to know is how users feel when *Mappiness* beeps users, not necessarily how they feel whenever they *voluntarily* submit the information.

On the top right corner of the home menu one can find the settings button. Each participant is able to select how many times they wish to be beeped daily, ranging from 0-5 times, and the app chooses at which hours (within the designated time span each user sets as prudent times to be contacted) to prompt the user into answering how they feel. This condition of random contact allows for a greater variety of mood-input with each beep, and it minimises polar extremes where users may engage with the app in moments when they're feeling very bored, very happy or very angry. The more times Mappiness engages with the user, the higher the chance that the user will be near the device to respond in a timely fashion.

Mappiness communicates with its users through a feature that iPhones have, called 'push notification'. These work as a pop-up similar to a text message, but free of cost. The design of Mappiness



¹⁷ In *E-topia*, Mitchell writes that wireless systems are providing an extremely effective way to reach rural inhabitants. Though his book was written at the beginning of the mainstreaming of the Internet in the mid 90s, Mitchell's observations are an every-day condition of the twenty-first century. It is this ability to reach a large audience, at random and at any location, that makes the Mappiness technology a major protagonist within the study and an indispensable tool in the generation of data pertaining to users' happiness in different parts of the city.

works in unison with the iPhone technology (such as camera, microphone, GPS, touchscreen, as well as push notifications) but also becomes part of its limitation in terms of who can participate. Without an iPhone, anyone interested in participating is excluded. Mappiness has a very precise population as its subject, and the LSE research team has revealed statistics demonstrating that the participant demographics point to a more educated population, as well as one with higher income.¹⁸

Mappiness requires its users to answer to its chime as quickly as possible, and according to MacKerron and Moruato, the app will only take into account those responses “starting within 60 min of a previously unanswered signal, and completed within a further 5 min.”¹⁹ This means that users have an hour to answer to the Mappiness chime and five minutes to complete the survey (however, the researchers do not make mention of this at any point of the download or signup process). It then proceeds to automatically upload the information on to the Mappiness server. The app, participant and technology foster a symbiotic relationship, in which all three are equally as important in the study.

Use and Experience

Where traditional research experiments sometimes give out rewards as compensation for people’s participation, Mappiness uses a different approach. According to the Mappiness website, in exchange for their participation users will get “interesting information about your own happiness, which you can download or see charted inside the app—including when, where and with whom you’re happiest” and also, “the warm glow of helping increase the sum of human knowledge.”²⁰ By tapping the ‘my happiness’ button on the main screen, users are able to view different statistics regarding their levels of happiness in different days of the week, with whom they are happiest and where they are happiest. While this may be a moderate incentive for people to participate, it seems unlikely that 63 thousand Mappiness users are participating to feel a ‘warm glow’—it might be they either want their happiness measured or find the app pleasantly entertaining.

¹⁸ Mackerron and Mourato, "Happiness Is Greater in Natural Environments", 994.

Mappiness is available for iPad as well, but tablets have practical conditions that differ to mobile phones: they are not devices which people commonly carry around easily in their pockets, making them less accessible. Similarly, there is a lower probability that iPad users have constant connection to the Internet, especially when out on the street, which means that the app has its logistical and technological limitations.

¹⁹ Mackerron and Mourato, "Happiness Is Greater in Natural Environments", 992-1000.

²⁰ "Home." *Mappiness*. LSE, n.d. Web. 7 Jun 2012. <<http://www.Mappiness.org.uk/>>.

Some of the Mappiness Participants interviewed for this study claim to use the app to purposely help the LSE research—such was the case of MOP7 who was asked if he would still have participated in an LSE study if Mappiness were a paper-based survey. He replied he would not, because it was less convenient, and also, it would not grant the satisfaction of being “part of a seemingly new type of experiment.” Other participants used it out of curiosity, some seemed to enjoy using the app as a pause during their daily routine and others used it to help *this* research—like MOP2 and MOP3, the interviewed Grindr Guys who heard about Mappiness through this research’s Call for Participants.

-Why do you use Mappiness?

MOP2: *To really help this research actually. At first it was to see what I could do for you, and when I got into it, I really believe in research developing society. I do think we have serious issues with emotions and mental health, and I think it's only going to get worse with the pressures of capitalism, globalisation and free market.*

-What prompted you to want to download it?

MOP7: *I believe I found it through Twitter; someone talking about ‘quantified self’, yeah... a way to engage on a personal, individual level. I think the word ‘feeling’ prompted me. [...] Just the idea of tracking a feeling was appealing.*

-What is the best part about the app?

MOP8: *I do appreciate the efficiency to respond, because basically it can be considered as a questionnaire, right? Questionnaires are usually a bit like—bleh. For everybody. I mean, if I see someone on the street coming towards me with a chart, I will turn away and go the other direction. So nobody likes questionnaires, but this was quite quick, and that's one of the things I appreciate—the nature of the app.*

As MOP8 describes, the act of successfully gathering people for a survey requires work and much effort by the researcher, and people are more receptive to the idea if there is a reward involved or if the researcher mentions that the survey can be completed very briefly (Mappiness’s entire survey process takes under a minute to complete). On another note, Mappiness is designed in a way that does not make its users feel like they are research participants, even though they are made expressly aware of the research nature of the app. As simple as this statement may seem, the gamified

properties of the app create an impact on the amount of users engage with it and the timespan they will want to use it for.

Gamification

Although not designed to be a game, for some, Mappiness provides a brief period of entertainment and playfulness; the recurring use of the word 'fun' surfaces throughout several of the interviews with the Mappiness Participants. Certainly the non-habitual nature of Mappiness's prompts become habitual after a period of time, and some users expressed how their intrigue and motivation dwindled after some time. Regardless of whether their use and enjoyment of Mappiness was short-lived or not, Mappiness has a way of appealing to certain Participants into trying it, even if for a short while. Contrasting to research surveys where participants are not notified of the results, Mappiness provides immediate feedback to its users so they are able to continuously view their statistics and their data. Users have instant access to the data they have input on the servers. As such, they receive a form of 'reward' for their efforts. Even though some of the Participants express that they do not see the app as a game, throughout their interviews several of them attested to a subtle yet playful relationship with the app, particularly through its interface design and cheerful chime it makes when prompting its users.

-What is your overall opinion of Mappiness?

M1PO: *I'm very happy with it, I think it's really good. I think it's quite like a cheerful layout. It's quite encouraging, but I think they could probably do a better job explaining what they're doing with their research. I think the general gist you get from it is that it's a good experiment, and it's interesting. And the fact that they give you something back by giving you your statistics is really good; if they didn't do that, then I don't think I would be as encouraged to do it, because as I said, there'd be no personal gain. When now I'm doing it, I can look at it and see where I'm happiest, etc.*

-Do you think hearing the cheerful Mappiness chime makes you want to keep participating?

M1P0: *Because it's cheerful I think that does encourage it. It sort of reminds you that it's about how happy you are, and that sort of just adds to the general mood of the app, I think.*

While not everyone is able to respond to the Mappiness chime in a timely fashion, the fact that the app's home screen displays the number of responses, the response rate percentage and the typical response time all help give the app a gamified demeanour that introduces an element of time and score. This score is not given as a rank among other participants, but rather as a personal challenge. Even though this playful, competitive aspect is not explicit, it is understood as such by the Participants, and several of them state that seeing those statistics on the very first page of the app makes them want to keep participating, even if there is no actual reward.²¹

-How timely to you respond to the Mappiness chime?

M1P3: *I'm a little bit obsessed, and I try to do it really quickly, so normally about seven minutes average.*

-Is that what it says in your statistics?

M1P3: *Yeah, seven minutes. [...] I just want to respond immediately.*

-Why's that?

M1P3: *Because it's a bit satisfying.*

-How many times a day do you answer the Mappiness chime?

M1P4: *Zero [He says jokingly]. Twice, of course. I have 100% response rate!*

-Do you ever see it as a game?

M1P0: *I do because I have a friend who uses it, so it's quite funny when both our phones will go off. In that sense, it's a bit of a game and also in*

²¹ Edward L. Deci and Richard M. Ryan's "Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions" in *Contemporary Educational Psychology* 25 (2000) calls 'intrinsic motivation' when a person does an activity for its inherent satisfactions rather than for some consequence or outcome. Looking for positive experiences extending one's capacities, intrinsically motivated people act out of fun or challenge, rather than for pressures or rewards. Also see their work in *Intrinsic Motivation and Self Determination in Human Behavior* (1973), Judy Cameron et al. "Achievement-Based Rewards and Intrinsic Motivation: A Test of Cognitive Mediators" in *Journal of Educational Psychology* 97 (2005), W. David Pierce et al. "Positive Effects of Rewards and Performance Standards on Intrinsic Motivation" in *The Psychological Record* 53 (2012) and Brian McKernan et al. "We Don't Need No Stinkin' Badges: The impact of reward features and feeling rewarded in educational games" in *Computers in Human Behavior* 45 (2015).

*the sense that I have been trying to get one in for every activity they list.
I'm still trying to do that.*

-Wow! I've never talked to someone who did that.

M1P0: *Yeah, no, I like completing lists. [She giggles bashfully]*

The traditional dynamics of completing surveys and the at times tedious feelings they produce for the participants is transformed through the experience of Mappiness. It requires a low degree of time-investment and provides a cheerful, simple design that invites users to participate. But not all users perceive Mappiness as being as jovial as others. Because Mappiness claims to find its strength in the fact that it gets thousands of answers for the same small set of questions, the app faces the matter of becoming monotonous and repetitive. It may be that the app's strength also works against it. If the app were able to maintain its sense of allure—its method of step-by-step disclosure—in the manner it formulated the questions, then it might be able to keep a greater amount of users involved for a longer period of time.

-What is the worst part about the app?

MOP9: *I got bored of it. I just find it repetitive after a while, because I always seem to be replying the same thing; quite quickly I just got bored.*

MOP4: *That after a certain while it got boring. Every single question, every single time.*

-If it changed the questions, do you think it would be less boring?

MOP4: *Probably, it would be more interesting.*

-When did you stop using it, or when do you think you'll stop using it?

M1P4: *I plan to stop using it after this interview.*

Although this research's interview sample is limited in terms of size, the majority of the conversations with the Participants showed that the lifespan of their use of Mappiness was limited due to monotony. The gamified allure of the app fades over time as the app fails to adapt and modify itself to encourage users to keep participating. MacKerron and Moruato, on the other hand, write “taking part in the study for long periods of time could conceivably lead to increased reflection on

states of mind, and awareness of the factors that affect these, enabling participants to act to improve their mood.”²² This statement is in conflict with the interviewees’ experiences, not only because the interaction between user and app dissolved as time progressed, but also because several of them denied doing something to actively change their mood after inputting a particularly negative reading of their mood.

-What is your overall critique of Mappiness?

MOP9: *My critique is that I didn't feel the questions got to the root of what they assumed they were trying to find out, because it didn't seem to differentiate enough between states of mind... I always ended up giving more or less the same reading.*

It might be that this brief encounter with a gamified app is what has made the Mappiness research so successful despite the fact that the very nature of the study seems to be vague. According to authors Isadore Newman and Keith McNeil in their book, *Conducting Survey Research in the Social Sciences* (1998), to ensure a proper design of a survey, each questionnaire “should be accompanied by a brief, nontechnical cover letter clearly explaining its purpose and relevance.”²³ In the case of Mappiness, this is not always clear. The researchers write a quick summary of what they are trying to find out, along with the app’s description on the Apple App Store simply stating, “Mappiness maps happiness across space in the UK. It’s part of a research project at the London School of Economics. We’d love to have you on board!”²⁴ Even after perusing through their website, the intention fails to be made evident, which is why certain participants such as M1P0 state, “I think they could probably do a better job explaining what they’re doing with their research.”

²² Mackerron and Mourato, "Happiness Is Greater in Natural Environments", 998.

²³ Newman and McNeil, *Conducting Survey Research in the Social Sciences*, 25.

²⁴ Description of Mappiness taken from the Apple App Store on 29 May 2015.

Spatial Awareness/Connection to Others

The intention of Mappiness is “to better understand how people’s feelings are affected by features of their current environment—things like air pollution, noise, and green spaces.”²⁵ However, the app never asks details about the built environment. In fact, the only time it prompts users to think about their surroundings is upon asking whether the participant is indoors or outdoors; there is no other intentional attempt to cue users to be critical or aware of the space they are inhabiting. Because of this, several of the Participants perceive a disconnection between Mappiness’s research questions and the its relationship to the built environment.

-Would you be able to say that Mappiness is a study directed towards the built environment?

MOP5: *I don't think so, because the questions they ask aren't very specific. [...] It doesn't have any questions about the environment or the space itself. It never asks you, "Do you like the set-up of this building?" or things like that. I don't really associate it with architecture.*

-What could Mappiness do, display or ask in order to make the study more related to the built environment?

M1P1: *In a way I want it to ask more questions, although I do see that would probably reduce the amount of data it got in the end. But you know, it could at least ask you [...] what you like about where you are. Is it fun, pretty, sexy? Is it noisy, quiet, dangerous, safe? It doesn't take into account any of that, and those are things that you can't deduce from looking at places. You have to have a cultural understanding of that place, you have to feel the physicality of being there. There's so much sensorially that's missing out, and it could ask you those questions. The way it's set up seems to give quite black and white conclusions.*

²⁵ "More Info." *Mappiness*. LSE, n.d. Web. 29 May 2015 . <<http://www.Mappiness.org.uk/>>.

-Do you think there's any way that Mappiness could make you feel more connected to the city?

MOP9: Well, if the questions were connected... Also, I suppose that time where it asked me to take a photo of where I was [a shopping centre that MOP9 chose not to photograph], it could have made me feel more connected. But then it's funny; I felt judged by that. Everyone puts pictures on Facebook that make them and their life look wonderful, and for Mappiness I felt I would only take a picture if it's somewhere really funky, trendy and cool. I can't take it at the Boots or wherever I happened to be.

As can be seen from the previous interview, a photograph helps some users change the way they relate to their surroundings. Some users chose not to take any pictures to not disclose where they work, raising matters of privacy. Mappiness is split between the antisocial, private nature of the anonymous research survey and between the socially connected, expressive nature of a smart phone application: while users understand that they are participating in an anonymous experiment, for many of the Participants, its antisocial, alienating quality is viewed negatively. Various times, users express that the reason why they do not feel a connection to their locations through the use of the app is because Mappiness does not foster sociability in any way, stating that to improve Mappiness they would add a social component.

-Does Mappiness make you feel more connected to the city?

MOP6: No. Perhaps if it had the interactivity where you could see what everybody else was doing, then perhaps it would.

-So seeing where other people are happiest would make you feel more connected to the city?

MOP6: Yeah, because it would be more sociable.

-What is your overall critique of Mappiness?

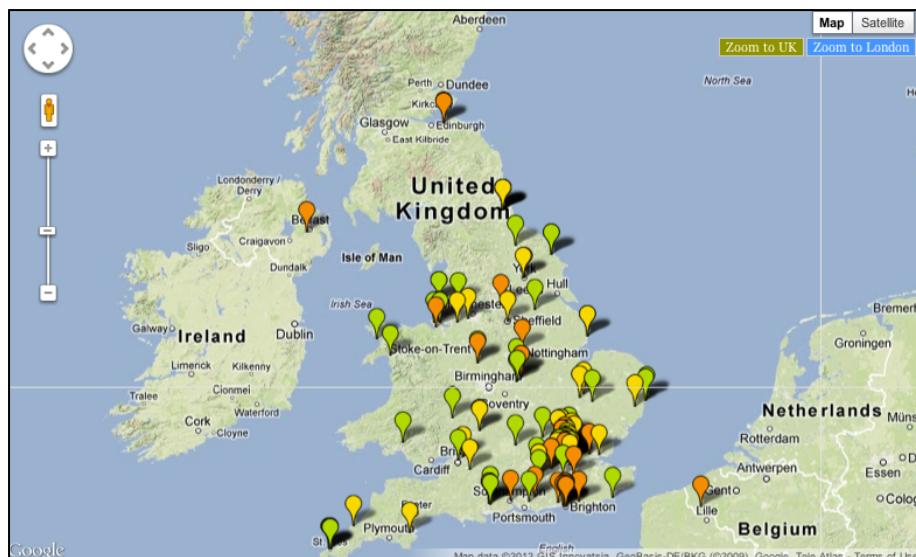
MOP6: It didn't go far enough. I want to see what other people are up to, I want to see some social interaction, I want to see photos that people uploaded.

-Does Mappiness make you feel more connected to the city?

M1PO: Um, no. I think it could make me feel more connected if—without giving out personal information—they had some sort of map you could

look at, see where you responded and where you're happiest; that kind of thing. I think like if it did that or if there was some sort of social aspect to it, I'd feel more connected. If there was any way of talking to other people on it, or having your results compared—and that'd raise an issue of personal information—but if there was some sort of social aspect that compares with other people, then that would make me feel more connected.

Several of the features that M0P6 and M1P0 describe are indeed part of Mappiness, but they are accessible via the computer, not the mobile phone. As such, the app works together with the Mappiness website. There, the data collected from the research is uploaded, processed and displayed (see image below). However, the role of the website is not made clear to Mappiness participants. It may be that the research team assumes that users will visit the Mappiness website on their own, or perhaps it is a deliberate decision so both interfaces serve different functions.²⁶ The app is used to gather the data, the computer to display each user's individual readings. The website, however, is used as the venue to display collective information from each of the thousands of participants in the experiment, while maintaining each person's anonymity. According to the Mappiness website:



We'll use it solely for our academic research. We'll apply statistical methods to the combined responses from everyone taking part. We'll use the location data to estimate what the environment was like in the places where people responded. And we'll be looking at the effect of this on people's feelings, while controlling for some other potential influences. If you're curious to see what we find, please come back

²⁶ The happiness maps that appeal to a more social—yet anonymous—nature are hidden away, discoverable only by curious people who peruse through the Mappiness website.

to this site from time to time: we'll be posting results here. We also hope to present our findings in academic journals and at conferences, and to make sure policy-makers are aware of anything important. In all cases, we'll never report any individual's responses—only information at the group level.²⁷

It is telling of the types of identities being produced by mobile technologies that subjects construct a relation to space through the photographs they take, and that these research participants still long for some form of social connectivity when it comes to anonymous research being done through digital platforms.²⁸ The National Accounts of Wellbeing organisation's website states, "It is also crucial that people feel a sense of relatedness to other people, so that in addition to the personal, internally focused elements, people's social experiences [...] form a vital aspect of wellbeing."²⁹ Perhaps it is because mobile phones are social devices or perhaps it attests to an inherent desire to feel like a part of a group, but through various interviews with the Participants it becomes clear that the feeling of belonging in physical space is closely associated with an individual's ability to relate, connect and find others around them. Mappiness Participants are a part of a research; however, they seem to long for a connection to a community.³⁰

The inability to connect with users however, creates possibilities for new connections with non-human others. Several Participants claim to having a particular relationship with the app and/or the city, contrasting with the interviewees discussions earlier. In the case of MOP7 and MOP9 especially, the two Participants in this study who live away from London, Mappiness grants trans-spatial properties of connectivity, linking them to London rather than their current cities.

-Does Mappiness make you feel more connected to the city?

MOP9: *No, not at all. That's partially to do with being in Lisbon, because I live such a different city even in terms of language. Mappiness was in English, so it was the wrong language. In some ways, it even reminded*

²⁷ "More." *Mappiness*. LSE, 7 Jun 2012. <<http://www.Mappiness.org.uk/>>.

²⁸ See Roland Barthes *Camera Lucida* (1982), Linda Rugg *Picturing Ourselves: Photography and Autobiography* (1997) and Elizabeth Edwards "Beyond the Boundary: A Consideration of the expressive in photography and anthropology" in M. Banks and H. Morphy (Eds) *Rethinking Visual Anthropology* (1997).

²⁹ "Developing a framework." *National Accounts of Wellbeing*. NEF, 2009. Web. 21 Sep 2012. <<http://www.nationalaccountsofwellbeing.org/learn/measuring/developing-framework.html>>.

³⁰ Robert Axelrod *The Evolution of Cooperation* (1984), Brian Butler "Membership Size, Communication Activity, and Sustainability: A Resource-Based Model of Online Social Structures" in *Informations Systems Research* 12 (2001), Joon Koh et al. "Encouraging Participation in Virtual Communities" in *Communications of the ACM* 50 (2007) and Manuel J. Sánchez-Franco et al. "How to Intensify the Individual's Feelings of Belonging to a Social Networking Site? Contributions from community drivers and post-adoption behaviours" in *Management Decision* 50 (2012).

me of London a little bit. It made me feel like I was almost back in London. In this particular case, it actually made me feel disconnected from the city I'm actually in; it puts me back in London—part of my mind goes back there. The very start is the language thing, it's asking you a question in English, so you're switching to the English part of your mind, rather than the Portuguese.

MOP7: *No, it made me feel more connected to London [he laughs].*

-Did you use it in Sweden, or were you living in London at that point?

MOP7: *I was in Sweden, and while traveling.*

-And it made you feel more connected to London?

MOP7: *Yeah!*

-Why was that?

MOP7: *I guess I realised it came out of London. I felt that most of the participants were there, and I felt like somehow my data would be correlating to that information whether I like it or not, so that's why I felt the connection.*

In terms of the study's need for data, Mappiness does not take into consideration inputs that are uploaded in countries outside of the UK. Though users can still participate, LSE does not take the data into account. As such, users stop becoming active research participants and become only app users. Because of the strong link between Mappiness and the UK, Participants like MOP9 and MOP7 experience an ephemeral feeling of spatial displacement, where their identities and embodiments connect to London, which is something that Mappiness Participants in London seldom felt. This indicates that Mappiness's ability to connect users to their cities is strengthened when the Participant contributes to the study while being away from the UK. The app then offers revelatory findings for the formation of individuals' spatial awareness and feeling of belonging. MOP9 in particular addresses the matter of language as a quality that links one's self to a particular location, and Braidotti's theories on nomadic subjects provide a useful framework to understand how physical displacement and languages constitute powerful ways of becoming.

Language/Tactility

In *Nomadic Subjects* Braidotti discusses how her condition of being a thinker who has lived in multiple locations informs her mode of writing—and ultimately her process of becoming subject. The nomad plays with the politics of location based on the languages they deal with. Braidotti states, “Writing is, for the polyglot, a process of undoing the illusory stability of fixed identities, bursting open the bubble of ontological security that comes from familiarity with one linguistic site.”³¹ Language, as evidenced by MOP7 and MOP9, deconstructs the fixity and awareness of the body’s position in space; it undoes the seemingly stable condition of being in a location by reconfiguring spatiotemporal relations and allowing one’s embodiment to be relocated and reassembled elsewhere. Of this Braidotti writes, “Our desires are that which evades us, in the very act of propelling us forth, leaving as the only indicator of who we are, the traces of where we have already been, that is to say, of what we have already ceased to be. Identity is a retrospective notion.”³² The nomad’s identity is characterised as one in which the subject can reconstruct itself by revisiting the places where it has already been—it is able to retrace the steps on life-map.

The figuration of the nomad differs to that of the migrant. The latter is caught in an in-between state, one that is related to missing, nostalgia and longing. As such, the past acts as a burden that lingers onto the present. MOP7 and MOP9 do not speak of their connection to London in a nostalgic manner, as a force that weighs on them in the present. Instead, their connection is rooted on their ability to navigate through their spatial, linguistic and embodied biographies, creating references that link past and present together. Braidotti upholds that “The nomadic style is about transitions and passages without predetermined destinations or lost homelands.”³³ The fluidity of navigating through multiple and temporally dissimilar embodiments—with their particular situated positions—attest to the nomad’s transitory and fractured nature. The nomad does not reject the notion of borders, but rather contests the nonfixity of boundaries.³⁴

Language is not solely a force resulting from the wording of the Mappiness survey (language, in this sense, pertains to the system of communication used by a particular community or country). On Mappiness, it is vital to also analyse language as a method of human communication—in this case—with a technological, non-human; it is a method of communication which is neither graphic nor

³¹ Braidotti, Rosi. *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*. 2nd ed. New York: Columbia UP, 2011. 43.

³² Braidotti, *Nomadic Subjects*, 40.

³³ Braidotti, *Nomadic Subjects*, 60.

³⁴ Braidotti, *Nomadic Subjects*, 66.

oral. The Mappiness experience begins by a user touching the green 'How Do You Feel' button on the main screen. This brings up the 'Feelings' screen, where the user is prompted to slide their mood on a scale ranging from 'Not at all' to 'Extremely'—measuring how happy, relaxed and awake they are. The three Mappiness scales—Happy, Relaxed, Awake—do not present any numbers, but instead they display eleven dots placed at equal distances above each scale (see image on right). Seemingly, the screen and scale are designed in a way that users are able to intuitively and effortlessly assess how they feel, and even though each dot above the scaled line subtly implies a number from 0-10, Mappiness breaks away from traditional rating systems—where people are intended to select a number. Whether this system of sliding a button left and right on a scale is more precise than trying to quantify one's mood in numerical terms, it is hard to determine, but if Hayles's theories are applied here, the digital act of sliding one's mood has different affective properties than doing it numerically.



-Do you think that the tactile aspect of the scale helps you to asses your mood?

M1P2: *I think so, because if I slide too far, it has to feel right. Once I was not in a good mood, but I wasn't that bad, so I went too far on the left, and I thought, "No, this is too much." And I went back. It does help, it gives it a length.*

-Do you think it'd be more accurate if you just tapped on the screen to put the button where you want it, or do you think that sliding it is better?

M1P2: *I think the button sliding is better. I think you can give it a little more thought about where you need to stop.*

-Do you think that the tactile aspect of the scale helps you to asses your mood?

MOP6: *Yes. Because if you had a box with just numbers, I feel like that's harder to assess. Putting yourself as a number is like... it just doesn't feel actually relevant. I don't feel like there's a connection with the number.*

M1P0: *I understand what you mean, but that's never occurred to me before. Yeah, I think I feel it more when I'm going from middle down. Cause when I'm going middle down, I care more, and I'm like "Oh God, I can't be that down." That's when I really think about it, about how down am I actually about this.*

-So you care more about precision when it's a negative reading?

M1P0: *Yeah, definitely. [...] If it's a positive response, in my head, I'm sort of like, "Ah, yeah, happy." But when you're talking about it going the other way, I don't feel like that very often, so I feel like I should get it a little bit more precise. And also, for myself, to try to figure out how down I actually am or if I'm just being really stupid.*

There is an element of tactility, of being able to physically feel one's finger sliding across the screen and deciding when to stop, rather than rationalising it quantitatively and tapping a number. The absence of numerical characters within the scale also help the user to visually calibrate how they best feel their mood can be represented. For instance, in a numerical survey ranging from zero to ten the numbers '4' and '5' would be located next to each other; choosing either one is a matter of preference and even arbitrariness. However, seeing a visible scale where the dots that replace the '4' and '5' have a measured, physical distance from each other—while also allowing the user to virtually and tactually feel this separation—gives the user a sense of numerical gradation to find a 'language' to express their mood.

The manner in which people interact with their objects and surroundings plays an integral part in the construction of perception and affection. By allowing the user to actually feel the movement of placing the button at different points of the scale, tactility plays a part in how users look within themselves and translate those emotions onto the interface. This allows them to think slightly more profoundly of what language to use when assessing their emotions; the act of sliding the scale is the key movement in which emotional introspection of a physical body overlaps with digital subjectivity. It becomes important to discuss how this pursuit to find a language that represents an emotional state onto a digital interface as accurately as possible is appropriated by each Participant.

-How do you assess your mood on Mappiness?

M1P1: *It's totally instinctive but again, as I'm doing it I'm always like "Ughhh, I don't know, it's about there." I don't know how to go into myself*

and know how much on a scale. Also, I wonder if they've really looked into psychology or psychotherapy. If you go to a psychotherapist, they wouldn't say, "Tell me on a scale how happy you are." There must be more subtle ways which have been developed through the history of psychotherapy to garner people's sense of satisfaction without asking that really basic question. Like I think maybe it might say, "pick a colour." I'm not sure what they are, but there must be something out there which has been developed before, which offers a more effective way of asking the question.

However insightful a psychotherapeutic approach to registering people's moods might be, as M1P1 suggests, it would fail to prompt users to actually think about their mood on their own; Mappiness users would become more passive. Similarly, while certain Participants claim that their answers come instinctively, for others coming up with a 'language' to assess their emotions can be complicated.

-How do you assess your mood on Mappiness?

MOP3: *Do you use ebay? When you leave feedback, you've got the five buttons, so you can rate the postage from good to bad. And I always do it in the middle, unless it was particularly cheap. I always start in the middle—the middle is normal. If I'm in a good mood, it'll go up, if it's in a bad mood, it'll go down. I don't know if that make sense, but i have to start in the middle and work my way up.*

MOP6: *That was difficult, because when you're starting out, you don't really know how you feel all the time. Then you have hindsight and you're like, "Maybe I wasn't as stressed as I felt at the time." I think it would even out over time because you'd get used to the app, your moods and recognising what your mood is, so you become more balanced as you go along.*

-And how did you know when to move the button slightly more to the right or to the left?

MOP6: *I'd think think back to previous ones, and I'd think, "If I was stressed then, I'm not as I stressed out as I was back then".*

-Do you quantify your mood in terms of a number?

MOP6: *Not really. I just knew that 10 was the highest, and zero's the lowest, so I had that idea of quantity in my head, but between I didn't really think of numbers. I wouldn't say "my mood's a six."*

-So it was more visual?

MOP6: *More visual, yeah.*

-Did you ever see the scale numerically?

M1P3: *Yeah, it's 1-10 on a sliding scale. I also think that the tendency for me to see it is 1 being bad and 10 being good. If I'm in a really low mood, that's bad. That also prompted me to reflect about where I was.*

The formulation of a language and system for self-evaluation was challenging for Participants mostly in the beginning of their Mappiness experience, but over time, they learn how to rate their mood more efficiently due to familiarity with the software and with their individual, introspective rating systems. Even though the scales are purposefully left without numbers, some Participants expressed that they visualised it numerically, while others never thought of it in those terms; the same information was displayed for every user, but each user perceived a method of reading, understanding and quantifying their mood. Discussing the limitations of practicing emotional exchanges with non-human others, Turkle writes, "If you practice sharing 'feelings' with robot 'creatures,' you become accustomed to the reduced 'emotional' range that machines can offer."³⁵ This certainly can be the case of Mappiness, as a survey with a carefully designed system of measurement (the three scales). The scales can be problematic in the sense that they can be grossly reductive, reducing all the complexities of the human condition to three sliding scales that range from 0-10. However, by limiting the range of options on the interface, participants are able to formulate new ways to communicate with a non-human other.

³⁵ Turkle, Sherry. *Alone Together: Why We Expect More from Technology and Less from Each Other*. USA: Basic, 2011. 125.

Past Self/Residue

Answering the same set of question at various points of the day makes some Participants undergo a process of reflection where they compare their current mood with how they felt in the recent past, in order to assess how to input their new data. This is in line with nomadic thinking, which upholds that subjectivities are constructed through the places they have been to, as was the case with the two Participants who live in Lisbon and Sweden (M0P7 and M0P9, as previously mentioned). According to Groves et al., “When it comes to understanding question design, cognitive psychology offers principles regarding how memories are formed, how they are structured, and what devices are helpful to recall memories relevant to the answers to survey questions.”³⁶ The function of memory is applicable to the discussion of Mappiness but in a different way than Groves refers to: most surveys are retrospective and require the participant to answer questions such as ‘How many hours a week do you spend online?’ But Mappiness functions in real time, and it never asks its participants to look back on past behaviour. As can be seen in the interviews above, retrospection and memory form an important aspect of a participant’s personal language in order to assess, quantify and represent their mood. Groves et al. describe four groups of response processes when participants answer surveys: comprehension (the respondents interpret the survey’s questions), retrieval (the respondents recall the information required to answer them), judgement (respondents combine/summarise the information they recall) and reporting (respondents formulate their response and put it in the required format).³⁷

Through the interviews in this chapter one can see that Groves’ four groups can be applicable to Mappiness, with ‘reporting’ presenting the bigger challenge. Groves et al. write, “‘Reporting’ is the process of selecting and communicating an answer. It includes mapping the answer onto the question’s response options and altering the answer for consistency with prior answers, perceived acceptability, or other criteria.” But because the questions Mappiness asks can be answered so seemingly arbitrarily—and furthermore with introspective information retrieved in-the-now rather than ones based on retrospection—the Participants that were interviewed reference their past moods in order to make sense of how they feel in the present.

For instance, if a user is prompted to input their mood at noon, they may measure their mood at that time by comparing it to how they felt when Mappiness beeped them earlier that day. These users engage in a an act of playing with time, where they are referencing a ‘past self’. Mappiness is a platform for this type of reflection to have an active role, and it always works with a

³⁶ Groves, et al., *Survey Methodology*, 31.

³⁷ Groves, et al., *Survey Methodology*, 210.

clean slate, creating no references to how users felt before. Rather, it is the users themselves who, in an attempt to find their individual language to communicate their mood, look to the past to make sense of the present. In his text “Autobiographical Memory and Conceptualizations of Self”, Joseph M. Fitzgerald discusses the construct of a self narrative “as a central feature of conceptualizations of the self” (1992).³⁸ He upholds that the self may be constructed through a multitude of ways and memory provides one of these mediums.³⁹

-How do you assess your own mood?

MOP7: *Uhhh, the thought process was: one, trying to find language—how I felt, first. And then, I tried to think about how that was in relation to the words that was used, “Not at all. How do you feel? Happy? Okay well I’m not very happy.” Or “I’m quite happy.” So that was one thing, trying to find a language myself, in specific instances. But then I also would consider how I’d answered previously and remember back, and I’d say, “Okay, well that time I felt really happy, so I’m probably not that happy, so okay I’ll be a little bit lower.”*

-So it becomes a play with time?

MOP7: *Yeah. And sometimes I felt like “Ooh, shit, I shouldn’t have answered what I did a moment ago, because now I don’t have any distance to go in” [meaning he cannot slide further right on the scale anymore] [he laughs]. “Because now I feel even better than when I said I was feeling extremely happy.”*

-Does using Mappiness make you feel more conscious and aware of your location?

MIP2: *Yes. For example, when I’ve been here at home and I’ve used Mappiness, I do think, “Well, a while ago I was outside when it beeped me, and I was in a better mood.” But I could only reply once I got here. It was*

³⁸ Fitzgerald, Joseph M. "Autobiographical Memory and Conceptualizations of the Self." *Theoretical Perspectives on Autobiographical Memory*. Ed. Martin A. Conway et al. Dordrecht: Kluwer Academic, 1992.

³⁹ There is a literature of studies looking to how the past self informs the construction of wellbeing in the present, though not necessarily through technological mediation. See Ira Hyman and Jeremiah Faries “The Functions of Autobiographical Memory” in M. A. Conway et al. (Eds) *Theoretical Perspectives on Autobiographical Memory* (1992), John Campbell *Past, Space, and Self* (1994), Michael Ross and Anne E. Wilson “Autobiographical Memory and Conceptions of Self: Getting Better All the Time” in *Current Directions in Psychological Science* 12 (2003) and Young-Hoon Kim et al. “Standing in the Glory or Shadow of the Past Self: Cultures Differ in How Much the Past Self Affects Current Subjective Well-Being” in *Emotion* (2012).

actually kind of an issue of ‘what should I put’, because I was happy earlier. It’s not that I’m unhappy now, but it’s a different situation.

Answering regarding their present mood in relation to the past happens in two ways, according to the interviews. The first has to do purely with the language they use to translate their mood onto a slidable bar: Participants attempt to answer how they feel by reflecting on how they rated their past inputs on Mappiness. The second has to do with matters of spatiotemporal displacement, where Participants see that Mappiness has chimed them after some time has already passed. Users must then evaluate whether they want to answer the Mappiness survey according to how they felt back when Mappiness initially chimed them, or whether they ignore the time factor and answer in the present. Mappiness’s users experience a fragmentation of identity, one that is not visible or displayed on the interface but rather one that is directly related to a past. Time and space therefore have a strong relationship with how a user constructs an understanding of their emotional state. Though Mappiness is relatively new, Cyberfeminist and media theories provide valuable ways to describe the app and the cognitive processes which it fosters. Hayles writes:

Encountering intelligent machines from this perspective enables me to see that they are neither objects to dominate nor subjects threatening to dominate me. Rather, they are embodied entities instantiating processes that interact with the processes that I instantiate as an embodied human subject. The experience of interacting with them changes me incrementally, so the person who emerges from the encounter is not exactly the same person who began it.⁴⁰

Hayles, like other Cyberfeminist theorists, sustains the mutuality of human interactions with machines as complex processes involving continuous shifts in embodiment. These processes give way to new, emerging identities and modes of perception, taking place through computational media and altering the way users perceive themselves, each other and the built environment. Mappiness allows people to see themselves through an embodiment marked by difference, by becoming their own mood-registering systems via a tactile/visual Internet mobile app. Even though Mappiness behaves as if it were an autonomous entity, notifying the user when to input the information it wants, there is a digital/tactual conversation that happens between interface and user, one directly linked to affective processes.

Internet theorist Shawn P. Wilbur briefly touches on this interactive particularity, which is of great significance in Mappiness’s interface, when he states, “It is likely that those who become most immersed in Internet culture develop a sort of synesthesia which allows them to exercise all of the

⁴⁰ Hayles, *My Mother Was a Computer*, 243.

senses through their eyes and fingers."⁴¹ This goes alongside McLuhan's theory on autoamputation—the idea that technology and media have become neurologically attached to our bodies⁴²—and on the Narcissus myth.

McLuhan argues that, contrary to popular belief, Narcissus did not fall in love with himself upon seeing his reflection. Instead, he argues that Narcissus was unable to recognise the image on the water's surface as being his own and his nervous system—upon failing to identify the image for what it was—was cut off, closing itself off to true perception.⁴³ He writes, "It is this continuous embrace of our own technology in daily use that puts us in the Narcissus role of subliminal awareness and numbness in relation to these images of ourselves."⁴⁴ Mappiness is caught in between opposing forces of thought: while McLuhan argues that the development of writing and the visual organisation of life opened the doors for the ability to introspect, he contradictorily states that, as in the Narcissus myth, technology's effect on the body—that of autoamputation—forbids self-recognition. Consequentially it can be argued that, firstly, the function and role of Mappiness—a tool that requires its participants to actively become mood-registering mechanism—contests McLuhan's idea that media blocks self-perception. Second, the idea of technology having hierarchy over users fails to acknowledge the mutuality of the processes between bodies and technologies. The interviews conducted for this research attest to this, and the findings align themselves with the ideas developed by Hayles, advocating for an understanding that both parts constitute and shape each other. Assessing one's mood through Mappiness is indeed an embodied, situated and localised practice, one which is mediated by a physical relation to the mobile screen and by an introspective process as a sentient entity.

Due to the fluid relationship between app and body, the way users relate to Mappiness, strays from simply being perceived as a survey, to becoming something more personal and life-like. The interactive properties of the app are perceived as a form of conversation between the user and the app through a number of its software design's features: from the way that at the very beginning of the Mappiness experience the app asks 'How do you feel?', to the polite 'Thank you' at the end of the survey, the app has the potential to be seen as a 'living' entity appealing to emotional connection.

⁴¹ Wilbur, Shawn P. "An Archaeology of Cyberspaces- Virtuality, Community, Identity." *Internet Culture*. Ed. David Porter. New York and London: Routledge, 1997. 11.

⁴² McLuhan, Marshall. *Understanding Media: The extensions of man*. Oxford and New York: Routledge, 2010. 46.

⁴³ McLuhan, *Understanding Media*, 47.

⁴⁴ McLuhan, *Understanding Media*, 50.

Companionship/Digital Care

Humans react to the touch and care of other humans.⁴⁵ Coming in physical contact is commonly an expression of affection or intimacy; humans cuddle their pets, caress their partners and tickle their toddlers. Now these physical practices translate onto the way people use apps and engage with their phones—tapping, swiping, sliding; the fingertip’s relation to the digital screen has been redefined. The iPhone 5s, for instance, introduced a function where its users can place their finger on the home button to unlock their phone’s security feature. By using scanning technology, the phone grants access only upon literally recognising its owners touch.

Added on to Mappiness’s reliance on a tactile relationship with its users, the app monitors its participants’ whereabouts and pinpoints their data input onto their exact location on a map, including their homes. Along with sharing moods/emotional states—in itself a practice which is common among friends and family members, not strangers—there is a great number of personal, private information being uploaded to the Mappiness servers. A personal relationship begins to take place, as Mappiness indirectly becomes a confidant. The information shared with the app is information that at times may have been withheld if it were a person, not a machine, who was asking the same questions. In her book about virtual research methods and ethnography, Christine Hine notes that humans are more likely to reveal intimate details about themselves via computer-mediated communication, than face-to-face interaction.⁴⁶ Even though Mappiness does not explicitly ask intimate questions, it still asks personal questions that—due to their constant repetition—might be perceived as intrusive.

-What is the worst part about the app?

MOP1: *It's the unexpected and slightly intrusive little ding that it makes when you least expect it—its randomness. Maybe not being able to choose or control when it happens, and I suppose they're trying to randomise their sample by doing it quite randomly, but a lot of the time I'll just get my phone out of my pocket, when I'm rushing somewhere, because I*

⁴⁵ See M. B. Thayer “Touching With Intent: Using therapeutic touch” in *Pediatric Nursing* 16 (1990), M. Apostle-Mitchell and G. MacDonald “An Innovative Approach to Pain Management in Critical Care: Therapeutic touch” in *Official Journal of the Canadian Association of Critical Nurses* (1997), R. Davidhizar and R. Shearer “A Touch of Care” in *Nursing Management* (1998), Elizabeth Bush “The Use of Human Touch to Improve the Well-Being of Older Adults: A Holistic Nursing Intervention” in *Journal of Holistic Nursing* (2001) and A. Connor and M. Howett “A Conceptual Model of Intentional Comfort Touch” in *Journal of Holistic Nursing: Official journal of the American Holistic Nurses' Association* (2009).

⁴⁶ Hine, Christine. *Virtual Methods: Issues in Social Research on the Internet*. Oxford and New York: Berg, 2006.

think someone's texted me and then I'm like, "Ugh, it's Mappiness. Why is Mappiness asking me?" It's just intrusion, demand.

If Mappiness were personified and compared to someone constantly concerned about one's wellbeing, it might be reminiscent of a maternal figure. To contextualise this comparison, it would help to imagine what it would be like to have someone messaging two to five times each day, at random moments to ask, 'How do you feel?' Furthermore, one would have to imagine having to, on the spot, attempt to quantify how happy, relaxed and awake one feels, to then give a report on who one is with, where one is and what one is doing. If the research being conducted by LSE were conducted by individuals who call the participants instead of notifying them via the app, it would perhaps be too irritating to participate. The participants might choose to revoke their cooperation before any significant data could be extracted for the research. However, being cloaked by a digital interface and a seemingly-maternal app that serves as, both, survey and agent, the researchers are virtually undetectable and Mappiness acquires a life of its own.

-Could you describe the experience of using Mappiness?

MOP7: *The initial experience was... it seemed like this seamless connection—this seamless interaction with me; I just had it with me all the time, and I was able to track what I felt was quite objectively or quite subconsciously these prompts. It was almost like having someone on my shoulder saying, "How are you doing?"*

-Would you rather have a researcher call you every day to ask how you felt, or would you rather receive it via Mappiness's push notification?

MOP7: *I think I would prefer; for me, something connected to the device, as I feel that would be something seamlessly integrated in my life.*

-What's the difference between the two?

MOP7: *I think sending a reply by text or using the app, I feel like I started to get my own sense of continuity; I could relate very much on a personal level, on an individual level, rather than how interested I was in talking to someone that day or what my mood was. I think the investment day-to-day was so small, it actually made it integrate. Had it been someone I need it to speak to, probably the investment would have been too big.*

Through an analysis rooted on technology as a mother figure, Mappiness overlaps with feminine cyborg discourses which deal with female gender-coded portrayals of cyborgs, particularly

within cyberpunk and cinema. Hayles's theories have strong resonance with this particular mobile app, as she in *My Mother Was a Computer*, constructs an argument by carefully analysing and dissecting the complexities of Polish writer Stanislaw Lem's *The Mask*, a 1970's novel centring around a female cyborg who—while seeking her own identity and free will—attempts to break free of her maker's programmatic encoding. In a manner that mirrors Mappiness's function and encoding, Hayles writes:

Male power has the ability to act but only within the constraints imposed by female influence, a formation enacted in a different configuration within the narrator, where male power manifests itself in actions performed by the male-authored program and the consciousness that, as we shall see, continues to be constructed as female.⁴⁷

Certainly one should not reductively describe/define Mappiness as 'maternal'—and thus female—simply because of patriarchal constructions of what caring entails and of what gender is socially intended to perform the role of carer. Rather, the Cyberfeminist framework that centres around the maternity discussion provides a powerful lens to critique relationships between technologies and users, as well as the design decisions that shape their meanings. As can be understood from Hayles's quote above, Cyberfeminism has appropriated motherhood to dissect the political relations between bodies and technologies, and has done so by addressing technology and motherhood as both heroine and villain (as is the case of *Alien*'s mothership). Hayles calls for a rethinking of the role of Mother Nature, one that foregrounds the impact computer technology has as "the Motherboard of us all."⁴⁸ Here, Hayles's ideas crossover with Braidotti, as the latter emphasises how the matrix presents the maternal body as the central origin of the subject.

As was discussed in chapter one, the separation of the infant from the maternal womb constitutes the subject's first fragmentation. It is the loss of wholeness, both emotionally and bodily. Throughout the course of their life, the subject—through actions, relationships, ideas and desire—attempts to reconstruct itself in order to become whole again. In the process of seeking oneness, the subject goes through dynamic and complex states of embodiment, reworking its affects. In this way, Cyberfeminist figurations of the mother allow theorists to reimagine and break down the pre-established notions of relationships between humans and machines.

Although Mappiness seems to maternally 'care' about its users' wellbeing at first glance, it is worth looking closer to the particularities of its interface's performance to understand the complexities of the software as a carer, particularly by discussing issues of autonomy between user

⁴⁷ Hayles, *My Mother Was a Computer*, 183.

⁴⁸ Hayles, *My Mother Was a Computer*, 3.

and app. Mappiness can be perceived as a digital companion that seems to care only about how happy its user is, cheerfully greeting the participant wherever they are and no matter what they are doing. As an alternative to female-maternal, Mappiness can also be discussed as other.

-What is the best part about the app?

MOP9: *I quite enjoyed the beep. When it beeped, I thought, "Oh!" [He laughs] It was kind of a silly thing, "OH! Somebody wants to know how happy I feel!" [He giggles]*

-Do you think that the sound that they chose for the app has something to do with it perking you up? It's quite a lively chime.

MOP9: *I think so! It was a good beep sound. Partly because it's different from other apps, and it was quite of a chirpy, uplifting little beep. It felt like a friend asking, "Hi, how are you?"*

-Did it ever feel like it was your phone itself asking how you were, or did you feel it was the researcher asking you how you were?

MOP9: *Uh, I didn't think it was my phone, and I didn't really quite link it to the researchers. I wasn't thinking that there was somebody sitting in a library in London asking me these things. To me, it was almost like a little bird or a little animal or a little person. I always felt—possibly because of the sound of the noise—that it was a little bird asking me how I was. [He laughs] I was talking to animals, I was talking to birds.*

-I'm going to call you Snow White from now on.

MOP9: *[He bursts in laughter] YEAH! That's exactly it! That's exactly it, Snow White, yes..*

Speaking of Mappiness as an animal-like entity, the conversation with MOP9 attests to an anthropomorphic projection of the software's programme. Of this kind of relation, Hayles writes, "Mystifying the computer's actual operation, anthropomorphic projection creates a cultural Imaginary in which digital subjects are understood as autonomous creatures imbued with human-like motives, goals and strategies."⁴⁹ MOP9's assigning an animal equivalent to Mappiness is an indication of how mobile technologies foster new ways of understanding, relating and coexisting with technologies as well as showing how a person constructs an understanding of a computer programme. The Mappiness chime is a high-pitched ding, similar to striking a glass with a thin, metallic object; its logo is that of a map; its interface is sleek and undecorated. Mappiness is in no way anthropomorphised by

⁴⁹ Hayles, *My Mother Was a Computer*, 4.

the designers, yet the way it performs—its tendency to interrupt the user and establish some sort of non-human communication through codes, written words and symbols, as well as its seemingly caring disposition—leaves users to construct individual ‘hallucinations’—as media theorist Friedrich Kittler describes in his chapter “The Mother’s Mouth” in *Discourse Networks 1800/1900* (1990). To Kittler, one of literature’s main fascinations is its ability to inspire users to create imagined worlds, scenes, actions and characters in a vivid way; these then appear to jump off the page in a hallucinatory manner.⁵⁰

These imagined anthropomorphisations hold parallelisms between Mappiness and another digital other of the 1990s: digital pets. Mappiness works somewhat similarly, and yet oppositely, to Gigapets and Tamagotchis when they were most popular. People who owned one of these digital pets would carry them around, and when the Tamagotchi was hungry, dirty or sick, it would begin beeping—communicating to its owner that it needed their attention and care. The Tamagotchi behaved as an autonomous entity, in which it completely depended on its owner in order to survive; in turn, the Tamagotchi became perceived as something slightly more than a game; it became a digital agent who was virtually alive inside the device that contained it.⁵¹ A process of digital care for their pet therefore took place, though there were certainly times where they were left to die, just to see what would happen.

Where the Tamagotchi beeped the user to have them care for it, Mappiness does the opposite; it beeps the user to show it ‘cares’ for them/their mood, this being expressed by a sole question, ‘How do you feel?’ It is common for humans, especially children, to express care towards non-living material things, and this is evidenced by children who carry dolls in strollers or those who treat their stuffed animals as if they were actual, living pets. Braidotti theorises about digital care and expresses that there is indeed a “capacity to develop caring relationships towards inanimate, inorganic, functional, fictional and electronically interactive ‘others...’” She proceeds, “Firstly, the human ‘other’ is overestimated as a standard-bearer for ethical behaviour. There is no epistemological, affective or moral reason why one would develop ethical forms of interaction only towards human or anthropomorphic ‘others.’”⁵² Braidotti names these non-human others with the term ‘attractors’, and their function is to facilitate a two-way flux of affection between individual and society, through which users find themselves to be impacted, just as they would be with another human.

⁵⁰ Hayles, *My Mother Was a Computer*, 6.

⁵¹ The arrival of digital and robotic pets brought forth a number of theorists looking into humans caring for digital others. See Sherry Turkle *The Second Self: Computers and the Human Spirit* (1984), Peter H. Kahn Jr. et al. “I Care About Him as a Pal: Conceptions of robotic pets in online AIBO discussion forums” in Proceedings *CHI EA ’02* (2002), Judith Donath “Artificial Pets: Simple behaviors elicit complex attachments” in M. Bekoff *Encyclopedia of Animal Behavior* (2004), David Levy *Love + Sex with Robots* (2007) and Sherry Turkle *Alone Together: Why We Expect More from Technology and Less from Each Other* (2011).

⁵² Braidotti, Rosie. *Transpositions: On Nomadic Ethics*. Cambridge, UK and Malden, MA: Polity Press, 2006. 121.

Attachment, care and affectivity are all attributable to anthropomorphic others, and this sense—and according to Braidotti—all others, whether anthropomorphic or not, are equal. Arguing for a less technologically accepting view of others, Turkle's research on Tamagotchis and robots leads her to believe of these technological devices that "If they can give the appearance of aliveness and not disappoint, relational artefacts such as sociable robots open new possibilities for narcissistic experience."⁵³ Turkle upholds that the emotional attachment humans assign to machines are fantasies about mutual affection and act as replacements for 'real' relationships with humans—though in her book, *Alone Together*, Turkle makes no mention of her posture towards non-human, organic others. For her, caring for and feeling cared for by machines is an act which ultimately leads to isolation.

The ability Mappiness has to contact the user and 'ask' for information, particularly by asking questions related to emotion and wellbeing, attests to how digital culture is producing identities that are continuously shifting—identities which can create emotional bonds with non-human others. Through the app's seemingly autonomous nature, of beeping users at random points of the day to enquire on their emotional wellbeing, users at times feel a sense of digital care on behalf of the technology itself, not of the researchers. Though the Participants know that the app is not an autonomous, thinking entity, its affectional properties mould the kind of relationships they have with it, often perceiving it as a companion, as an animal other or as a living technological entity.

Turkle sees processes like these—where technology cares for a user and a user cares for it in return—as a loss of embodied social expression resulting from digital interaction. Intimacy becomes transferred into the technology rather than on human relations. Turkle writes, "The idea of sociable robots suggests that we might navigate intimacy by skirting it."⁵⁴ This might recall several of the conversations with some of the Participants, particularly ones that spoke about being lonely and Mappiness providing companionship. Although Turkle might condemn it with strong psychological bases, her theories in *Alone Together* are heavily informed by technophobic and nostalgic underpinnings. Turkle fails in seeing the value of the processes that caring and being cared for by others play as catalysts in the construction of the subject as a digital, spatial and technological entity, or to the value in rethinking traditional, patriarchal ideals of relationships and care. Turkle, instead, credits human relations as valid, making generalisations in terms of processes for caring:

[...]I am troubled by the idea of seeking intimacy with a machine that has no feelings, can have no feelings, and is really just a clever collection of 'as if' performances, behaving as if it cared, as if it understood us. Authenticity, for me, follows from the ability to put oneself in the place of another, to relate to the other because of a shared store of human experiences: we are born, have families, and

⁵³ Turkle, *Alone Together*, 56.

⁵⁴ Turkle, *Alone Together*, 10.

know loss and the reality of death. A robot, however sophisticated is patently out of this loop.⁵⁵

Following this statement, one would be forced to invalidate any kind of mutual, human interaction which lacks empathy on both parts. Secondly—like a robot—a human who was raised without a family, one who considers that they never had one or someone who has not had an experience with death, would also be left out of the loop. Arguing for a universal process of care, one which is black and white, makes Turkle miss out on the multiplicity of subjectivities, belittling the processes that constituted and continue to mould them. As Braidotti claims:

[...]technological affects are powerful mediators for affectivity and desire. Tamagotchis and Pokemons, as well as more advanced fictional figures from the twilight zone known as ‘virtual reality’, are no less likely to make a profound impact upon the affective structures of the subject than any traditional literary or cinematic character, or indeed any living human or companion species. They act as points of support for what psychoanalysis deemed as the process of ‘transference’. I have nomadically redefined them as ‘attractors’ or affective magnets that connect the self to the social, and vice versa in a complex feedback mechanism. They ultimately constitute means of affective movement, flows or fluxes that allow for projections, interaction and encounter with a network of ‘others’. In that sense, all ‘others’—anthropomorphic or not—are equal.⁵⁶

It is insensible to—in light of the vast technological changes that are moulding societal, economic, political, spatial and individual structures—condemn them and approach them by portraying them as invalid and fear-inducing (as Turkle does in her social robots discourse). The global situation engendered by technologies requires, instead, a robust understanding of the subject as a “multi-layered entity that is not unitary and still capable of ethical and political accountability.”⁵⁷ Rather than clinging to nostalgic and patriarchal divides between subject/object and organic/machinic, contemporary digital theories should critically address and be open to understanding how the blurring of these categorical divides foster new modes of experiencing space and place, as well as citizenship, community and difference. This is why Haraway and Braidotti advocate that there is no difference in the affectual processes of caring for a human and that of caring for an other—both give way to the emergence of the subject. In this way, Mappiness allows theorists and designers to think

⁵⁵ Turkle, *Alone Together*, 6.

⁵⁶ Braidotti, *Transpositions*, 121.

⁵⁷ Braidotti, *Transpositions*, 144.

differently about the way humans think, remember and understand, by being a tool that provokes self-reflection and a method of self-quantification.

Turkle's research in *Alone Together* is of a different technological focus (social robots) than this dissertation (GPS mobile apps); her theories cannot be directly applied onto Mappiness. However, they do provide a counterargument to Braidotti's ideas on digital care by presenting it as an illusory concept. It would be a misleading to argue that the Mappiness Participants actually believe that the app is alive and therefore a companion, but what can be argued is that the matter of digital care foregrounds new ways to think about how apps are impregnated with social meaning, spatial performance and emotional weight. As such, they are useful in providing data and insight as to how people relate to technology and how people experience companionship through and with their mobile devices.

-Why do you use Mappiness?

MOP5: *At first it was out of curiosity. Then using it once or twice, I found it interesting because it made me more aware of where I am. Like when you're busy and you take your lunch break, you tend to forget your surroundings, and I think it's quite nice of Mappiness. Sometimes I really want to express myself, but there's no one around.*

-What is the best part about the app?

MOP5: *I like the questions really, in terms of what you're doing, how you're feeling. It's really simple questions but sometimes I think it's just nice to check myself because sometimes in my work place—I work in a lab—I'm by myself most of the time. And even now I'm doing medicine, so everyone's busy doing their own thing. It's nice, it's like having your mom asking you, "Oh, how are you doing?"*

-When using Mappiness do you feel like a research participant?

M1P1: *Hmm, no interestingly. I don't necessarily picture in my head who these researchers are or what they're doing with my information. I think it's definitely a relationship with an app. It's like Mappiness is asking me something.*

Through these statements the matter of autonomy is challenged, as users surrender a degree of self-rule to the obey the app's call. Although they do so willingly, as a conscious decision to

become part of a study—which has autonomy in its own right—the fact that the app begins to be perceived as an entity, not as a survey, means that the forces at play between technology and user find themselves in a state of negotiation. When perused more carefully, the notion of Mappiness as a cheerful, maternal companion is subverted: Mappiness does not want to know how the user feels when *they* choose to upload their mood for themselves. Rather, *it* chooses when it wants to contact the person and ask them how they feel. The idea behind Mappiness is not for the user to activate it—Mappiness activates the user. The perception of digital care varies from traditional definitions of care in the sense that the interaction with Mappiness is brief and unidirectional. After users input the data, the app gives its thanks and ends its communication. As such, the maternal effect is actually diluted, revealing a more selfish ‘other’, only contacting the participant when it needs something from them but not the other way around.

Digital Trust

Designed and ‘controlled’ by a research team, Mappiness is not actually an autonomous entity, because there is a group of people prompting the data it collects. However, as was discussed in the previous section, its sporadic and non-face-to-face communication makes it be perceived as one. With the open nature of the Internet, particularly through social media, the subjectivities of the twenty-first century are split between those who are open to sharing personal details with a global Internet ‘community’ and those who wish to retain as much privacy as possible. Because Mappiness combines both, Internet services and academic research, matters of privacy and trust must then be discussed.

Out of the 14 Participants, 12 of them said it was easier to reveal personal information through a computer, one said it was the same (face-to-face and in person), and one said they preferred it to be face-to-face. Mappiness does not ask too many questions and always presents its answers in multiple choice form, so the data that can be uploaded has a limited, pre-determined level of detail. Aside from this, each user is completely anonymous. However everyone has a different standard for what ‘personal’ or ‘private’ means; for some, being asked if they are alone is not particularly intrusive, while for others it is. Similarly, listing ‘intimacy’ as one of the answers to “what are you doing?” means that while the app will not ask exactly what act the participant is engaging in—and ‘intimacy’ entails a number of actions—not every participant might feel comfortable disclosing this information. Some of the Participants attributed this feeling of being able to confide in

the app to the ephemeral-like nature of the app, where the data uploaded simply vanishes without a trace, leaving nothing behind.

-What sense of privacy does Mappiness give you?

M1P4: *The app itself doesn't make me feel uncomfortable about my privacy, but when it has asked me for photos outside or next to work, I didn't take pictures because I didn't want people to see where I work.*

-Is it easier to reveal personal information through a digital device than it is through face-to-face interaction?

MOP9: *Yes, definitely.*

-Why is that?

MOP9: *The questions are being asked through your phone, and your phone is a very familiar, comforting object. It's very unthreatening, so you instantly feel at home with your phone, you carry it around the whole time. Even when the app says 'thank you' at the end, it disappears, and it's gone. There's no trace of it, I have no trace of it. Whereas if I sent an email, that email would still be in my outbox, or if I had filled out a form, it'd still be on paper. I'd be more conscious of the fact that my handwriting is sitting on someone's file, whereas there's an insubstantial aspect with phones...*

-Would you rather have a researcher call you every day to ask 'How do you feel?' Or would you rather receive it via Mappiness's push notification?

MOP9: *Oh, no, via Mappiness definitely. Somebody calling me would be far too invasive, I would have to stop what I was doing, and then of course sometimes when you answer those questions, it's fine in an app, but if it were a phone call it would be more invasive. [...] Also, I think I would be more than conscious of the reaction of the person I was speaking to, to what I was saying and whether there would be any judgements in that. The advantage of the app is I didn't think there were any judgements.*

Emancipation from judgement is a recurring theme in this research. Mappiness frees the users from having to tell their private emotions to a person who is physically located in front of them

and rids them of the fear of being judged for what they say, where they are and what they do. The Mappiness Participants claim that being uninhibited by the absence of a physical researcher opens the doors for honesty, even though it should be stressed that anonymity and decorporealised interaction can easily give way to misrepresentation, among other things.

-Is it easier to reveal personal information through a digital device than it is through face-to-face interaction?

M1P3: *Definitely. I think it's so easier to fill out this quickly. It's just easier than speaking to someone. I think people are probably more truthful speaking to an app rather than speaking to a person for fear of being judged.*

-Does assessing your mood on Mappiness contribute to you becoming aware of how you truly feel?

M0P4: *Yes, because instead of having a person ask you—whereby you might be limited by social hierarchy or stigma or judgement—a phone app, you know... even though it might not be private, it's just still something you can answer as yourself.*

One then can begin to see how much people are concerned with being understood and perceived in the right light, and it is then easy to understand why Internet users craft their digital personas so carefully, though at times subconsciously. Although the Mappiness Participants do not construct a digital, tangible profile they are still involved in the creation of an online persona. This persona is an intangible, invisible one, but is instead a quantified value based on emotions and moods; it is a persona composed of numbers and algorithms—an image that is too decorporealised to be able to be visualised easily as a literal embodiment as much as it can be visualised as a graph. They are identities that aim at accuracy, at a self-knowing based on physical factors that deal with location, mediated by a digital interface. Similarly, there is no virtual space where these personas conglomerate and align; they exist solely in the database of the LSE research. Hansen's work in *New Philosophy for New Media* is relevant here as he argues for ways of constructing embodiments that rid themselves of traditional notions of what being embodied means:

[...]for if the digital image foregrounds the processual framing of data by the body, what it ultimately yields is less a framed object than an embodied, subjective experience that can only be felt. When a body acts to enframe digital information—

or, as I put it, to forge the digital image—what it frames is in effect itself: its own affectively experienced sensation of coming into contact with the digital. In this way, the act of enframing information can be said to ‘give body’ to digital data—to transform something that is unframed, disembodied and formless into concrete embodied transformation intrinsically imbued with (human) meaning.⁵⁸

As Mappiness users inscribe themselves onto the interface they begin constructing a sense of embodiment. This process is situated, introspective and fast. Nevertheless, the data that is being input the software, by means of the slideable scales and the multiple choice options that follow, are undoubtedly fragments of a subject. They are snapshots representative of a particular moment in time and a particular location in the city, with all the complexities this entails. This is why Hansen mentions that this type of embodiment—one which is in the form of processed data—is not an object but rather a feeling. In the case of Mappiness, the closest thing to a visible body, a digitally constructed embodiment are the charts itself. It is they who have the overall picture of the user, taking into consideration their mood and their position in the city. These charts (see image on right) are, through a posthuman lens, a constructed ‘body’. As Hansen notes, they are imbued with meaning. Each time a Mappiness user inputs data, they act similar to a painter working on a self-portrait, with each sliding and tapping of the finger, equating to a brush stroke. Each slide and tap are part of a process and flow of becoming.



⁵⁸ Hansen, Mark B.N. *New Philosophy for New Media*. First MIT Paperback Edition. Cambridge, Massachusetts: The MIT Press, 2006. 12.

Conclusion

Since the app's release in August 2010, LSE's research through Mappiness has collected over a million responses from thousands of participants who have downloaded the app and signed up to be participants. By notifying users at random points during the day, Mappiness hopes to be able to gather a large sample of data that will lead the researchers at LSE to understand how the built and natural environment influence people's mood. GPS technology plays a crucial role in Mappiness, as it allows the app to be able to gather a reading of the particular space while pinpointing the participant's location in the city.

The mutually shaping, codependent relationship between body, technology and place reach are evident particularly through the interview findings. It is through the triadic relationship between body, space and technology that Mappiness enables the construction of digital subjects by conditioning the user's performance as it navigates through boundaries—digital and cognitive. The app unveils itself to the user step-by-step, through a jovial interface. Only after having completed the survey and answering its different combination of questions will a user become fully familiar with it. This relates to Hayles's theories of affection as she upholds that our processes of becoming are a product of how we encounter information, how it is presented and what it means to us. The way users interact with Mappiness alters the sensory experience of being in a space and warps self-recognition by making oneself the object of study.

For many of those who download Mappiness, this process of becoming is understandably not the end goal; a discourse rooted on a situated, posthuman subject and their relation to the city is possibly not even in the minds and intentions of the app's designers and researchers. For Mappiness to be marketable, relatable and successful, it is reduced to its performance: a digital survey which takes virtually no time or effort in the participant's day. In exchange for a user's participation, Mappiness offers charts as a compensation—a means for people to be able to see their quantified selves. But through the interviews conducted for this research it was found that the charts are not as appealing as the Mappiness researchers might think; although some users value the charts, being part of a new experiment along with a curiosity for what the Mappiness experience had to offer were the more attractive factors for downloading the app. By incorporating gamified elements to its design, the app is able to keep users entertained for a period of time, but in the majority of the cases the 'fun' of the app did not last very long as it becomes monotonous and repetitive.

What the Mappiness researchers and designers are ignoring is that although a rigid structure for gathering qualitative and quantitative data is important, that is only one half of the app's complex hybridity. Technological platforms must innovate, they must diversify in order to stay relevant. Apps

and digital spaces are modified periodically to maintain dynamic, to be competent in the app market and to foster longevity in the relationship between app and user. Similarly, designers and researchers should be encouraged to test the boundaries of what they have already achieved. Complacency has the power to turn a formidable piece of technology into an unresponsive and outdated commodity.

Mappiness initially became successful due to the media coverage it got when it first came out five years ago. But with only one published paper about the findings, an inactive Twitter account and no updates to the website or to the app itself, the researchers give the impression of having created a project that runs on its own, giving nothing back to their users—not even in the form of brief updates which the website promises its participants.⁵⁹ As such, there is a sense of carelessness from Mappiness researchers, leaving its participants in the dark and with disparate impressions on what the research is looking for and what it aims to achieve. Although the technology Mappiness uses is praiseworthy due to the nearly-seamless exchange of information between body, space and interface, Mappiness is a vivid example of why it is important to not just create technologies to serve human functions, but to also invest in an understanding of the causes of the political, social and subjective effects of the apps.

Informed only with a brief, vague statement of what the project seeks to find—on, both, their website and their Apple App Store—the Participants interviewed for this dissertation expressed not knowing the app’s full capabilities. The Participants were also usually unaware that they could download their data to their phone and view where in the city they replied, therefore accessing visible imprints of their whereabouts and how they felt when they were there. This image becomes a live mood map, filled with an urban history of a user’s strides across the city and slides on their mood-registering scales. A pop up within the software’s display, indicating a brief set of quick facts to inform the user could have solved that problem. However, for an app that asks its users how they are feeling, it seems to ‘care’ very little about the way users relate to the app and about having users get the full experience.

By prompting users to upload their moods, Mappiness records their position in space at a particular moment in time, and it assigns that location a measure of happiness. The app asks the user where they are and how happy they are doing the activity they are currently doing, prompting them to take a moment to undergo a process of self-evaluation to then transfer those emotions onto the app. Though this process is brief, it still presents a scenario where people have to stop what they are doing to answer to the call of an app. Some of the Participants that were interviewed claimed that the resulting effect of the app was a feeling of connection to their city or awareness of their surrounding, suggesting that, to a degree, the app subtly enhances or alters the user’s relationship to the city.

The rigidity of the Mappiness research, comes across as stifling. For each time a user actively and recurrently inputs their mood into Mappiness—not knowing exactly what for—one can note that the of the app outweighs the goal of the research itself. Similarly, throughout the interviews it became

⁵⁹ "More Info." *Mappiness*. LSE, n.d. Web. 20 Dec 2015 . <<http://www.Mappiness.org.uk/>>.

evident that there is an ambiguous, grey area in the way in which Mappiness is relating to the built environment; it is drawing out conclusions that are a by-product of, rather than a intentional result of questions that relate to space. For an app that is supposed to formulate a correlation between happiness and physical space, there are not enough questions that relate to the built environment in order to generate a default reading nor to make users actually evaluate how the space is affecting their mood.

The app's solitary nature and its focus on introspection leads Participants to state that although the app can reconfigure spatial awareness, it could make them feel more connected to the built environment if a sociability component was introduced. According to the National Accounts of Wellbeing organisation, throughout the years there has been a focus on the quality of people's wellbeing in terms of their individual identities and how they experience their lives from a personal standpoint.⁶⁰ However, this leaves gaps in assessing interpersonal relationships with others, which is a tremendous factor in wellbeing and of pleasure in experiencing city life, as is evidenced by the Participants' desire for a sense of digital community. This is attested by Mappiness's findings which conclude that "the largest positive net effect of combining work and another activity on happiness relates to 'Talking, chatting, socialising'."⁶¹ Mappiness takes a vague documentation of its users' interpersonal relationships within its sample, and it remains focused on the individual self. Despite this, for the purpose of this dissertation, it is useful to have the Mappiness case study focused on the individual rather than the social, to see how this type of mobile app becomes a place for constructing selves, while also evidencing Haraway's claim that cyborgs are needy for connection.

Analysing behaviour on Mappiness is challenging because of its inherent relation to introspection. Performance for Mappiness Participants has to do with looking within the self and being able to find a language to express their emotions, which will in it itself create a macro reading of that space. This pursuit of expression, as Braidotti writes, "is the kind of materially embodied and embedded performance that challenges the limits of the linguistic framework..."⁶² This need to uncover one's own introspective/interfacial language brings about Mappiness's relationship to spatiotemporality; although users are expected to upload their current mood, the participants make sense of their present emotions by following traces in their memory and comparing their past to their present. In this way, these nomadic subjectivities partake in a play between awareness and memory, and the boundaries between physical/digital as well as time/space are constantly being negotiated, deconstructing and reconstructing the subject.

⁶⁰ "Developing a framework." *National Accounts of Wellbeing*. NEF, 2009. Web. 21 Sep 2012. <<http://www.nationalaccountsofwellbeing.org/learn/measuring/developing-framework.html>>.

⁶¹ Bryson, Alex, and George MacKerron. "Are You Happy While You Work." *Centre for Economic Performance* 2042-2695 (2013): 13. Centre for Economic Performance. Web.

⁶² Braidotti, *Transpositions*, 52.

On another note, the app also gathers information with immense potential for the shaping of the built environment, urban planning policies and the politics that inform standards of wellbeing. As such, it becomes vital to question which groups and agencies will have access to the data collected by Mappiness. Perhaps architects, urbanists and planners should become more actively engaged within the design of the survey in Mappiness and in the interpretation of the data sent to its databases. The problem is that, even if there is relevant data that is being recollected—and if there are significant findings being produced for the field of architecture and urbanism—Mappiness's closed-door nature makes it hard to assess. Similarly the data that *is* presented is vague, and the way that it is presented seems to lack clarity and focus in terms of its design. In a 2011 interview with the *Guardian*, when asked what Mappiness might be applied for, MacKerron replied:

On the way we spend money, publicly and privately. Governments are not necessarily doing the best job at finding the balance that makes the population happiest. And on an individual level, people don't always make optimum choices. The major decision you make in terms of your environment is probably where you live. I don't yet have an answer—it is a trade-off between factors that affect wellbeing. It isn't necessarily that we should all go and live on mountain-tops...⁶³

For the time being, though it's being advertised as a survey that's intended to be related directly to the built environment, Mappiness appears to lag behind its intended purpose. Furthermore, its current use for the potential bettering of cities remains blurred. As was discussed previously, Picon suggests that whether technology is good or bad for design is no longer the question. Rather, the direction architecture takes under its influence should be the primary concern.⁶⁴ One can then directly translate this to Mappiness; as a piece of technology that ruptures traditional survey limitations—repetitively communicating with thousands of people no matter their geographical location on a daily basis—the app is a powerful tool. However, to reference Picon's question, what direction can architecture and urbanism take under technology's influence? At the moment Mappiness remains a clever proposal and an admirable innovation in the way researchers can extract information from volunteers. However, more than a tool that is able to measure happiness in the built environment, it measures how happiness fluctuates in people's lives depending on what they're *doing*, not necessarily where they are *at*.

⁶³ Heathcote, Elizabeth. "George MacKerron: 'I Can Measure How Happy You Are - and Why'" *The Observer*. The *Guardian*, 13 Feb. 2011. Web. 25 Sept. 2014. <<http://www.theguardian.com/technology/2011/feb/13/bright-idea-Mappiness-happiness-app>>.

⁶⁴ Picon, Antoine. *Digital Culture in Architecture: An introduction to the design professions*. Edited by Henriette Mueller-Stahl. Basel: BirkhauserGmbH, 2010. 8.

It is pressing for Mappiness to take a more proactive role in its intentions and its relation to its users. If one thing is clear it is that each Participant had a particular relationship with the app. Mappiness seems to be turning a blind eye by not pushing the research forward and bettering its performance while relying that their participants will continue to buy into the ‘warm glow’ they are intended to feel if they participate. In this study, when asked if she thought that the questions Mappiness asks is able to give the LSE researchers a good understanding of how happiness relates to the built environment, M0P4 expressed, “I think that’s the link that’s missing as it is right now. My final question for the application—and this is why I removed it from my phone—is, ‘so what?’”

For the moment, the true innovation of the research lies in its technology and methodology, not in its findings nor on its endpoint, because Mappiness comes across as an experiment with a low degree of political agency and a high level of technological sophistication. Though its intention to gather data on the wellbeing of individuals in relation to space is lacking, Mappiness, is a key tool to understanding the construction of the subject as a digital, spatial and technological entity; it is a subject with a tactile, physical relationship with the interface, alternate understandings of care and new constructions of space/time relations.

It remains idyllic to want to use Mappiness’s technology to better citizens’ experiences and wellbeing in urban space, but until Mappiness begins to produce any significant changes or findings within society and the built environment, it will continue running the risk of being a powerful technology with dubious political agency, that while providing novel, posthuman theoretical observations on the relationship between city, identity and technology, has no utilitarian outlet; until then, Marshall McLuhan’s words expressing that the political agent is the technology, not the product of the technology, will remain true for the app: in the case of Mappiness, at least for now, the medium is the message.⁶⁵

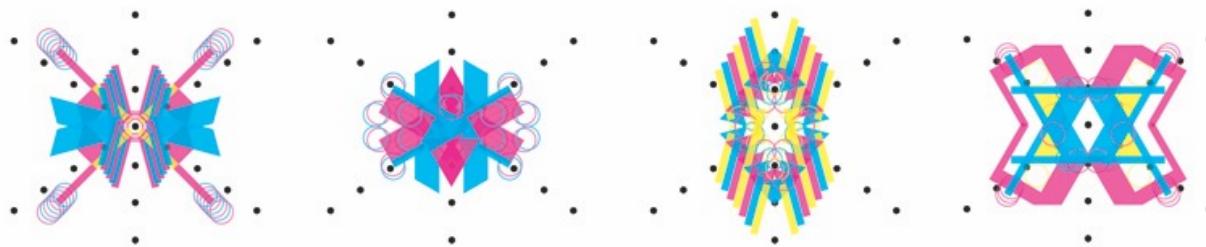
⁶⁵ McLuhan, *Understanding Media*, 7.

Chapter 5

Driving/Guiding

The boy puts the key in his Jeep Wrangler's ignition, grabs his iPad and flicks cellular data on. Tapping on a smiling icon of a blob on wheels, the iPad's screen lights up in blue, and shows the words, "Waze. Outsmarting traffic, together."

With one hand on the wheel and the other holding the iPad, the boy starts driving when we hear the app say, "Road candy ahead." With the clunkiness of the iPad bumping into the steering wheel, while the boy—in a frenzy—glances back and forth, from the road to the iPad's screen, he exhales and quietly mumbles, "This is gonna be harder than I thought."

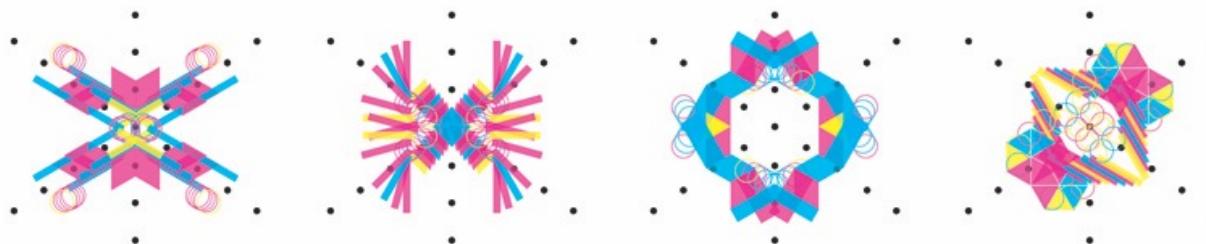


W0D1

W0D2

W0D3

W0D4

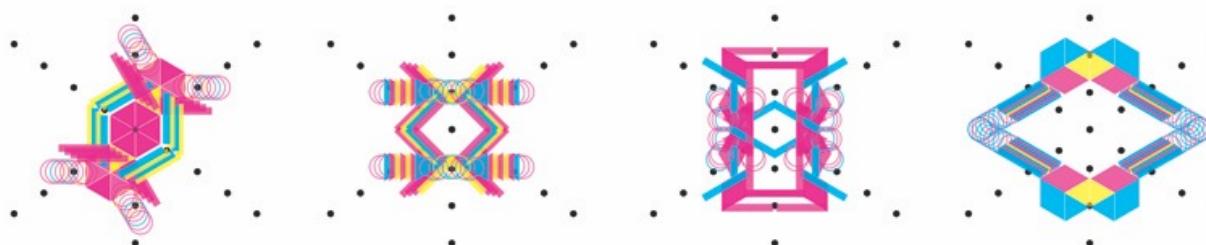


W0D5

W0D6

W0D7

W0D8



W0D9

W1D0

W1D1

W1D2



W1D3

W1D4

W1D5

"At each juncture I entered a waypoint, ensuring that each moving trace would be remembered. I was reminded here of my own mobility relative to theirs—and that my GPS map of California would look quite different from that of a migrant worker, a Chinese pharmacist, a high-tech executive or a groaning seal for that matter'. [GPS maps] offer new ways of visualising social difference that are based on human movement rather than physiognomy or pigmentation."

-Lisa Parks, 2011

Introduction

Originally launched in 2008 by Israeli start-up company Wazers Mobile, and then acquired by Google in summer 2013, Waze is a satellite navigation app which uses crowd-sourced information to help drivers find the quickest route to their destination in real-time. The company advertises Waze with the slogan, "Waze. Outsmarting traffic, together." According to *Forbes Magazine*, in 2013 Waze reported 50 million users, making the company one of the largest 'community-based' traffic and navigation apps in the world.¹ Although the company chooses not to disclose how many of its users are based in the UK, they confirm that London alone has a reported 80 thousand users.² Waze's success is an indicator that the togetherness it advertises is more than a catchy slogan; for Waze, strength is in numbers.

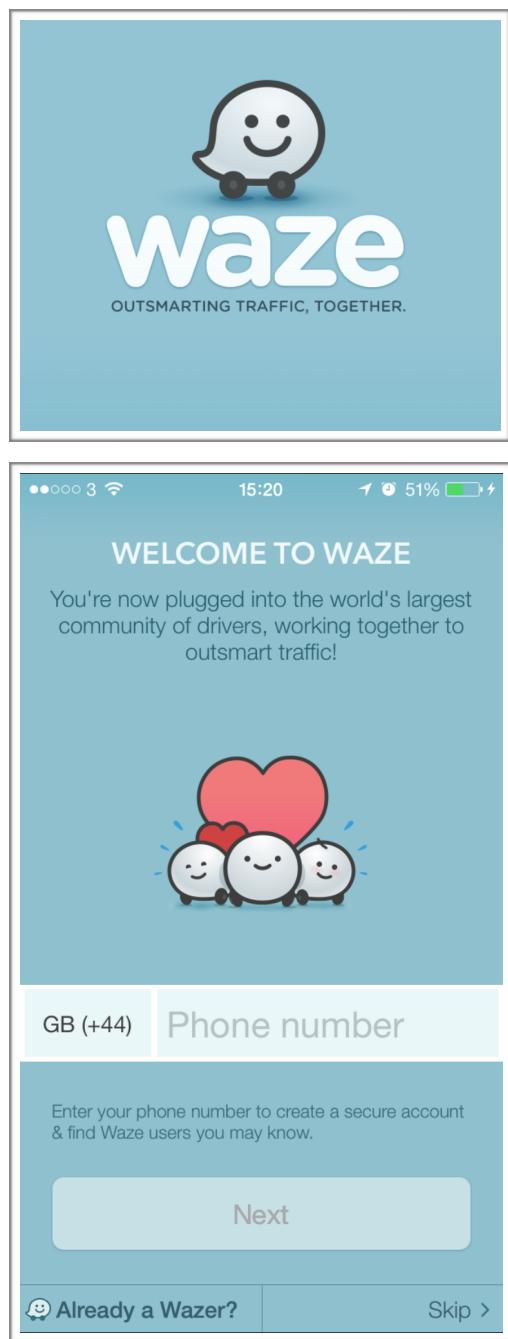
The app's appeal to an audience of drivers—evidenced by the vast number of users throughout 13 countries—can be attributed to a variety of factors which include free use, its gamified nature and the ability it has to redirect drivers' navigation when road conditions change in real-time, minimising the time drivers would need to spend on the road. Crowdsourcing technology allows Waze's databases to record an immense amount of traffic information, by users reporting on road conditions such as traffic, road blocks, cars on the side of the road, weather conditions, presence of police, speed cameras, fuel prices and accidents.

¹ Peter Cohan. "Four Reasons Google Bought Waze." *Forbes*. Forbes Magazine, 11 June 2013. Web. 11 Sept. 2015. <<http://www.forbes.com/sites/petercohan/2013/06/11/four-reasons-for-google-to-buy-waze/>>.

² This figure was obtained via personal email exchanges with the company.

This chapter explores Waze through physical driving alongside digital guiding; it focuses on the hybridity between person, space and machine (referring both to the vehicle and the app). Waze functions via direct participation of the user: it sets a route from an origin to a destination by calculating the quickest route to minimise travel time and petrol consumption, but if the driver experiences any delays along the route, the app provides a platform for the user to report the problem to the server. Waze then reroutes any vehicles which have been sent down that same road.

According to civil engineer Piet H.L. Bovy and geographer Eliahu Stern in their book *Route Choice: Wayfinding in Transport Networks* (1990), spatial navigation choices result from prior mental states, events and processes.³ This is to say, apart from navigating in relation to familiar architectural elements or landmarks, users construct a sense of orientation based on past experiences and decisions. In turn, with Waze, the collective experience and knowledge of the digital community of drivers is used to guide vehicles to reach their destination as efficiently as possible. The driver's individual experience is secondary to the collective experience of the Wazers in the area—a contradiction with driving theories, such as those proposed by Bovy and Stern: they argue that an individual's route choice is considered to be "selfish", because each driver decides how to optimise his journey for personal satisfaction. They state, "There is no cooperation in this respect between



³ Piet H. L. Bovy, and Eliahu Stern. *Route Choice: Wayfinding in Transport Networks*. Dordrecht: Kluwer Academic, 1990. 25.

Also see Asad J. Khattak et al. "Effect of Traffic Information on Commuters' Propensity to Change Route and Departure Time" in *Journal of Advanced Transportation* 29 (1995), Tsippy Lotan "Effects of Familiarity on Route Choice Behavior in Presence of Information" in *Transportation Research* (1997), Eliahu Stern "Choice Behavior in Congestion Situation: Modeling and Research Needs" in T. Gärling et al. (Eds) *Theoretical Foundations of Travel Choice Modeling* (1998), Reginald G. Golledge (ed) *Wayfinding Behavior: Cognitive Mapping and Other Spatial Processes* (1999) and Moshe E. Ben-akiva and Michel Bierlaire "Discrete Choice Methods and Their Applications to Short Term Travel Decisions" in R. Hall (Ed) *Handbook of Transportation Science* (1999).

travelers. Exceptions to this assumption can be found only when a group of travelers have a common goal and a group consultation is practiced, usually in unfamiliar environments.⁴ However, on Waze, there is no formal consultation with locals. The app has reduced the need to stop and ask for directions, so long as mobiles have an Internet connection.⁵

Consultation as a form of wayfinding is instead embedded within the performance of the app itself. Wazers act as one super-network of driving experiences, in which every driver benefits from the other drivers' collective journeys. The result of this group effort is to help drivers reach their destination as quickly as possible, minimising excess travel time. Waze's ability to update travel conditions in real-time aims to minimise pollution, consumption of petrol, excess travel time and potential accidents caused by road hazards.

This idea of users working together to outsmart traffic relates to a sense of digital community, though one that is transactional and detached: the drivers do not know each other, appearing as small avatars zooming through a digital map, but they often feel a sense of responsibility to provide data that will help other users. Through studying Waze, this chapter seeks to explore manifestations of community and digital citizenship, while rethinking the public/private coding of the road space. The interior of the car—often associated with a solitary disconnection from the external environment—is re-examined here as a penetrable space for digital forms of social interaction.⁶ Similarly, through the splitting of embodiments in the form of digital residue, this chapter seeks to understand identity performance and the recrafting of subjectivity, and their relationship to public space.

In the chapter's first section, 'Driving/Not Driving', the discussion begins by addressing the benefits and problems of car driving. Through social geographer Colin G. Pooley, Jean Turnbull and Mags Adams's research in *A Mobile Century: Changes in Everyday Mobility in Britain in the Twentieth Century* (2005), matters of inequality brought by driving arise, and are counterposed with arguments established by theorist James A. Dunn Jr. in *Driving Forces: The Automobile, Its Enemies*

⁴Bovy and Stern, *Route Choice*, 23.

⁵ There is a body of work looking to route choice mediated by technology. See Jha Mithilesh et al. "Perception Updating and Day-to-Day Travel Choice Dynamics in Traffic Networks with Information Provision" in *Transportation Research* (1998), Moshe E. Ben-Akiva et al. "Route Guidance and Information Systems" in *Journal of Systems and Control Engineering* (2000), Jean Wolf et al. "Elimination of the Travel Diary: An experiment to derive trip purpose from GPS travel data" in *Transportation Research Record* (2001) and Dominik Papinski et al. "Exploring the Route Choice Decision-Making Process: A comparison of planned and observed routes obtained using person-based GPS" in *Transportation Research Part F: Traffic Psychology and Behavior* (2009).

⁶ David J. Reibstein "The Direction of Causality Between Perceptions, Affect and Behavior: An Application to Travel Behavior" in *Journal of Consumer Research* (1980), Tim Dant and Peter J. Martin "By Car: Carrying Modern Society" in J. Gronow et al. *Ordinary Consumption* (2001), Anne Ellaway et al. "In the Driving Seat: Psychosocial benefits from private motor vehicle transport compared to public transport" in *Transportation Research Part F* (2003), Christy M. Collins and Susan M. Chambers "Psychological and Situational Influences on Commuter-Transport-Mode Choice" in *Environment and Behavior* 37 (2005), See Benjamin Gardner and Charles Abraham "What Drives Car Use? A grounded theory analysis of commuters' reasons for driving" in *Transportation Research Part F: Traffic Psychology and Behaviour* (2007) and Peter Merriman "Driving Places: Marc Augé, Non-Places, and the Geographies of England's M1 Motorway" in *Theory Culture & Society* (2015).

and the Politics of Mobility (1998). Following this, the discussion is steered towards environmental ethics and family morality and duty, through sociologist Mimi Sheller's theories on automotive emotions (2004). To situate the role of the car in the construction of subjects, the chapter gives an account of the car's relevance in Britain by looking into histories of its arrival. The automobile is explored as an alternate form of urban mobility that while creating environmental and spatial problems, was able to mobilise citizens in a way that broke spatiotemporal relations.

The following section, 'The M1 Motorway and Refracting Subjectivities', uses geographer Peter Merriman's theories on the design and advertising of the M1 and its effects on the social and cultural histories of driving in Britain (*Driving Spaces*, 2007). The section focuses on how the driver and the skill-set associated with driving had to be carefully trained and taught, as the motorway called for new subjectivities that could perform certain actions while in movement. Bovy and Stern's theories on route choice are then discussed, by counterposing wayfinding theories of the 80s and 90s with the methods of route selection established by Waze, in the twenty-first century. Where Bovy and Stern theorised route choice as an antisocial, self-centred action, where the user bases their decision on previous spatial experiences--Waze contests this notion and uses crowd-sourcing technology so that each Waze user communicates with every other user, through an impersonal manner.

'Use and Experience' is the first of the sections sustained by the interviews carried out with the Waze Drivers. The section positions urban theorist Iain Borden's experiential accounts of driving, as narrated in his book *Drive: Journeys Through Film, Cities and Landscapes* (2013), with the findings of the interviews. Contrasting to *Drive*, the section discusses the act of driving as a means to an end and as a method for travelling large distances in a compressed amount of time, rather than as an utopic form of mobility that grants users happiness.

In 'Gamification', the app is described as a material object through its interface. The section explores the manipulation of Waze's map to uncover new ways of relating to space, while discussing how Waze's playful design can make the, at times, mundane act of driving more jovial and empowering. By giving users an avatar, Waze sets itself apart from other sat-nav systems; drivers, through Waze, have a body with a voice, a presence and an identity. Similarly, the section discusses the app's point-reward system, which fosters a sense of achievement and compensation; throughout the section, reward is explored as a digital yet material property rather than a physical, quantifiable one.

'Wayfinding/Sociability' presents Waze as a portal for two-way communication from vehicle to vehicle, fostering alternate forms of sociability that were previously not possible; therefore, the coding of private and public is rethought. Similarly, though the vehicle is often perceived as an antisocial space, the interviews expose a certain degree of connection among Waze users and a

curiosity to find others around them, not necessarily to hold conversations but rather to attain a sense of collective identity and performance.

Spatiotemporal splits between digital and physical embodiments are then discussed in 'Trails/Digital Residue'. The section picks up on the software's real-time data anomalies to discuss how Waze creates new embodiments that inhabit multiple locations at disparate times while echoing the movements of the physical body. The theoretical articulations are rooted on posthuman thinking, particularly by referencing Hayles's *My Mother Was a Computer*. In her book, she argues that as societal changes occur and embodiments become increasingly sophisticated, theorists must find ways to create more nuanced analyses of the posthuman.

Finally, 'Embodiments/Othering' centres around the concept of difference by discussing the road space, the vehicle and the driver as male-oriented constructions, then counterposing it to Waze's selection of avatars. Through Waze's cheery disposition, the masculinised notion of driving is neutralised; through its variety of avatars that range from gender-neutral to effeminate and from machinic to animalistic representations, Braidotti and feminist theorist Nina Lykke's ideas on cyborgs and monsters in their book *Monsters, Goddesses and Cyborgs: Feminist Confrontations with Science, Medicine and Cyberspace* (1996) become the primary bases for the discussion.

Driving/Not Driving

Differing to the other case studies in this dissertation, one of Waze's particularities is that it is a piece of technology reliant on an additional machinic component: the automobile. Using Waze while being present inside a moving car is an essential quality of the app. Therefore, when speaking about Waze, the role of the car in the production of new identities and the experience of spaces must be addressed. Users download and use Waze because they are either car owners or will be using a car on a particular occasion, and need the fastest route to their destination. The app is a tool to enhance the experience of the car's drive by aiming to provide a less stressful journey. In turn, Waze claims to be able to minimise time spent on the road, which would then have certain effects on traffic flow, congestion and on the environment: this being one of the biggest critiques against automobile use.⁷

Cars raise environmental concerns: they consume large quantities of natural resources, cause large-scale gas as well as noise pollution, contribute to congestion in cities and increase the amount of fatalities and injuries through accidents.⁸ Discussing car-use often points towards an environmental sense of ethics and care. However, the car has also brought about major advancements to the way people live their lives. In her 2004 paper titled "Automotive Emotion", Mimi Sheller writes:

Despite strong feelings against cars and the damage they do to the natural environment, the ethics of anti-car protest is often at odds with the needs for mobile sociability and the day-to-day moralities involved in coordinating family life or networks of friendship in automobilized societies.⁹

⁷ See Eva Ericsson "Independent Driving Pattern Factors and their Influence on Fuel Use and Exhaust Emission Factors" in *Transportation Research Part D* (2001), Jim Motavelli *Forward Drive: The Race to Build 'Clean' Cars for the Future* (2001), Eva Ericsson et al. "Optimizing Route Choice for Lowest Fuel Consumption: Potential effects of a new driver support tool" in *Transportation Research Part C: Emerging Technologies* (2006) and Kyoungho Ahn and Hesham Rakha "The Effects of Route Choice Decisions on Vehicle Energy Consumption and Emissions" in *Transportation Research Part D: Transport and Environment* (2008).

⁸ Pooley, Colin G., Jean Turnbull, and Mags Adams. *A Mobile Century?: Changes in Everyday Mobility in Britain in the Twentieth Century*. Aldershot, Hants, England: Ashgate, 2005. 16.

Also see Jane Jacobs *The Death and Life of Great American Cities* (1961), Ralph Nader *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (1965), Richard Sennett *The Conscience of the Eye: Design and Social life in Cities* (1990), James Kunstler *The Geography of Nowhere: The Rise and Decline of America's Man-made Landscape* (1994) and James Dunn *Driving Forces* (1998).

⁹ Sheller, Mimi. "Automotive Emotions: Feeling the Car." *Theory, Culture & Society* 21: 229. SAGE. Web. 1 Nov. 2014. <<http://tcs.sagepub.com/content/21/4-5/221>>.

In the same way that one can talk about environmental ethics, the benefits of automobility raise questions of family care. There is a conflict between an ethics which is concerned with personal action at a macro level and a more individualistic sense of morality rooted on people's responsibility to care for their immediate circle of interpersonal and familial relationships.¹⁰ Because of this, the polarity of the automobile debate creates a divide between those who are pro-car and those who are against it. As James A. Dunn Jr. writes in his book, *Driving Forces*:

In discussions of transportation policy, a growing number of overly vocal critics and analysts see the automobile not as a solution but as a problem, and auto policy not as a success but as a failure. If they have their way, future policy toward the auto will reduce its convenience and utility, not preserve it. These 'enemies' of the automobile choose not to see it as the most successful mode of transportation and the most popular means of personal mobility ever created. Instead they view it as a voracious consumer of irreplaceable energy resources, a major source of greenhouse gases, a killer of tens of thousands of accident victims, and a destroyer of calm and cohesive communities.¹¹

Dunn claims that those who oppose the auto have focused their energies onto the collective problems related to the automobile, and in their zeal to highlight the car's problems, they end up ignoring its importance and muting its advantages for millions of people.¹² At the opposite end of the spectrum lie Colin G. Pooley, Jean Turnbull and Mags Adams's ideas in *A Mobile Century*. For them—and apart from the environmental concerns—driving mobility raises issues of social inequality among those who are unable to participate in it, leading them to be socially excluded.¹³ All the while Dunn views these postulations as the car's 'enemies'—those who seek policies that will discourage users from using their cars, abandoning and ignoring the sense of empowerment and equality they provide drivers with.¹⁴

¹⁰ See Michael L. Berger "The Car's Impact on the American Family" in M. Wachs et al. (Eds) *The Car and the City: The Automobile, the Built Environment and Daily Life* (1992), Ruth Brandon *Automobile: How the Car Changed Life* (2002), Brian Ladd *Autophobia: Love and Hate in the Automotive Age* (2008) and Jim Conley and Arlene Tigar McLaren (Eds) *Car Troubles: Critical Studies of Automobility* (2009).

¹¹ Dunn, James A. *Driving Forces: The Automobile, Its Enemies, and the Politics of Mobility*. Washington, D.C.: Brookings Institution, 1998. 3.

Also see Tim Dant and Peter Martin "By Car: Carrying Modern Society" in A. Warde et al. (Eds) *Ordinary Consumption* (2001), Simon Maxwell "Negotiations of Car Use in Everyday Life" in D. Miller (Ed) *Car Cultures* (2001) and David Banister "Reducing the Need to Travel" presentation in ESRC Mobile Network (2003).

¹² Dunn, *Driving Forces*, 4.

¹³ Pooley et al., *A Mobile Century*, 16.

¹⁴ Dunn, *Driving Forces*, 3.

Historically, the arrival of the automobile created reconfigurations in the morphology of cities, districts and towns. According to Pooley, Turnbull and Adams, at the end of the nineteenth century, cities were still relatively compact, allowing the majority of daily journeys to be taken by foot—most people had limited choices for mobility, and only those with higher incomes could afford public transport, whether by horse-drawn omnibus or tram.¹⁵ It was not until the 1920s and 1930s when most towns began introducing motorbuses to replace trams: the main form of urban public transport. The adoption of the car as a form of urban mobility in Britain started off slowly with approximately 8.5 thousand private cars in 1904. By 2002, nearly a century later, the number of private vehicles had risen to over 24.5 million privately owned vehicles, meaning that the infrastructure of cities and towns would undergo a number of significant changes.¹⁶

The M1 Motorway and Recrafting Subjectivities

Roads, avenues, freeways and highways are all political spaces; they are highly controlled—some more than others—and delimit a particular route to reach a destination. To ensure an acceptable degree of safety, these trajectories have their particular laws regarding speed, signals and actions. In *Driving Spaces*, Peter Merriman gives a historical account of the design, use and consumption of England's M1 motorway in the 1950s and 1960s. Merriman explains that The Motorway Code—a 1958 guide produced by the British Government prior to the opening of the Preston Bypass—functioned as a moral contract persuading drivers to translate its coded recommendations into embodied and habituated techniques for conducting oneself and one's vehicle safely along the motorway.¹⁷

Personal automobiles and driving on high-speed motorways created new relationships to space and new sensorial experiences for the body. The driver had to learn to read the road and train their vision to adapt to new speeds, which in turn made physical demands on the body. To this day, a driver must be physically apt to drive a vehicle and have a certain degree of healthy eye-sight as well as limb coordination. Therefore, the experience of driving, although reliant on a motorised vehicle by definition, is an embodied practice.

¹⁵ Pooley et al., *A Mobile Century*, 18.

¹⁶ Pooley et al., *A Mobile Century*, 21.

¹⁷ Merriman, Peter. *Driving Spaces: A Cultural-historical Geography of England's M1 Motorway*. Malden, MA: Blackwell, 2007. 144.

In 1959, *The Autocar*—a publication which provided information on how to get to the M1, the design of new signs, maps of the route and explanations of The Highway Code—stated, “There are some who are neither physically nor mentally equipped to cope with the increased tempo, or possess the greatly reduced reaction times that high speeds demand—let along having eyesight in keeping with the demands of safe, fast driving.”¹⁸ With a new form of mobility, subjectivity needed be recrafted and trained. Merriman asserts that driving at high speeds involved teaching the population performative practices for the road, whether they related to switching lanes, mirror usage, emergency procedures or exiting strategies.¹⁹ The advent of personal automobiles also involved new mental mappings in relation to the cognitive processes of decision-making while driving. After all, choice is an inherent quality of driving in terms of wayfinding and performance.

Drivers face the task of making a number of choices that range from trivial ones, such as which song to listen to, to important ones such as what speed to cruise in or which route to take to arrive to a destination. According to Bovy and Stern in their book *Route Choice: Wayfinding in Transport Networks*, without the use of sat-navs, the driver has to choose what route seems to be the better option, from a set of alternative routes. This decision takes into consideration a multiplicity of factors—road maintenance, presence of police, traffic congestion, speed limits, etc. In addition to this, the driver is expected to either already know how to reach the destination or have the ability to find their way there. Prior to sat-navs, using a paper map to travel to new, unknown locations was the norm. The problem with map-navigation while driving is that it is uncomfortable and perhaps even overwhelming to fit in all of the built environment’s information onto a graphic, paper map.²⁰ Similarly, any changes that occur to roads or paths make the map out-of-date or obsolete. Bovy and Stern note that when travellers use maps, they usually get lost because the map’s schematic nature does not allow it to include enough environmental clues that can be identified in situ.²¹ In Waze, using digital methods of navigation/guiding means that the information on the map can be updated in real-time.

Because of the GPS technology, the driver is able to visibly track their location on the map as they move. Attempting to find one’s moving position on a paper map has contrasting affective and experiential properties from that of visibly tracking one’s movement and position on a map that discloses itself little by little. Seeing one’s moving, digital embodiment represented on a digital map fastens the body (both physical and digital) to space and time. It On a paper map, the body is absent

¹⁸ Merriman, *Driving Spaces*, 156.

¹⁹ Merriman, *Driving Spaces*, 144.

²⁰ See Perry W. Thorndyke and Barbara Hayes-Roth “Differences in Spatial Knowledge Acquired from Maps and Navigation” in *Cognitive Psychology* 14 (1982), Piet H. L. Bovy and Eliahu Stern *Route Choice: Wayfinding in Transport Networks* (1990) and Jeffrey L. Adler “Investigating the Learning Effects of Route Guidance and Traffic Advisories on Route Choice Behavior” in *Transportation Research Part C: Emerging Technologies* (2001).

²¹Bovy and Stern, *Route Choice*, 12.

and unlocalised; it is placeless and depends on the imagination and orientation skills of the map-reader to give it its position.

Use and Experience

The ability to go farther, quicker and more comfortably than ever before—through contemporary modes of travel—creates a sense of liberation for those who are able to afford it, and in this newfound form of mobility people are able to practice their subjectivities and perform their identities. The way people move, the mode of mobility and the spaces they traverse through are all ways of asserting one's identity, whether consciously or not. In addition to being a means to perform ordinary tasks, movement—by bicycle, car, train, bus or foot—can be a marker for a person's social status, personality and wealth. According to Pooley, Turnbull and Adams, mobility helps “create the spaces in which we live, meet people, carry out transactions and develop identities.”²² The everyday spaces which people move through are responsible for constructing the communities that give them a sense of belonging and that help assign meaning to their lives. However, as was previously mentioned, the liberation from space-time constraints by driving, although impregnated with the power of choice and the ability to exercise one's identity, is not value free. The car causes major inefficiencies in the urban fabric—among other factors, excess traffic and road accidents contribute to the stresses of modern life on the road.²³ Similarly, although liberated from certain spatiotemporal constraints, drivers are regulated, policed and controlled in new ways.

In his book, *Drive*, Borden discusses the pleasures of driving, depicting the experience of being behind the wheel as primarily enjoyable. Borden constructs his discourse—his entire book—on driving as a source of pleasure by using cinematographic references as the bases for his arguments. The impression that one is left after reading the book is that driving is a joyful experience for most people who get behind the wheel. However, in its pro-driving discourse, *Drive* seems to over-rely on the pleasure of driving and only briefly touches upon its displeasures, frustrations, stresses and environmental harms, which were topics discussed by the Waze Drivers interviewed for this research. Because Borden barely acknowledges these ideas—generally doing so in passing—the reader is left

²² Pooley et al., *A Mobile Century*, 14.

²³ Pooley et al., *A Mobile Century*, 15.

unaware of what lies on the opposite end of the spectrum, and of the historical and social complexities of automobile driving. Borden writes:

For it is very much in normal people's quotidian lives that the city car operates, offering us not only a means of daily transport but also an important psychological and ideational sense of emancipation, pride, independence, autonomy and self-expression; the car allows us both to negotiate the conflicts we feel in our lives, and, to some extent, transcend them through newly constructed attitudes, aspirations, beliefs and perceptions.²⁴

Drive paints an optimistic picture where drivers revel in doing so. The act of driving—and furthermore, the condition of ownership when it comes to automobiles—is described in the above quote as habitual. Though this is true in certain cultures and locations, it is not necessarily the 'quotidian life' of the general population—not even in London. Portraying cars in this light fetishises the act of driving and is as exclusive as it is elitist. While this enthusiastic approach to driving may be the case for a number of people, it can at times be overstretched, such as when Borden writes, "The single most powerful idea attached to urban driving is that cars and driving are true harbingers of democracy, creating a world where all men and women are equal, where they can go anywhere, do anything, meet anyone."²⁵ But by narrating through examples of mostly all male drivers, Borden does not directly deal with driving's relation to matters of difference, class, gender and othering, universalising the act of driving as an egalitarian, democratic available to all citizens.

The fact that *Drive* does not address these matters seems to be intentional, as Borden emphasises the need to theorise on driving from a non-academic perspective, stating that what is needed is:

[A]n investigation of non-theorized, everyday practices where people encounter, imagine and reproduce their lives in a non-academic manner. We therefore need, perhaps, less highly detailed quantitative analysis and less complex theoretical constructions, and rather more reflection on the kinds of emotions [...] describing how the car is an object of amorous attention, that is being touched, caressed and fondled.²⁶

²⁴ Borden, Iain. *Drive: Journeys Through Film, Cities and Landscapes*. London: Reaktion Books Ltd, 2013. 47.

²⁵ Borden, *Drive*, 17.

²⁶ Borden, *Drive*, 11.

Addressing matters of exclusivity and difference would perhaps mean that Borden would have to delve deeper into more theoretical and philosophical arguments, something which he seeks to work against in *Drive*, as can be read in the quote above. However, it is worth noting that Borden uses theorists such as Henri Lefebvre and Maurice Merleau-Ponty as some of his quoted sources to sustain his arguments, and therefore deals with 'complex theoretical constructions'. In an effort to uphold the pleasures of driving in fictitious, scripted worlds, Borden side-steps and at times ignores the social, car-related discussions of difference that have moulded cultures today.

Upon interviewing the Waze Drivers for this research, matters of gender and displeasure prove too prevalent to disregard, even when several of the Drivers express fondness for their vehicles and for the feeling of being on the open road. Although some of the Waze Drivers confirm that they find pleasure in driving, only one of the interviewees mentions enjoyment. For the others the purpose of driving is a means to an end, a convenient and quick way to get from point A to point B, and one that allows the driver to carry large amounts of items with them without hassle.

-Why do you drive?

W1D3: *For a number of reasons. Because I enjoy driving, because I work in the automotive industry to a greater or lesser degree—and I think that's an important part of the experience, I like to experience different contexts. I drive because it's simply, typically the most convenient way to get from one point to another, and because it's kind of faster. I think also because having invested in a car you inherently think "Well the car's there. What's the point in having it if I don't use it?"*

W1D4: *[He laughs] Because the area that I cover from a work-perspective is fairly large. Very often public transport can't get me where I need to go, I can't rely on the timings of public transport, I have a lot of stuff which I shouldn't be taking on public transport or within the public sphere. I've got more control of them if I put them in my vehicle. It's just easier. Sometimes I get called to visit people on short notice, it just needs my work requirements primarily. If I didn't need a car for work though, I probably wouldn't use one around my town.*

If driving might be more about the functional aspect than its enjoyment factor, as several of the interviewees mention throughout their discussions, then Waze is an app that provides a solution to a problem. Waze works as a GPS satellite navigation system for those users who need directions on

getting to their destinations. It helps avoid the uncomfortable and despairing feeling of getting lost, while also acting as a tool that forecasts road conditions ahead. Although Waze can also be used as a social network, the main reason that the Drivers use the app is to beat traffic and find the quickest route to their destination.

-How often do you use Waze? Do you use it every time you drive? How much do you depend on Waze to get around?

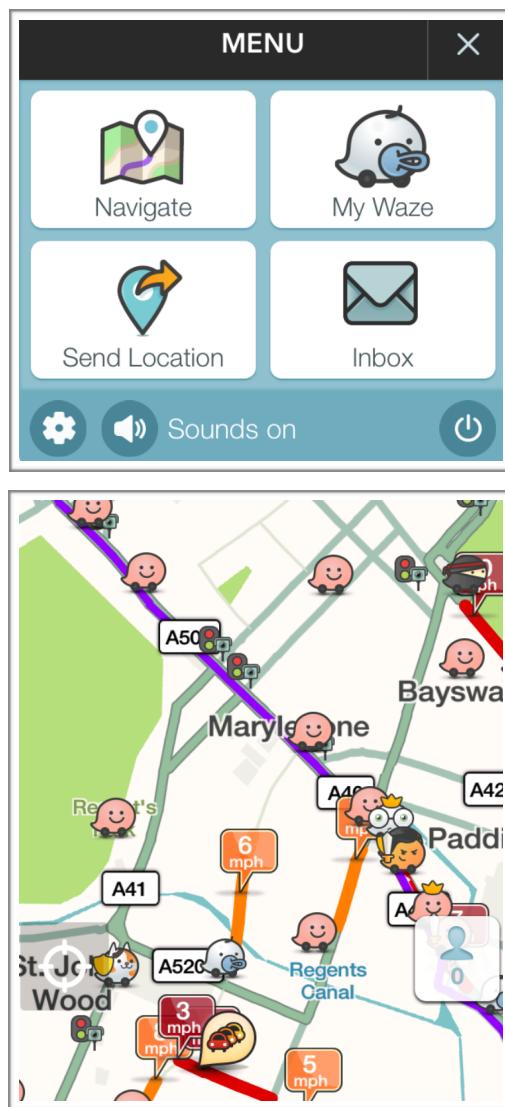
W0D9: *It has gotten to the point more and more when now it's every time I drive. Because now, I do know the way to drive home from the office, but I don't know where the traffic is, so now I'm depending more on it. I don't know the fastest way to go. And now every time I go home through London it's slightly different, which leads me to believe it's literally taking me the quickest route that it possibly can.*

The Drivers use Waze for different purposes, but the interviews show that the app is used less frequently to find directions to one's destination as it is for people to find alternate ways to reach their endpoints, ways that avoid traffics—as is the case of W0D9. The app creates new forms of spatial awareness by advising drivers to take various routes to the same endpoint, even some routes that might be unfamiliar to the driver. Although Waze can be used for traditional function of finding out how to get from point A to point B, it has redefined the power of the map by providing a path based on real-time traffic conditions. Because of its real-time collection of data, diverting users along different routes in locations they are already familiar with, it creates new patterns of urban mobility that break habitual route choices. But to be able to delve into the details of the navigation, the performance of the app and its relation to the user, it is necessary to open a discussion related to its interface. The digital screen on Waze, its tactile aspect and its spatial and embodied representations are the basis of the chapter.

Gamification

Downloading Waze is likely the simplest part of the experience. Upon creating a profile and being launched upon a virtual map of one's surroundings, users have four options on the screen, each containing a series of options within themselves. The 'target' symbol allows users to find their position on the map if their fingers wander around, taking them to other parts of the digital map. It ensures that a user is able to find themselves again if they ever get 'lost' while surveying the Waze interface. Tapping the 'Waze character' discloses the main menu (see image below, top right) where users can see their profile, input their destination to begin their navigation, send their location to friends who use the app, change their display settings and check their inbox. The 'friends' icon shows how many Waze-using-friends a user has, and allows them to be contacted. Finally, the 'location' icon can be found on the bottom right corner. Apart from inputting the route details, this is the most important part of the app; tapping it takes the user to the 'Report' menu, where they're able to let other Wazers know if there is a traffic jam, presence of police, car accident, road hazard, fuel prices, map issues, presence of speed cameras, take pictures of places for other Wazers to see and enables a chatting function. The 'Report' button, amongst a series of seemingly endless list of options that take you to a new page with more options, has the simplest and most straightforward performance of the entire app; it also possesses the features that make Waze truly different from other sat-navs.

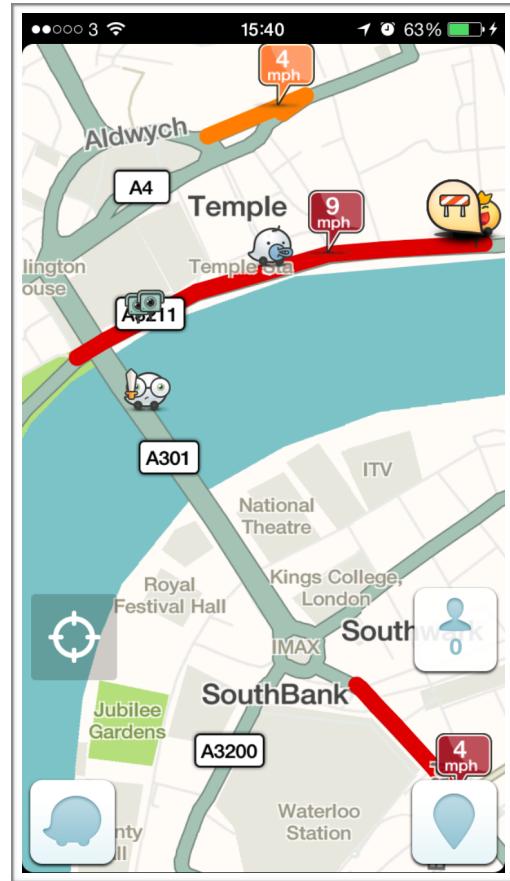
Immediately when opening the Waze app, the user encounters a caricature-like, building-less world of avenues and arteries (see image bottom right). In some ways, the app's map interface resembles a vascular system more than a representation of the built environment precisely because, apart from road infrastructure, the map depicts nothing else that is built. Natural elements such as parks, rivers and ponds are present, but the structures that contain, surround or delimit them



are absent. Except for the presence of important city landmarks, which are shadowed in grey while their individual names are placed onto them as labels, the Waze interface is meant to show exactly that: roadways. Thus, in an attempt to simplify the interface's graphic information, the app portrays a representation of urban space that seems bizarre, and begs the question if eliminating the physical shapes of the built environment—the urban morphology—is more disorienting than it is comprehensible.

In his chapter in *The Map Reader: Theories of Mapping Practice and Cartographic Representation* (2011), urban geographer John K. Wright states, "The image on a map is drawn by human hands, controlled by operations in a human mind. Every map is a reflection partly of objective realities and partly of subjective elements. No map can be wholly objective."²⁷ The digital map on Waze, despite technology's ability to use actual satellite images of the built environment—images that aim at accuracy—is edited to the point of complete manipulation and removal of the city's physical structures. In this process of abstracting the built environment into simple colours and figures, while portraying cars as a series of smiling avatars, the interface reads less like a sat-nav map and more like a computer game.

Upon launching Waze, a smiling bubble on wheels greets its users with a blurb that reads, "Outsmarting traffic, together", and immediately a map of the area appears on the screen, showing the location of users all around. Waze assigns the individual a digital body in the form of an avatar. As will be discussed further along in the chapter, through this embodiment, users can construct a spatial, temporal and social understanding of their immediate context, by being able to visually position themselves within an expansive network of others. Each user chooses their own Waze avatar. These are all consistent with the Waze main character but modified to fit different personalities. From smiling Wazers with crowns, to ones looking quizzical or studious, to some who are sucking on a pacifier, the map of the user's area is dynamic as it is jovial and friendly. Although there is an almost overwhelming amount of information displayed, the colours and the abundance of smiling faces make the app feel welcoming. Even though the Wazers will probably not message each other—based on



²⁷ Wright, John K. "Map Makers Are Human: Comments on the Subjective in Maps." *The Map Reader: Theories of Mapping Practice and Cartographic Representation*. Ed. Martin Dodge, Rob Kitchin, and Chris Perkins. Chichester, West Sussex, UK: Wiley-Blackwell, 2011. 304.

what the Drivers expressed in their interviews—they are all still present on the map, surrounding one's location and looking back smilingly.

The withdrawn, aloof nature of the Waze Drivers while inside their cars—as several of them mention is the case in their interviews—is contested by the friendly demeanour of the avatars. Contrary to being an anonymous driver, Waze gives its users a voice, a presence and an identity by offering different features that make it lively. Perhaps the most popular gamified aspect of it is its point-reward system: for every road report they input, every 'thank you' they send to another Wazer and for every mile they drive, Waze gives points to each user and ranks them hierarchically; the higher the points, the more avatars a user can unlock and use as their own. Points do not have any function other than offering digital compensation that somehow manages to grant the user a sense of satisfaction. Although achieving a certain number of points gives Wazers the opportunity to become 'map editors' (they can edit the interface's map in order to correct any mistakes and make it as precise as possible) for the most part, the points seem to be somewhat of a digital placebo that becomes an alluring quality, as W0D9 and W0D8 discuss:

-Did you ever see Waze as a game?

W0D9: [...] *I noticed that I'm on 'master Wazer'; that's only the second one—there's like five, with a king at the end. I was like "Oh, I'm just 4,000 points away". The points thing, I didn't give a shit about. It didn't really appeal to me—it's not really a game—but the points are cute and it's fun, and it's not harming anyone. It's not really why I use it, but then again, being a very competitive person and seeing the Wazer thing, I was like, "I would like to get on the next level..."! You get points when you report things, but there's no real incentive to get the points. What do you get when you get to the top? You might get map editing skills or something, but it's not a reward I would strive for. I report maps and traffic, as I suppose most people are, to help the app.*

W0D8: *It's a nice gimmick to have, but it's not essentially necessary in the already altruistic nature of the app itself. You don't need encouragement to have an awesome nav.*

W0D9: *It might help some people sign up. Some people might think it's an attractive thing, so in that sense it gives it a bit of character which might attract people.*

Through the points system, Waze gives the illusion of progress. Tapping into drivers' competitive side, it echoes childhood experiences related to playing with cars and of racing, all by simply assigning them a ranking in relation to the other users.²⁸ For several of the users, aware as they are about the inutility of the Waze points, it serves as an additional motivation to use the app and a pleasant feature that layers itself onto their driving experience. W1D1, for instance, claims that he feels a sense of achievement by merely seeing himself rise in the rankings. Driving 100 miles will not credit his account with 20 pence-worth of gasoline; it will not unlock discount vouchers from potential sponsors, nor will it grant any physical, tangible expression of achievement or reward. What it does is foreground a playful quality in the app, one that makes the Waze experience—along with driving—feel more performative.

-Did you ever see it as a game?

W1D1: *It has game elements. I think the fact that there is a ranking system that gives you points for every mile that you drive, yes I do. It also has the goodies as well, which they did at Christmas. They also did the Winter Olympics, where if you drive over that particular item on the road you get a few points, but yeah. I think we've tapped into that mentality of you wanting to go up the ranks. I actually got to 'knights' ranking, which is the second one. I retweeted that to everybody; probably nobody cares anyway! But there's a sense of achievement there.*

-Did Waze give out candy as an incentive to map the roads?

W0D6: *Yeah. At that point, the area where I lived, there was candy everywhere [he giggles]. My wife and I go out for drives quite a lot in the evenings, and that kind of added something that was a little bit fun. We used to go out and see if we could find them, for no particular reason. It was something extra to do.*

-Did you ever see it as game?

W0D6: *Yeah we did. Very much in the early days it was more of a game than a way to get around. The idea of collecting little candies and things you could pick up, it was quite fun. I think we used it more as a game at the start.*

²⁸ See Barry J. Nalebuff and Joseph E. Stiglitz "Prizes and Incentives: Towards a General Compensation and Competition" in *The Bell Journal of Economics* 14 (1983) and Robert Axelrod *The Complexity of Cooperation: Agent-Based Models of Competition and Collaboration* (1997).

W0D6, as noted above, used Waze when there was not much of the country mapped onto Waze, particularly because the app relies on its users in order for it to collect its data and map its roads.²⁹ ‘Cookie munching’—the act of the app mapping an area while Wazers drive through an unmapped road—thus, was popular. Through munching, users would be compensated by being able to collect digital treats along unverified roads that did not appear to be confirmed as drivable paths on the Waze interface. Similarly, Waze sometimes gives away digital candy on the road as a gaming incentive to get users to drive down roads they would not normally go to, in order to register factors like speed and locations. By gamifying functions that might otherwise be perceived as tedious, Waze plays off of its users’ affectivity to collect the information it needs, in exchange for artificial rewards. More importantly, this playful ‘exchange’ of actions/goods brings out alternate ways of relating to, navigating and experiencing spaces through the car. Bovy and Stern state, “A traveler can only choose from among those routes which he knows about or which he is familiar.”³⁰ Cookie munching contests this idea; a Wazer might cookie munch around an area that they are familiar with if they notice that it is missing from the map, or they can head towards unfamiliar roads to see what they can discover there, showing how wayfinding methods vary by driving alongside Waze.

Wayfinding/Sociability

Driving fluctuates between being a social experience and a solitary one.³¹ A driver commuting to work—unless giving a ride to a coworker or dropping off a passenger somewhere en route—will spend their journey alone, detached from social interactions (unless talking on the phone). Throughout their interviews, Drivers mention how they prefer to drive on their own, while others prefer the company of others; some prefer to sit silently and watch the landscape go by, others enjoy conversation. Apart from the sociability that takes place within the car space, there is indeed social interactions that take place outside of it on the road: unless experienced in a completely deserted environment, driving involves an elaborate set of social regulations and behaviours in order for the multitude of cars and drivers to safely co-inhabit the same space. In contrast to the anonymity and withdrawn behaviour many drivers assume while in their car—by seeing the presence of other digital embodiments on the interface’s map—Wazers experience a sense of connection to a larger

²⁹ Users must drive with their app turned on, over unconfirmed roads Waze has marked with dots, according to Waze’s official online wiki forum.

³⁰ Bovy and Stern, *Route Choice*, 52.

³¹ Daniel Miller *Car Cultures* (2001) and Iain Borden *Drive: Journeys Through Film, Cities and Landscapes* (2013).

community. Waze therefore enables new constructions of interpersonal relations mediated through the digital interface.

-Have you used Waze in other cities?

W0D8: *Didn't we do it around Geneva?*

W0D9: *Oh, yeah, we did! [...] I wanted to see if Waze would work abroad, and it did. I don't think there were any Wazers out there.*

W0D8: *We found one in France.*

W0D9: *We found one in France, and I think in Sicily there were none.*

-When you say you found one, it means you saw a Wazer on the map?

W0D8: *Yeah. [...] We had to figure out how to get back to the hotel from the airport. We turned [Waze] on and we were like, "Oh, there's no one here." And then we saw one little Wazey blob on the map...*

W0D8 and W0D9's narration attests to how Waze can enable users to feel a sense of connection to others. This in turn can be linked to Haraway's cyborg figuration, as it—understanding that it cannot be whole as an entity—seeks out other forms of connection.³² The incorporation of a digital embodiment (in this case an avatar) in relation to other Wazers changes the way users construct a sense of connection to each other. W0D8 and W0D9's wording attests to this. "We found one in France." The word "found" is used in processes of searching, differing from alternate phrasings such as, 'We saw one in France'. Similarly, by following up with "Oh, there's no one here", this sense of searching for others in the Waze interface is foregrounded, attesting to an alternate form of wayfinding, one which seeks out companionship.

-Have you used Waze in other cities?

W0D7: *Well, I switched it on when I was in Tel Aviv just 'cause I know it's an Israeli company. I was interested how many Waze users were out there, but I haven't actually used it to navigate because of the data charges.*

-Did you see a lot of users?

W0D7: *Oh my God, it was amazing! Compared to London where you see one or two, over there, you would see thousands!*

³² Haraway, Donna. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century" in *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991.

Waze's icon is shaped as a bubble, and its meaning could be two-fold. Firstly, it could represent the space of the car, which some users claim fails like a bubble sealed off from the exterior. Secondly, it could also be interpreted as a speech bubble, playing with the idea of sociability/antisociability and public/private when driving.³³ The road is a space that anonymises those who drive through it, particularly if they are driving at high speeds. As a consequence, people inside cars seldom partake in direct forms of interaction. Waze acts as a fissure that allows new constructs of sociability between cars—one that is constantly mediated through another party; communication is usually never direct unless a Wazer sends a direct message to another Wazer. All interaction unfolds from the interior of the car, onto the app/server, to the other cars and the people inside them.

-Do you see Waze as a social network?

W0D8: *It's kind of a social network [...] in that we all have a similar goal and we're all trying to get there. We'll help one another out but with one extra stepped removed from each other. It goes: person, phone, phone, person. And so all you need to do to help other people is press a button, and it's done.*

Waze fosters a form of communication between drivers on the road, which changes the traditional dynamic of driving, an experience which many Drivers compare to being inside of a sealed private space traversing through a public space. The barriers of that 'bubble' create a small environment within it, and sociability is usually limited to those confined inside the car. However penetrable that bubble is, drivers usually have little communication with each other. What Waze is doing is opening a digital portal for drivers to communicate with one another while driving in their cars, through a very controlled form of communication. By reporting onto the app itself, Waze becomes a mediator between strangers, one that disseminates information on the fly. The unspoken conventions of public and private become slightly more permeable and a layer of sociability embeds itself in a typically antisocial space.

-How is your sense of sociability affected by driving?

W1D5: *I'm not a very sociable person [she lets out a burst of laughter].*

No, so I really like being in a car of my own and listening to an audiobook and going quite far. Or I use it as an opportunity to put the

³³ See Mimi Sheller "Mobile Publics: Beyond the Network Perspective" in *Environment and Planning D: Society and Space* 22 (2004), Mimi Sheller and John Urry "The City and the Car" in *International Journal of Urban and Regional Research* 24 (2000) and "Mobile Transformations of 'Public' and 'Private' Life" in *Theory, Culture & Society* 20 (2003).

phone on, hands-free of course, and catch up with people—but actually more the former. So I don't really want to be sociable when I'm in my car, to be honest.

-And if there's a car next to you and the person smiles or waves or says hello...

W1D5: *I'd think they're weird.*

-How is your sense of sociability affected by driving?

W1D3: *At a basic level you're only extending sociability to the people who are in the car with you. You're creating a physical divide between the world around you, the screen, the wider city and the private space. It's very easy to isolate yourself from what's happening in the real world or the outside world. The car is a great insulator in terms of everything from noises to human emotions to the impact you're having on the people around you, which is why I think people get road rage. They forget that they're effectively in a goldfish bowl; the car makes people feel like they're in a concrete bunker and they're invincible.*

The Waze Drivers see the car as a physical divide from the outside. This can be related to a driver's training, requiring concentration and as little distractions as possible. According to Merriman, the space of the motorway shapes the very being and ontologies of vehicle drivers, requiring new kinds of skill and spatial awareness.³⁴ New techniques of driving, looking and concentrating are required, even though some drivers might develop them more effortlessly; concentration on the road ahead, not on the act of making eye contact with other drivers is the norm. Similarly, the forms of sociability and interaction of the road involve non-verbal, non-human forms of communication—they are codes and signals in the form of blinking lights, bursts of sounds and two-dimensional graphics. Waze too uses these mechanical signs through its interface, but it also enables the driver to become an active social agent with a degree of input into the driving experience of a larger group of people, not just of the individual.

³⁴Merriman, *Driving Spaces*, 145.

Community/Digital Citizenship

Alternate ways of experiencing citizenship and community must be discussed when apps like Waze begin to demonstrate the emergence of new socio-spatial constructs and modes of embodiment.³⁵ The importance of multiple avatars/users on the Waze map, the ability to report, the option to thank other users for their report, the ranking among each of them and the ability to choose an individual avatar (as opposed to being assigned one) all point to a kind of social order—a suggested community of subjects.³⁶ The result is a map with small avatars moving through the streets in real-time, giving sense of diversity within a systematic and limited group of choices. Upon seeing these others with ‘personalities’, rankings and individual names, users are reminded that each moving icon is a real, living person—a citizen occupying a particular space in the city, for a brief moment of time.

-On Waze, do you feel like a part of a community of people/drivers?

W0D5: *When I see the other drivers on the map I feel more of a community; when it's empty it feels like a regular sat-nav.*

-Are there any ways in which Waze changes the way you perceive others?

W1D1: *Yeah, actually. Within the United Kingdom, I'm ranked at about 14,000; I'm quite high-ranked, so there's probably 20-30 thousand people out there who are using it on a regular basis. I was in disbelief, when I first downloaded it, that it would be that popular, but it is. There's a community there, but it's somewhat exclusive.*

³⁵ The word ‘community’ is addressed here, as a response to Waze’s use of the word. They advertise themselves on their website as, “Waze is the world’s largest community-based traffic and navigation app.”

³⁶ See Robert Axelrod *The Evolution of Cooperation* (1984), Kevin Hill and John Hughes *Cyberpolitics: Citizen Activism in the Age of the Internet* (1998), Peter Kollock “Social Dilemmas: The Anatomy of Cooperation” in *Annual Review of Sociology* (1998), Joon Koh et al. “Encouraging Participation in Virtual Communities” in *Communications of the ACM* 50 (2007) and Caroline Bartle et al. “Online Information-Sharing: A qualitative analysis of community, trust and social influence amongst commuter cyclists in the UK” in *Transportation Research* 16 (2013)

Throughout some of the interviews, Waze Drivers spoke about the presence of these unknown embodiments that travel on Waze's screen. For some users, like W0D5, being able to see other people on the app's interface works similar to being able to see people congregated in space and provides him with a sense of community. In order for community to take place, people need to be bound to a common factor; when driving, drivers are dispossessed of their regionalism, identity and histories. Their only *known* commonality is their desire to reach their destination. This is to say, without the presence of its users displayed on Waze's map, there would be no impression of community.

In the case of W1D1, being ranked 14,000 among Wazers gives him a sense of scale and spatial position among a long queue of users—his position is closer to the 'front' than others who are 'behind' him. Comparing oneself to the other Wazers and positioning oneself in relation to them creates a new subject that is projected onto the app's interface. In turn, this opens the doors for the subject to feel scale, size, presence of a population, a feeling of belonging and a way to relate to other members of the "secret club." As such, the subject constructed through the physical/digital boundary—the subjectivity which experiences the space of Waze's interface—is embodied not merely by the presence of its avatar on the screen, but by these shifts in affectivity which place the body as the centre for determinacy.

-Do you feel like a part of a community of people/drivers?

W0D9: *It's like a secret club. We know other people who use it and I do try to recommend it to my friends and family, because I think it's great. We're getting there faster, we're beating other people with a normal sat-nav but not really a community where you can borrow a cup of sugar from a fellow Wazer.*

W0D8: *You acknowledge one another's existence in public, but no, I wouldn't say it's a big community. There's not going to be a Wazer meeting where we all go and swap stories of how quickly we avoided traffic.*

W0D9: *And if there was I wouldn't go.*

W0D8: *Yeah, do you want to be the type of person who goes to that meeting. It's a tool. It's a very useful tool.*

W0D9: *You're a tool.*

W0D8: *You're a tool.*

W0D9: *Stop it.*

W0D8 and W0D9 see Waze as a secret club of people who help each other, but when directly asked if they feel like a part of a community they say no. W0D9 speaks about not being able to borrow a cup of sugar from another Wazer. One can deduce that his understanding of community is smaller, intimate and closely linked to physical/geographic proximity. Although the term community is more vast than that of a neighbourhood or regional community, one must begin to wonder if apps like Waze are responsible for producing new, alternate types of communities or if there should be a completely different name for these types of relationships. Geographer John Pickles, aware of these socio-spatial changes brought about by technologies writes:

Images of a whole earth, representations of relationships that transcend local, regional, or national identities, new notions of community that transcend parochial conceptions of locality and place, and new mediations of self and other (constituted through digital interfaces and new representational forms) all became realities through these mappings of nature, society and the body-subject.³⁷

As such, Pickles upholds a nomadic position in which patriarchal boundaries are contested by the emergence of different social constructs with intrinsic relations to technologies, territories and space. Contrary to Pickles, Turkle believes that broadening the definition of ‘community’ to include non-physical places would be stripping the word of its meaning, stating, “it is easy to forget what the word used to mean. From its derivation, it literally means ‘to give among each other’.”³⁸ This phobia of forgetting—a fetishism for the past—paralyses Turkle from moving forward. By being transfixed amidst technologically mediated changes in society—within the framework of Braidotti’s nomadic thinking—Turkle theorises as a migrant, not a nomad.

The migrant, on the other hand, is caught in an in-between state whereby the narrative of the origin has the effect of destabilizing the present. This migrant literature is about a suspended, often impossible present; it is about missing, nostalgia, and blocked horizons. The past acts as a burden in migrant literature: it bears a fossilized definition of language, which marks the lingering of the past into the present. The migrant’s favorite tense is the present perfect.³⁹

³⁷Pickles, John. *A History of Spaces: Cartographic Reason, Mapping, and the Geo-coded World*. London: Routledge, 2004. 146.

³⁸Turkle, Sherry. *Alone Together: Why We Expect More from Technology and Less from Each other*. New York: Basic, 2011. 238.

³⁹Braidotti, Rosi. *Nomadic Subjects Embodiment and Sexual Difference in Contemporary Feminist Theory*. 2nd ed. New York: Columbia UP, 2011. 59.

For Turkle, the term ‘community’ is about physical interactions and exchanges, which require a territorialised notion of community. But failing to adapt words to social changes, for the sake of preserving dated meanings, is more hindering to language than it is beneficial. It is in the nature of linguistics to take words and update their meanings within the ever-changing context of contemporary society.

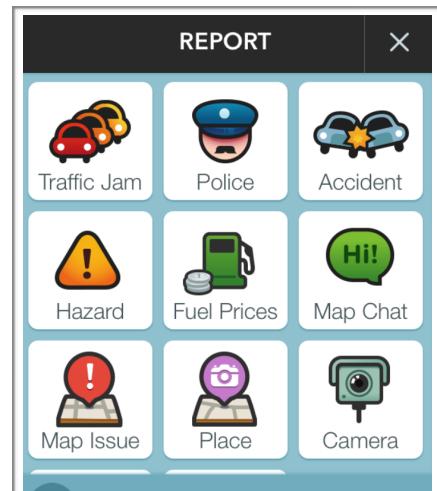
Rather than using ‘community’ Turkle suggests that a more appropriate word would be ‘club’, to describe members with common interests. Digital spaces such as websites, celebrity-fan message boards and online forums for ‘motor heads’ (to name a few) might arguably be closer to being described as clubs. Upon first glance, term seems to be applicable to Waze due to the exclusive nature of the app: not everyone owns or drives a car, and not everyone who does necessarily uses Waze. However, there is one important aspect of the term ‘community’ that is lost when replaced by ‘club’—that which has to do with an element of being helpful to other members and looking out for a common goal. Where a club is centred on a particular focus—on driving, on a particular brand of car, a sport or a hobby, for instance—the word ‘community’ is spatialised and inherently related to identity. Turkle herself writes, “Communities are constituted by physical proximity, shared concerns, real consequences, and common responsibilities. Its members help each other in the most practical ways.”⁴⁰ According to this definition, Waze is no different; the one dissimilarity lies in that the helpful transactions are digitally mediated, even though their finality are material.

-Are there any ways in which Waze changes the way you perceive others?

WOD1: *I see them as more collaborative and cooperative, whereas before an app like Waze you'd be very much competing for space with drivers.*

Now it's, “How can we work together to optimise the space we have?”

Of course, not every user feels that Waze is a community because of the unattached nature of each driver. They do not come together, they do not meet, they do not interact; the traditional notion of ‘community’ is not entirely represented through GPS services such as Waze, but one still has to ask: are users experiencing digital communities, where they work together in a symbiotic manner, stripped from their corporeality and with no need to be physically linked to each other, or is this something else? The case of Waze gives evidence to



⁴⁰ Turkle, *Alone Together*, 239.

the emergence of digital citizenship, with users being empowered by a collective sense of duty. The act of reporting traffic, police, road blocks, accidents, floods and any other type of road problems (see image on previous page), is similar to that of a traditional ‘neighbourhood watch’, where a group of neighbours patrol an area, looking out for hazards and suspicious activity. But instead of being neighbours, the Wazers are simply passer-byers, anonymous bodies who may never meet, know or come across each other again. For some of the Wazers, the anonymous aspect of the Waze avatars make them feel like they are not part of the community, while for others the *performance* of community was stronger than the need to know the individual. This method of performance is a product of the app’s system of reporting.

-Do you ever submit data such as traffic reports, presence of police, or road damages onto Waze?

W0D7: *Yes, so other drivers are warned of issues, but not police. I don't report police as I don't want to warn dangerous drivers.*

W1D4: *Yeah, quite regularly. If I come across them, as soon as I can get a chance, I'll do it. I guess as I'm feeding off the system, it's only fair I feed into the system, because I've benefited from other people. I can't see why I shouldn't let people benefit from me.*

W1D5: *Yes, mainly when I'm angry, because I'm stuck in solid traffic that's not moving. Not because of any altruistic reasons to be honest! [She laughs] It's probably because I want a way to externalise [she begins pounding the table rhythmically and angrily while giggling] the fact that I'm annoyed.*

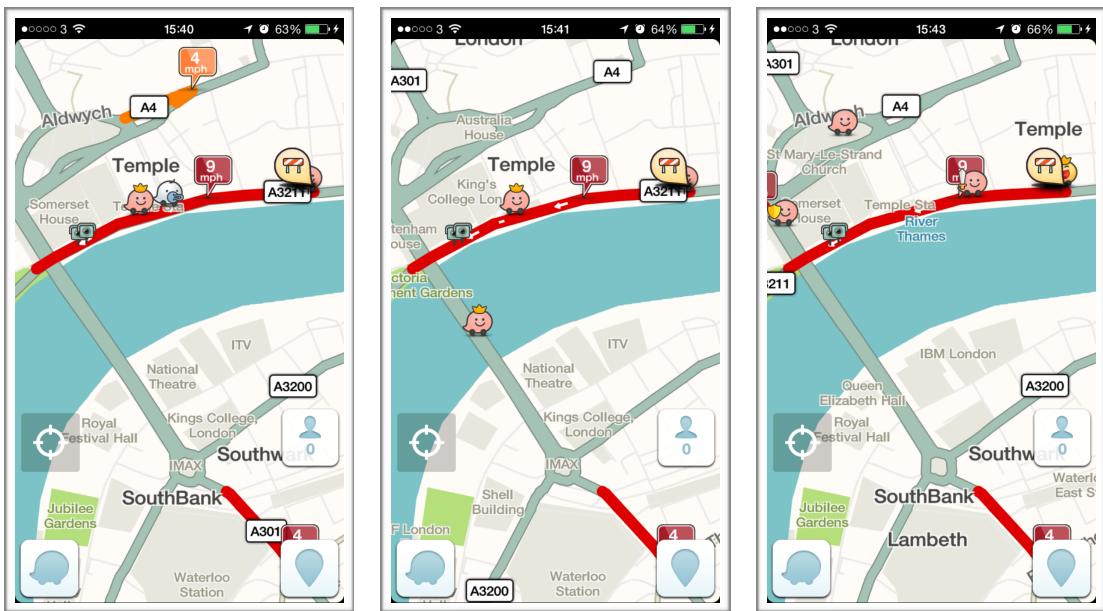
Reporting hazards and road conditions on Waze is completely optional, and the act of reporting is left as a voluntary form of communal cooperation that attests to a form of digital ethics. This sense of ethics is particularly evident in W0D7, who chooses not to report the presence of police, in the interest of the greater community at large. Some users like W0D1 state that the reason why he does not input data is because he rarely uses Waze and does not feel a strong connection to it. He believes that if he used it more, he would feel like he needed to give back to the app. Perhaps the act of reporting has to do with frequency of use and how much each user has personally invested in the app.

From the interviews conducted for this chapter, a wide range of reasons were given from those who do report. Some users expressed that it has to do with wanting to help others, but reporting could also be associated to a feeling of being indebted or a sense of responsibility to giving back to the app. For others it just has to do with an outlet to express their frustrations. The one thing they all have in common, whether it was a selfless or self-gratifying action, is that reporting is indicative of having a voice and the power to actively contribute to something larger. Waze empowers the user by granting them agency.

Trails/Digital Residue

Technologies are not foolproof. When the system glitches and behaves in a way in which the software designers might not have intended, it often opens new possibilities for new theorisations about the app's performance. Waze is no exception, and the matter of Wazers leaving behind a trail-digital residue-brings out the spatiotemporal fissures between digital and physical. Digital embodiments always perform in the manner that the physical body performs, but even though the two embodiments inhabit the same place, they sometimes inhabit them at different times. Rather than documenting and transmitting information as it occurs, Waze's technology disturbs normal space-time configurations and presents a time lag regarding reports and presence of avatars on the road.

Seeing cars drive past on the Waze screen can therefore be misleading. The interviewed Drivers mention how sometimes the app shows another Wazer coming in their direction, when in reality the road is empty. Real-time data, which is one of Waze's key characteristics, is then dubious, and through these cracks in the system, one can see that there is a lack of synchronisation between people's physical embodiments and their digital ones. A Wazer can drive down a street physically and have their location look accurate on their phone's screen, but this movement is not represented as accurately on other Wazers' screens. Therefore, it is as if each Waze Driver leaves a trace, a sort of digital projection of their self left behind to be tracked by other Wazers nearby (see images above). The software thus presents Wazers' past embodiments and routes as if they were actually taking place in the present, engaging in a play between past and present, physical and digital. Wazers' embodiments are split into two, one that moves in real-time through space and another which lingers



behind—a residue. Invisible to the eye, this latter embodiment can only be traced/viewed via the app's interface.

-What's the least successful part of Waze?

W1D5: *I couldn't care less about the 'go a bit further and you'll get a sweet'. When I'm bored and a passenger, I'm mildly amused at watching the little cars. But I would say that I've lost faith in it a little bit, because the cars don't seem to exist [she laughs]. When you see those cars come past you on Waze, and you're on a totally empty road, you know something isn't quite right with it.*

-Are there any ways in which Waze changes the way you perceive others?

W0D7: *No. Not at all. Occasionally when you get the icon up you think, "I wonder if that's the car I can see", "I wonder if that's the person I'm seeing on the road." I don't know how real-time it is, I assume it's not totally live, because often they don't seem to move very much even if you're on a motorway. I assume it's just a snapshot in time.*

These responses attest to three key points. Firstly they sustain that the use, experience and affective properties of Waze vary when the user is a passenger, a driver in motion or a driver in a state of stillness. Secondly, they show that users invest a certain level of trust in the app which can make

them reconsider their feelings when using their judgement, losing confidence in the app's ability to perform accurately. Thirdly, they give insight to how the app's glitches enable spatiotemporal disturbances of digital bodies, making the relationship between space, body and time a volatile one that resonates with theories of the posthuman.

Through the severance of spatiotemporal presence, new embodiments are formed. While the Renaissance idea of humanism approaches the subject as a unified self, posthumanism recognises the disunited nature of the subject in addition to upholding the belief that humans are able to fluidly manifest themselves through different identities. In *My Mother Was a Computer*, Hayles references:

[...] our 'postbiological' future: the expectation that the corporeal embodiment that has always functioned to define the limits of the human will in the future become optional, as humans find ways to upload their consciousness into computers and leave their bodies behind. In *How We Became Posthuman*, I argued strongly against this vision of the posthuman, ending the book with a call to contest for versions of the posthuman that would acknowledge the importance of embodiment and be conducive to enhancing human and nonhuman life on the planet.⁴¹

Hayles's idea of leaving behind one's consciousness—or traces of it—in digital form, could be metaphorically related to Waze upon first glance. However, Wazers do not leave their consciousness behind on the digital map nor are they freed from their bodies. Instead, what is displayed on the screen—the reports, avatars and their movement—are remnants, a digital residue left behind after its main part (in this case the physical body) has gone. As mentioned in chapter one, digital residue holds a direct relationship to space and time; it is a material manifestation of the no-longer—a split, performative embodiment that mirrors (and simultaneously documents) practices, movements and urban histories, rather than acting on its own accord. The agency of the digital residue lies in the possibility of multiple bodies performing in relation to each other, at disparate temporal instances.

Hayles calls for an embodied approach to the subject, meaning that technology cannot be thought of as something that can replace the body but rather something that can enhance it. Aware that the Internet and technological innovation have become ubiquitous and vast, Hayles acknowledges the need to rethink original concepts in Cyberfeminist theories. Contrasting dramatically with Turkle—who refusing to acknowledge the socio-spatial changes produced by technologies, argues for the nostalgic preservation of the semantics of 'community'—Hayles states:

As new and more sophisticated versions of the Posthuman have evolved, this stark contrast between embodiment and disembodiment has fractured into more

⁴¹Hayles, Katherine. *My Mother Was a Computer: Digital Subjects and Literary Texts*. Chicago: U of Chicago, 2005. 2.

complex and varied formations. As a result, a binary view that juxtaposes disembodied information with an embodied human lifeworld is no longer sufficient to account for these complexities. Although I have not abandoned my commitment to the importance of embodiment, it seems to me that contemporary conditions call increasingly for understandings that go beyond a binary view to more nuanced analyses.⁴²

The condition of having physical bodies driving their cars around the city and then having a digital embodiment lingering on the interface can be considered a form of the “sophisticated versions of the Posthuman” Hayles describes above. Hayles is correct in stating that it is no longer enough to have a pre-established binary view of them, because they are now a spatial matter. These embodiments are situated, they are localised and they are place-based; they exist within representation of spaces and territories, and they have an intrinsic relation to time. Through them, an archive of drivers’ movements is created, but since they are displaced in time, instead of acting as a real-time transmission, they become part of their urban histories. The digital embodiments exist in an imprecise moment in time. At points, they catch up with the physical bodies; other times they are left behind unable to move fast enough with the vehicle’s speed. And so, the Waze others navigate through the digital map after the physical bodies are already gone, echoing the driver’s movements and mirroring their spatial decisions. The physical body triggers and creates them, but they exist outside of the physical world and outside the laws of time.

Embodiments/Othering

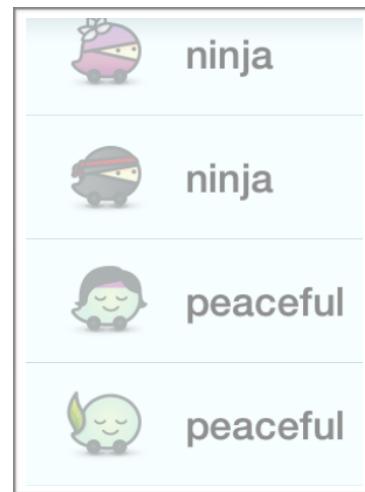
The Waze avatars are the product of a process of othering. They create alternate depictions that challenge traditional notions of the road space and what it means to inhabit and navigate through cities. Perhaps one of the most important aspects of othering has to do with gender difference and driving as a masculine form of mobility. According to historian and gender studies theorist Virginia Scharff, in her chapter in *The Car and the City*, “Manufacturers’ notions of masculinity and femininity shaped the very nuts and bolts of the machines they created, affecting the uses to which cars can be

⁴² Hayles, *My Mother Was a Computer*, 2.

put and the consequences of such use.”⁴³ Similarly, in *Driving Spaces*, Merriman gives an account of the genderisation of the M1, stating:

[T]he motorway driver was frequently constructed as a male and distinctively masculine figure. The presence of all-male AA and police patrol teams reinforced the construction of the motorway as a space of male expertise, but despite this ongoing construction of the motorway as a space of masculinity, motoring journalists, motoring organizations and civil servants appear not to have explicitly reflected upon gender differences in their discussion of motorway driving and the conduct of drivers.⁴⁴

Challenging the masculinised coding of the road described above, the caricature-like Waze avatars are designed in a variety of depictions that help diversify the identity of the drivers (see image on right). Every Wazer begins with an avatar of the Waze bubble sucking on a pacifier (when a user downloads Waze they are represented as an infant). Upon driving over 100 miles, the Wazer is then able to unlock different avatars, or as Waze calls them: moods.⁴⁵ Waze provides certain characters that make reference to gender in an attempt to create the representation of a heterogenous community. This allows different types of Wazers to find an avatar that they best feel represented by. The element of choice shows how much gender equality has progressed since the 1900s, when according to Scharff, women who wanted to drive would only do so using electric cars due to their low radius of mobility, lack of speed and gentle demeanour:



Certainly, some women who wanted the increased mobility that came with driving shared the idea that gas cars, being powerful, complicated, fast, and capable of long-distance runs, belonged to men, while electric cars, being simple, comfortable, and

⁴³ Scharff, Virginia. "Gender, Electricity, and Automobility." *The Car and the City: The Automobile, the Built Environment, and Daily Urban Life*. Ed. Martin Wachs and Margaret Crawford. Ann Arbor: University of Michigan Press, 1992. 75.

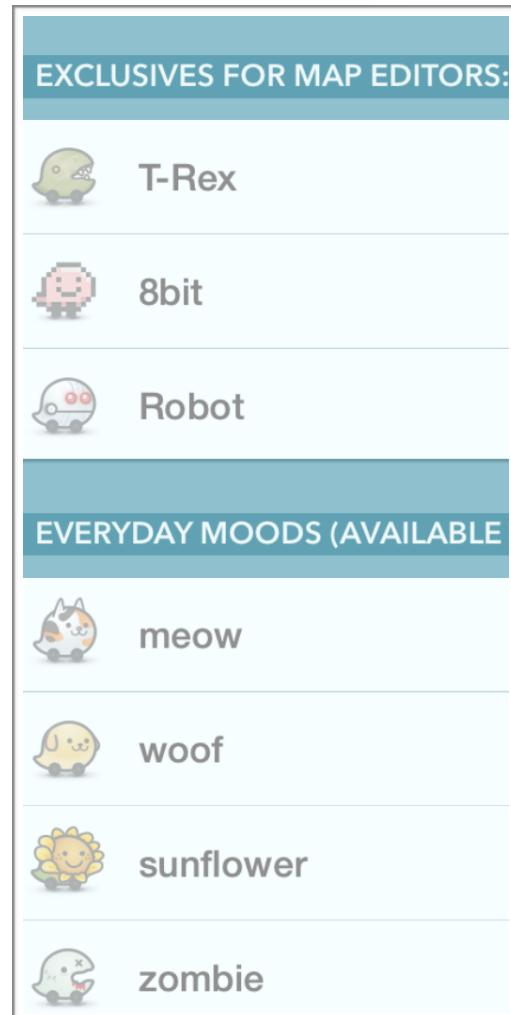
⁴⁴ Merriman, *Driving Spaces*, 167.

⁴⁵ The use of the word ‘mood’ is perhaps indicative of a recognition of the fluidity of identity.

quiet, though somewhat short on power and restricted in range, belonged to women.⁴⁶

Most of the Waze avatars seem gender-neutral, particularly because the Waze blob/bubble is not human—an interesting design decision from a Cyberfeminist perspective—but for every ambiguously gendered character, Waze has created a ‘female’ or effeminate equivalent. Instead of focusing on anatomical differences, Waze’s depiction of gender is executed through the placement of long hair and fashion accessories such as bows for the hair, which speak more about stylistic trends—albeit trends typically associated with femininity—than about biological differences in male and females. This ambiguity of gendering enables identities to appropriate any Waze avatar they please, because the differences are not biological. But as Braidotti and gender study theorist Nina Lykke write in *Between Monsters, Goddesses and Cyborgs*, “Through science and technology, the biological capacities of women and men had been equalized in order to definitively prevent the (re)-emergence of gender inequality.”⁴⁷ The only Waze avatar which has eyelashes and lipstick is the ‘Proud’ female avatar—as Waze has labelled it: a pink bubble with a rainbow-coloured heart on its back.

In a manner comparable to Haraway and Braidotti’s theories on others, Waze also includes avatars that depict the non-human. A T-rex, cat, sunflower, dog, zombie, 8-bit Waze bubble and robot (see image on right) are all listed as part of the selection of avatars, and these all attest to a certain association humans are able to make with other forms of being. The digitally informed avatars which are the more stereotypically cyborgian of them all can only be used by map editors, which are Wazers who have accumulated a set number of



⁴⁶Scharff, "Gender, Electricity, and Automobility", 77.

Also see Sean O’Connell *The Car and British Society: Class, Gender and Motoring, 1896-1939* (1998), Ruth Brandon *Automobile: How the Car Changed Life* (2002), Virginia Scharff *Taking the Wheel: Women and the Coming of the Motor Age* (1991) and Charles L. Sanford “‘Woman’s Place’ in American Car Culture” in Lewis and Goldstein (Eds) *Automobile and American Culture*.

⁴⁷ Lykke, Nina, and Rosi Braidotti, eds. *Between Monsters, Goddesses and Cyborgs: Feminist Confrontations with Science, Medicine, and Cyberspace*. London: Zed, 1996. 2.

points and miles and theoretically spend more time in their cars, on their phones and in front of their computers. All of these avatar others somehow relate to the cyborg figuration, referencing one of Haraway's key questions:

Why should our bodies end at the skin, or include at best other beings encapsulated by skin? From the seventeenth century until now, machines could be animated—given ghostly souls to make them speak or move or to account for their orderly development and mental capacities. Or organisms could be mechanized—reduced to body understood as resource of mind. These machine/organism relationships are obsolete, unnecessary. For us, in imagination and in other practice, machines can be prosthetic devices, intimate components, friendly selves. We don't need organic holism to give impermeable wholeness...⁴⁸

The presence of flora and fauna others in the Waze selection of avatars begins to tear down the walls between what is animal and what is human by creating a greater category under the umbrella of the organic. By placing a dog, a cat and a flower as potential embodiments for Wazers, the app enables potential conversations to expand on traditional ideas of what composes the subject and how these could be shaping their identities, while simultaneously showing an element of irony—of having a flower drive a vehicle that releases so many pollutants, and whose roads involve so much territorial destruction.

The T-rex and the zombie, on the other hand, offer a direct response to the figure of the monster. As Lykke and Braidotti uphold, the cyborg and the monster have been closely related to feminist science and technology studies by Haraway.⁴⁹ One of the conspicuous characteristics of the boundary between human and non-human is that its construction has been accompanied by a strong hostility towards monsters and hybrids—such is the case of Frankenstein. This is because these others are boundary figures which do not adhere neither to the human or the non-human sphere.⁵⁰ Haraway believes that monsters have always defined the limits of community within the imaginations of those who live in the West. She writes:

The Centaurs and Amazons of ancient Greece established the limits of the centred polls of the Greek male human by their disruption of marriage and boundary pollutions of the warrior with animality and woman. Unseparated twins and hermaphrodites were the confused human material in early modern France who

⁴⁸ Haraway, "A Cyborg Manifesto", 25.

⁴⁹ Lykke and Braidotti, *Between Monsters, Goddesses and Cyborgs*, 2.

⁵⁰ Lykke and Braidotti, *Between Monsters, Goddesses and Cyborgs*, 15.

grounded discourse on the natural and supernatural, medical and legal, portents and diseases—all crucial to establishing modern identity. The evolutionary and behavioural sciences of monkeys and apes have marked the multiple boundaries of late twentieth-century industrial identities. Cyborg monsters in feminist science fiction define quite different political possibilities and limits from those proposed by the mundane fiction of Man and Woman.⁵¹

In this way we see that the embodiments/digital residue left behind by Wazers' movements within their cars are anything but disembodied, making Waze of key importance to the findings of this research. Bodies are often absent or rendered irrelevant in contemporary practices of geospatial technologies, and Mei-Po Kwan in her chapter “Affecting Geospatial Technologies: Towards a Feminist Politics of Emotions” (2011) upholds that “Visual representation of the moving body by GPS introduces the possibility of subject(ive) mapping. Although represented as a series of lines and dots, the body's movement transforms the map from an omniscient view of territory into an individualised expression.”⁵² By appropriating the power of geospatial technologies through a Cyberfeminist or posthumanist perspective, it becomes possible to contest the dominant uses of these technologies and see beyond what is presented in their interface, at first glance; the hidden politics and affective properties of the interface become visible, enabling a closer study of the complex realities behind space, time, technology and subject.

Conclusion

Waze is enabling new forms of communication that are based on momentary transactional interactions that go from individual user, to app, to community of users—a series of three steps. This form of communication, where the user is one step removed from the other user does not weaken the connection between humans. Rather, it reconfigures the coding of public and private behaviour within the car, as well as that of the road. Waze introduces an element of transactional sociability that would previously have been absent.

⁵¹ Haraway, “A Cyborg Manifesto”, 26.

⁵²Kwan, Mei-Po. "Affecting Geospatial Technologies: Towards a Feminist Politics of Emotion." *The Map Reader: Theories of Mapping Practice and Cartographic Representation*. Ed. Martin Dodge, Rob Kitchin, and Chris Perkins. Chichester, West Sussex, UK: Wiley-Blackwell, 2011. 450.

These new modes of relating to each other, to technology, to the car and to space, produce new subjects. These are subjects that—much like the Waze avatar every user starts out with—are still in early stages. Turkle makes a relevant point along these lines when she states, “Because we grew up with the Net, we assume that the Net is grown-up. We tend to see it as a technology in its maturity. But in fact, we are in early days. There is time to make corrections.”⁵³ But in her attempt at an optimistic outlook, she dooms our current condition by declaring it one that needs corrections, therefore implying that things have gone awry or that, at the very least, we are headed to an unwanted state of being. Whether corrections need to be made or not seems to be of little relevance unless research is carried out to get a well-rounded grasp on the subjects these technologies are producing, as well as the spatial relations they are enabling. Before declaring Internet-based technologies like Waze as in need of correction, we must first understand if there is a problem to begin with.

Road traffic congestion became a problem in London from the early 20th Century and continues to be an issue that cannot be overlooked.⁵⁴ By setting drivers on journeys in the least congested roads, Waze minimises travel time. According to Bovy and Stern, reduction in excess travel can save American motorists about \$40 billion a year on petroleum products. Consequentially, this results in a reduction of air and noise pollution, wear and tear on the road systems and unproductive use of time.⁵⁵ The interviews conducted for this chapter highlight the displeasures and boredom of driving and traffic, providing a counterargument to Borden’s propitious discussions in *Drive*. Borden writes, “automobility complements our sense of autonomy...”⁵⁶ Although this is true, the experience inside the car can be as liberating as it can be frustrating.

Waze attempts to help solve the problem of traffic, which composes the majority of the experiential frustrations of drivers, because it defeats the purpose of driving in the first place: people drive in order to travel long distances in a compressed amount of time. The app attempts to divert drivers through alternate roads in order to ensure that congested areas become less packed, while attempting to maintain the majority of users mobile and on-time. According to the accounts of the Waze Drivers, Waze has proved successful in helping them reach their destinations as quickly as possible, although some of them admitted that the app at times glitches and suggests a path that will lead them astray.

The aggravations of driving and traffic contrast with Waze’s cartoon-like appearance. It attempts to set itself apart from other sat-nav softwares by not only incorporating its interactive quality but also by introducing an element of gamification, which further fortifies the transactional

⁵³Turkle, *Alone Together*, 294.

⁵⁴Bovy and Stern, *Route Choice*, 32.

⁵⁵Bovy and Stern, *Route Choice*, 241.

⁵⁶ Borden, *Drive*, 233.

interaction between app and user. The app plays off a system of points to induce a feeling of reward for the user. The new subjectivities fostered by Waze point to a subject that perceives digital-based rewards as material rewards, instilling in them a feeling of achievement. The digital performance of reward—of being congratulated with points—seems to be real enough. By this same system, the software ranks each Wazer, which gives each user's body a quantified notion and a feeling of belonging to a community of people who are part of this 'secret club', as some participants described. A feeling of digital community is created by the ability to see one's number and avatar on the digital screen, amongst other digital embodiments. With these individual changes the notion of community and the commitment people feel to others is also being reshaped through the desire to help each other, while simultaneously remaining detached strangers.

Hayles's theories of the posthuman subject are revisited through Waze as it enables users to select a variety of avatars. From ninjas to cats, Waze gives the option for its users to select what kind of body they want others to see them as on the digital map, whether its human, genderised or monstrous. Through these seemingly meaningless representations—which may appear to be placed there out of humour or to grab people's attention—difference and othering are foregrounded, and Waze becomes key in understanding how the human body cannot be excluded from discourses regarding the digital. Theories of cyborgs, monsters and others by Haraway, Braidotti and Lykke, dealing with hybridity and fluidity of boundaries in a subject's process of becoming, can be applicable to Waze. Although at first glance it may seem petty to relate these discourses to the avatar selection on Waze, this research argues that it is precisely through these nuanced embodiments that new conceptualisations of the posthuman subject can emerge. The avatars, through their variety of categories, enable new, unforeseen ways to theorise about the role of the body, its relation to the digital interface and its performance of identity in space.

Spatiotemporal relations acquire new manifestations as Wazers experience a dual embodiment, one physical and one digital, which occupy disparate positions in different times. The digital residue left behind is only perceptible on the digital screen, but their visible presence creates a shift in the way other users relate to the app, trust its accuracy and relate to urban space. The issue of trusting Waze is also highlighted as users face a choice to either accept Waze's route or be doubtful about it and trust opposing instincts. The driver and the app undergo a type of affective conversation which fluctuates between the user's judgement and the app's programming to fulfil the user's needs. Bovy and Stern write, "It is expected from the nature of the choice process that route selection is a very personal matter, and therefore, strong individual differences in preference and behaviour will occur which cannot be easily reduced to observable personal characteristics such as age or sex."⁵⁷ Route choice is then an assertion and a performance of one's identity. Waze destabilises and at times suppresses this performance in order to engage in an alternate type of choice, one that is constructed

⁵⁷Bovy and Stern, *Route Choice*, 33.

through the digital platform. By cloaking drivers behind an avatar on a map—one that obliterates social status, age, gender, etc—Waze gives a sense of equality to its users, destabilising the stereotyped notion that car culture is for men. Gender is not a factor in the Waze interface. However, it must be clarified that inclusive as it is, because Waze depends entirely on the use of the vehicle as well as a smart phone with Internet connection, it also deals with matters of exclusion to those who fall outside these parameters.

From the comfort of an office chair and a desk, exploring the Waze interface has different affective properties than tapping through it while seated in front of a driving wheel. The former allows for careful perusal, attention to detail and a sense of safety and tranquility absent when the app is used while a driver is in motion. The matter of interference between the app and the act of driving a vehicle points to a non-fluid way of technology attempting to integrate itself to daily life but finding difficulties in doing so. Even though Waze attempts to mimic road-discipline and communicating via hand signals and gestures—by enabling a hand-swipe over phone/three-finger tap on the screen—the interface is too busy with options and menus; navigating through it while driving is an enormous hazard. However, the politics of the information that is displayed on the map have undeniable powerful and agency. Waze can help modify a user's driving, to meet regulations, should they be straying off governmental norms. The presence of speed cameras and police, for instance, communicate a warning to particular drivers who might be driving without their seatbelt fastened, who are speeding or who are drinking. This, naturally, opens up a new set of hazards as it enables threatening vehicles to alter their behaviour with sufficient time that it allows them to go undetected by regulating authorities and systems. At the same time, the app only facilitates the ability to report the presence of these systems of control; it is the users who willingly upload the warning signs.

Like meerkats warning the rest of the group of incoming threat, Wazers partake in a communal, coded message that ensures that their driving preferences should be modified in areas where governmental surveillance is present—if their behaviour is considered illegal or problematic to authorities. While some of the reports are rooted on a ethical motivation—digital citizens who wish to be helpful to the rest of the Waze community—it can also be noted that Waze can be used in a socially irresponsible manner: through the interface's ability to reveal the location and presence of systems of control, it allows reckless drivers to drive dangerously in unmarked areas, potentially endangering the lives of themselves and others. The process of reporting, along with the display of a geographic overview inhabited by digital embodiments, gives Waze a panoptic quality which—although seemingly puts the user in a primary position of agency—still begs the question of who controls and watches whom.

Conclusion

The boy stands in front of a room, and Braidotti stares right at him. As he starts talking, he's interrupted by a digital version of himself, talking over him, projected against a wall. Dramatically asking for the audience to take a picture of the boy with Braidotti, the star-struck digital projection's playful nature brings Braidotti to burst in tears of laughter.

Afterwards, I see the boy talking to his secondary advisor. "You're very lucky she found that funny," she says in her soft, cool English accent. "That could have gone either way."

Throughout this dissertation I have purposely never used the word 'I'. To follow what I felt was expected of a research project of this nature—and to balance the seemingly jovial aspect of researching apps with a highly conventional mode of writing—I constructed my arguments in a passive, detached academic voice. To bring in a touch of humour that would disrupt the seriousness of the chapters—something which is not only important in Cyberfeminism but also something inherently tied to my own identity—I also wrote in an active voice that narrated the experience of my interactions with technology. However, upon reflection, it becomes clear to me that more than interruptions, these interludes at the beginning of each chapter act as points of tension between a fluid, playful identity and one which aims to follow conventional academic protocol. Both voices attest to a fragmentation of myself as a subject. Now as I conclude the dissertation, I look back on the study as a reconstructed subject myself.

Tracing my own nomadic journey through the structure I set up—by looking back on the methodology of the thesis, my initial aims and what was produced, as well as how I too have changed as a subject through this research—my embracing a traditional, English academic model was a point of tension that has undoubtedly translated onto this writing itself. Conducting research that centred around the discussion of mobile apps, I suppressed my Latin humour (to not come across as flippant) and embraced academic sobriety. My decision to do this resulted in my carefully controlled and highly organised mode of writing, and in turn, in the way that I deployed the figuration of the boy in the dissertation. Perhaps this is why the boy, at the moment, is still too timid; to truly be a Cyberfeminist construct and figuration, the figure of the boy, which I see immense potential in, needs to be liberated from the rigidity I conceived it under, and be free to push, test and break boundaries. In short, the boy should be free to *play*—and perhaps even misbehave. In my attempt to maintain structure, what I might have inadvertently produced is a boy that at the moment is too formulaic and disciplined. Although using the boy in this thesis helped me to find a way into Cyberfeminist discussions, use humour and mark my singular subjectivity within the writing, the role of play was underdeveloped. It may very well be that to fully use the boy's playful and disruptive potential in a more performative manner, I might have to go back to the beginning of my research period, when I first began engaging with performative methods of research and practice.

These disruptive, performative inclinations were evident in the presentation I gave at the Braidotti seminar—where I interacted with a digital version of myself on several screens simultaneously. The digital projection, interrupted me as I talked, thus taking 'a life of its own'. In turn, I—the researcher—seemingly lost control of the presentation, as a playful digital identity fascinated by Braidotti created an unexpected disturbance that made his own demands: "I want a picture with Rosi Braidotti. Take me to her!" This particular presentation was born out of curiosity and of my own desire to be playful within academia. But concerned these approaches would be perceived as naive, I held myself back from going forward with them and exploring them further. I decided to

follow academic conventions to understand and abide by them, so I could then learn to break the rules. This now leads me to think that instead of focusing on closing things down, as I do throughout this thesis, the boy might help me be *messier*, opening up new ideas and possibilities. The boy, now that the dissertation has concluded, might enable me to do just that. His relation to play, body, patriarchy, sexuality, space and time, opens new imaginaries, and although these might not yet be fully developed in this thesis, they are the beginning of a conversation about boyhood, technologies, feminism and the queering of space which can be further explored.

Similarly, I would like to note that meeting Braidotti and participating in that seminar defined a pivotal moment in the research, and the body of work that I was looking at to construct my theoretical framework was heavily influenced by it. The triadic configuration I was working on at that moment was very different; it sought to situate the use of technology across three scales: domestic, urban and work place. I had been looking at de Certeau and Lefebvre to inform my interests in alternate definitions of urban space; McLuhan, Matthew Gandy and Vincent Miller for the discussion on digital media; and Jeremy Till, Jane Jacobs and Daniel Miller to look at their ideas on collective participation. But the intellectual and performative exchanges with Braidotti at that time marked a transition period in which the scope of the research became more focused. The initial domestic/urban/work triad no longer interested me in the way that body/space/technology did.

Even though this research was heavily influenced by theory, I approached it partially as a designer, though I was not necessarily aware of it at times. This not only came through in the thesis structure and in the design of the avatars, but also through my critique of the apps, which paid attention to design-based details: mapping representations, user experience design, graphic design and illustration, which all constitute part of the apps' material qualities. My aim was never to discuss the apps' function in terms of coding or through their backdoor politics, but rather to discuss how the apps performed in relation to the body and space. That, to me, is inherently architectural, and is something that has become clear in retrospect. However, this design-based, material critique of them is not solely a product of me being a designer, they are topics that some of the interviewees themselves brought up during our conversations. The one methodological phase that I full knowingly approached from a design perspective was in the avatars: a design experiment that helped me think about and discuss physical and digital embodiments.

The avatars were initially intended to be displayed within the text itself, next to the quotes of the interviewee which they were designed after. There were practical reasons for why the final thesis depicts them at the beginning of each chapter, as a collective set, rather than as actual avatars alongside a 'feed' of interviews. Placed next to their quote, the avatars—intended to help me and the reader differentiate between each participant, as they lost their embodiment through their assigned coded name—were too small. Although maybe calibrating the size might have begun to solve this problem, inserting them within the text also put them inside the discussion itself, and because they

were a design *experiment*, not an *outcome*, it made sense to separate them from the finished chapters. These avatars helped me progress in my study, gaining clarity into a Poststructuralist-mode of thinking about embodiment. Having been invited to exhibit them in two events—Cities Methodologies and Queer Zoo—the avatars encouraged me to think about my research through the eyes of the viewer, audience and public. It also challenged me to be able to find the right way to explain the avatars and my research scope to people who came from varied academic backgrounds and with a broad range of interests. By explaining them to others, the avatars and the research became clearer to me. They helped me find a language of expression and strengthen a train of thought; in this way, they were part of my thinking technologies. They were born from me, but I learned from them.

A colleague once asked me if it would not have been more effective to input my interview data into a software that would generate the forms of the avatars, rather than designing each one individually piece by piece. The answer is ‘no’. It might have been less time-consuming with the right software, but the intention of the avatars was to step back on the process of writing and transcribing, and use the time I spent designing them as a mental breather, while still thinking about the research in a visual manner. I wondered what type of images I could produce to give my participants a body within the dissertation, one that would not be caricature-like, but rather a coded figuration of themselves, a snapshot of who they were. However, these design experiments now invite new questions, and a second step to their development might have to do with elaborating on their coded nature. There is an organised system and rationale to the avatars’ construction but one that is not necessarily meant to be decoded. In this way they can be somewhat read because of the system that has been put in place, but the way each geometric figure overlaps and juxtaposes onto the other creates a sort of visual static noise that disables a full reading. Similarly, there are questions that arise when these avatars are thought about in relation to wider fields and disciplines such as visual communication, digital culture, Internet art and visual culture.¹ Similarly, although it was not part of my method, the avatars could be placed within the field of dynamic data visualisation, which Manovich claims is one of the new cultural forms computing has enabled.² One of the major discrepancies to the avatars as they are now, is that they are not as distinct as people are, nor are they as distinct as social media avatars are. Even if they were used inside the text—as originally intended—

¹ There are theorists working in the field of Internet art that look to intersections between data visualisation and ethics. Similarly, Internet art takes data and historic precedents in order to critique and engage in specific states of affairs, to reflect on underlying systems of power, control or representation. See the work of Lev Manovich “The Anti-Sublime Ideal in Data Art” (2002), Wolfgang Bednarzek “The Art and Promise of Network Analysis” in *IEEE Multimedia* 12 No. 13 (2005), Charlie Gere “The History of Network Art” in T. Corby (Ed) *Network Art: Practices and Positions* (2006) and Jeremy Pilcher “Network Art Unbound?” in *MIT Press Journals* vol. 45(2012).

² As a leader in the field of information graphics, the work of statistician and computer scientist Edward Tufte is also particularly relevant here. Although his work deals primarily with quantitative data, not qualitative, Tufte’s interest are to blend narrative, research and design. See for example *Envisioning Information* (1990), *Visual Explanations: Images and Quantities, Evidence and Narrative* and *Beautiful Evidence* (2006).

from a visual communications perspective, their current design works as a collection, rather than as images tied to individuality. Because the images are not different enough from each other, the element of traceability that is inherent to the avatars we see in a social media feed is lost. If the avatars had played a larger role in the dissertation, this could have been taken into consideration to keep exploring their design, particularly by placing them in context with informed by leading sources.³ As such, there are still aspects inherent to embodiment and individual identity which I am still interested in exploring, and it may very well be that in the future, the boy's disruptions might be graphic rather than written—in this way the avatars themselves might be conceived and designed as humorous disruptions in the text rather than as a passive series of images.

Another aspect of the methodology which I believe deserves some reflection is in regards to the interview participants, as they provided valuable, original contributions to the theoretical arguments of my study. The majority of the interviewees in this research were regular users of the apps, while others were using the apps for the first time out of curiosity. In this way, the level of investment, familiarity and novelty for the apps fluctuated, providing a variety of relations between user and technology. You get insight into the digital, social etiquette in each app as an outsider seeing everything for the first time. Unfamiliarity is a powerful tool for critique.

The participants' voices told anecdotes that were used to sustain, compliment or enhance my arguments. Because of the nature of this research and the considerations on word length—as well as wanting to formulate specific arguments—there is undoubtedly an element of subjectivity on the quotes I selected. In this way a reader might suggest they were cherry picked. This is not done to discredit or ignore other forms of app-use that challenge my primary postulations, but rather to produce tight, precise arguments that strengthen the study's aims and fully answer the research questions. There are indeed quotes that contradict what I propose. I include these as disclaimers within the arguments, not necessarily as pulled-out quotes, particularly because my intention was to highlight unconventional ways the apps were being used, as well as non-normative relations the users were forming between themselves, the apps and space. I used the quoted material as voices interrupting the text and speaking out on each participant's non-conventional use of the apps. As a product of this, giving the interviewees such a visible, active role within the study might leave the reader wondering about who these people are. However, the dissertation was never intended to be a story about these people as individuals—though this might be a potentially interesting project in

³ Graphic representation of quantitative data have dated back to the eighteenth century, but digital forms of visualisation allow for a variety of techniques that not only bring the image into question, but also the process. For this reason, another aspect I am interested in is the role of data visualisation as an output for *behaviours*, creating mappings of human culture and economies (such as demographics, stock markets, etc). The avatars could therefore be placed within discussions of cultural criticism, iconic and narrative media representations, as well as quantified data representation. According to Manovich, data mapping has generated immense interest and relevance in relation to media art, and could also make the avatars a potential project which could be elaborated by future funding. See the work of John Simon "Every Icon" (1998) and "Bitstreams" (2001), as well as Natalie Jeremijenko's "Live Wire" (1995).

itself. I acknowledge that the participants have been disembodied and de-historicised in the name of research, and that a collective story that gave more detail about the nuances of each participant, who they were and how they used the apps could also be provide fruitful ways to discuss apps and their relations to body and space. However, that feels like a different project to me; my aim in this dissertation was to protect each user's identity—thereby abiding to the UCL REC's requirements—and provide a material critique of the apps by using the interviewees as sources for data that would help me answer my research questions.

It is important that I acknowledge that due to the nature of the subject of study—smart phone, Internet-based technology—the findings cannot be universalised. They speak of a particular population and their economic, geographic and educational background. Instead, I uphold that they indicate socio-spatial changes that are manifesting as mobile technology becomes more ubiquitous and users become more technologically proficient, as well as reliant. Similarly, my observations, conclusions and theoretical proposals are not necessarily shared by the interviewees in the study. Although the interview data was recorded and transcribed for accuracy, I present the participants' ideas and accounts as research; they are not intended to define the participants as individuals. This is to say, I do not attempt to use the interview quotes to brand or stamp each user with particular labels, but rather I look to their conversations as a way to construct a meta-narrative exploring and analysing the field of experiential digital embodiment. In this process I propose that by navigating and crossing between digital peripheries, the subject is deconstructed and reassembled in nuanced ways. Unsurprisingly, I find Haraway, Braidotti and Hayles extremely valuable to this discussion of digital spatiality and digital subjectivity. These three theorists' ideas on technologically-mediated embodiment has previously not been linked to a situated, localised and spatialised context, particularly because they have been discussed in fields such as sciences, medicine and feminism, but have been absent from discussions related to the urban. Looking at Haraway's cyborg and her ideas on situated knowledge, Braidotti's theories on the figure of the nomad and of attractors, as well as Hayles's discussions on affectivity and the motherboard, leads me to propose that Grindr, Mappiness and Waze are performative agents with material manifestations—they are forces at play within the processes of becoming subject.

As I have discussed throughout the chapters, each app serves a different function and thus enable different modes of performance for the users, suggesting different outcomes. Looking to Grindr, Mappiness and Waze as case studies allowed me to address matters of embodiment, identity and difference as place-based constructs, and yet technologically affected, modes of performance. Similarly, by linking each app to a particular type of spatial movement—strolling, striding and driving—the dissertation echoed Braidotti's aims in *Nomadic Subjects*, as she writes, "This project stresses the fundamental power differential among categories of human and nonhuman travellers or movers. It also sustains the effort to develop suitable figurations for different kinds of mobility they embody and

engender.”⁴ In this way, I discuss subjects as fluid and capable of creating shifts in identity and embodiment by navigating through different spaces—physical and digital.

When I read the three apps alongside each other, I see three common themes emerging from them in regards to the digital subject and their relation to space. I believe that these commonalities suggest descriptions of the twenty-first century digital app-user to help answer the question, what kind of collectivities are these digital technologies producing? The subjects that I have discussed are subjects that, due to their fragmented bodies and altered spatiotemporal conditions, leave behind digital residue; secondly, they are subjects with a transactional sense of sociability, who create a sense of identity through and by the presence of other bodies on the interface; and lastly, they are subjects who I propose are in the pursuit of wholeness through technology—though problematically with varying degrees of ethical responsibility for others, raising the question of whether we should be looking to propose a sense of app ethics.

Firstly, the unitary notion of the subject is long gone; these subjects’ embodiment extend from the limits of their skin, of space and time. The apps I looked at in this study are producing subjects with fragmented embodiments that inhabit disparate spatiotemporal conditions. These fragmented bodies—split between physical and digital space—are not passive, but rather play an active role in their ability to enable spontaneous sociability. Particularly in Grindr and Waze, the apps’ inability to refresh themselves in exact, precise real-time meant that while users were digitally present in a particular place on the digital map, their physical body was present in a different location—something I described as digital residue. Like a fingerprint left on a surface, each Grindr, Mappiness and Waze user left an imprint on the urban fabric, detectable via the mobile phone’s interface, echoing Braidotti’s claim that “The body has turned into many, multiple bodies, and no scientific gaze, however epistemologically trained, can render a unitary synthetic vision of the totality of discourses that compose the contemporary body or embodied self.”⁵ Seemingly active and represented as actually present in space in real-time, the digital embodiments I studied in this dissertation split from the spatiotemporal conditions of the physical body and lingered behind as residue composed of data.

On Grindr, digital residue indicates previously unforeseen ways for gay men to partake in cruising practices in the city. The ephemeral aspect of the Grindr digital space, disappearing after an hour, resonates strongly with the nature of queer spaces in the city in urban histories, where the places were hidden from plain sight and would come alive during particular times. However, because users leave their imprint on the digital space for up to an hour after having closed the app, I suggest that Grindr exploits users’ privacy, leaving them visibly exposed on the grid. As such, the fragmented

⁴ Braidotti, Rosi. *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*. 2nd ed. New York: Columbia UP, 2011. 4.

⁵ Braidotti, *Nomadic Subjects*, 193.

subject Grindr is producing leaves its users uncertain of where the boundaries between digital and physical social behaviour lie, as queer interaction in the city is reconfigured by the extreme overlaps between the two types of spaces. This is something that contrasts with Waze, where users do not intend in coming together or meeting face to face. On Waze, the fragmentation of the body and seeing it displayed as residue on the interface affects their way of relating to the app in terms of trust. The system glitch and time lag makes users wary that the information the app is giving them might be faulty as well.

In the case of Mappiness, I believe that digital residue manifests in a different way. Because there was no map or body displayed on the mobile phone's interface,⁶ the residual aspect came through the actual performance of the user with app-experience: if the app beeped a participant at a certain time, and the user was unable to answer at the exact time they were beeped, they sometimes reverted to a past mood and answered in past-tense. In this way, the physical body experienced a virtual displacement, where answering in-the-now depended on how they felt and where they were in the past. In this way, Mappiness is producing a kind of subject that holds a dynamic interaction with past states of themselves, one that is engaged in a process of introspection and self-quantification. I am particularly interested in the accounts of the two Mappiness Participants that lived outside the UK, as these brought to light an alternate way in which users experienced self and spatial displacement. They expressed that through using Mappiness, they did not feel a connection to the cities they were present in, instead feeling a sense of connection to the UK because the app displayed its information in English. With both users living in non-English-speaking cities, having the Mappiness app 'talk' to them in English created a link between their particular location and Mappiness's home-base, resonating with Braidotti's discourse on language, territory and nomadism:

Choosing to resist this monological reduction, I acknowledge the multiplication of my possible locations, which are not only spatial but also temporal. My memories splinter and proliferate accordingly, bringing in data that may or may not relate directly to my lived experience, but are integral to my consciousness.⁷

Language is a way of undoing the stability of fixed identities, as Braidotti argues, but I also propose that language is a way of undoing the stability of *spatial fixity*, enabling the subject to become displaced from their current setting and 'moved' to a new location—even if just affectively.⁸ The fragmented identities of the app users point to a fluid, unstable and dynamic subject, with

⁶ It is important to clarify here that Mappiness users do leave an imprint and a mark (a reading of happiness in that space) on the digital map, but it is accessible on a browser, not on the app's interface.

⁷ Braidotti, *Nomadic Subjects*, 110.

⁸ Braidotti, *Nomadic Subjects*, 43.

transformative relationships to space, mobile apps and interfaces. Similarly, the continuous flux of information and the three-way interactions between body, space and technology attests to a subject that not only inhabits physical space, but one that also is able to perform spatial practices in digital spaces; it is a subject that constructs alternate relations to the city through the technology.

Fragmentation of identities played a pivotal role throughout the dissertation, and each of the three case studies showed that their particular users constructed a digital embodiment and subjectivity in different ways. The case studies have demonstrated that, in digital spaces, identity and embodiment are not solely constructed through the selection and use of a profile picture, but also through physical attributes, subversion of character traits, misrepresentation of identity and crafting of alternate biographies.⁹ In Grindr, the manner in which users crafted a writing voice, subverting certain character traits for instance, was indicative of the fluidity of identity—though in some cases it could also be an active form of misrepresentation, as argued by Goffman. However, the recrafting of a user's identity also lent itself to being an empowering choice: by framing the self in a specific, edited manner, the user controlled their identity and the message it sent out in a way that is not possible to do in person.

In Waze, users did not construct a profile in the same manner that Grindr users did, but they selected an avatar that best conveyed their personality or mood. As such, they were able to switch from one avatar to the other, not looking to be necessarily represented by the avatar in terms of their bodily traits but rather fluidly negotiating which elements of their identity they wished to be represented on the digital interface. Mappiness did not portray a corporeal representation of a user's embodiment, but rather a graphic representation of the participant's quantified mood inputs: the charts.

The type of subjects being produced by these app technologies sought a space free of judgement while also desiring confidence and companionship—even if in a transactional manner. There was a desire to have visual, emotional or social access on command with a seemingly low level of investment. However ephemeral these digital and social connections appeared to be, they enabled and are enabling the construction of alternate spatial relationships which cannot be ignored, bringing me to my second proposition as to the kind of digital subjects the apps are producing: subjects with a transactional sense of sociability. Grindr, Mappiness and Waze held a strong relationship to user-experience in real-time, and along with their dependence on physical location of users, attested to spatial connections linked to the presence of bodies. This is to say, through the presence (or absence) of bodies on the digital screen, users began constructing an understanding, perception and

⁹ Here it is worth noting that there is currently ongoing research in relation to images in the field of digital culture. Research conducted by digital image theorist Ingrid Hoelzl, for instance, investigates how the screen affects the conception and production of images, as well as how the many uses of mobile screens contribute to the constitution of a shared space between citizens and images. Hoelzl proposes an 'expanded image theory', that rethinks the relationship between screen images today, in relation to other disciplines such as visual studies, vision research, media and communication studies, art history and urban studies. For more on expanded image theory, see her paper "Screens—The Place of The Image in Digital Culture" in *Leonardo* vol.45 (2012).

relationship to their environment. A sense of self-interest is inherent in all of the three apps, but despite their self-focused nature—sexual gratification, quantification of one's mood and reduction of time spent driving with the help of others—a sense of transactional sociability emerges, creating a network of users who experience belonging as well as alternate configurations of spatial connection to the city. However, I feel compelled to clarify that I do not seek to impose the term 'community' onto the networks of interpersonal relationships manifesting through the apps, but rather I suggest that the term 'community' is destabilised by the subjects that took part in these digital and spatial practices. Therefore, my aim is to encourage a conversation rooted in digital conceptualisations of spatial relations, rather than clinging to nostalgic ideals of community.¹⁰ The reason why I argue for a rethinking of what 'community' might encompass in the twenty-first century is because the apps all produce digital and material manifestations of belonging, collective and group benefits, looking after others, geographic commonality and a general sense of collective values. However, in these digital spaces, where transactional interactions were so prevalent and where users' feeling of responsibilities for others were inconsistent (particularly the case of Grindr), the idea of a *traditional* community is contested.

Through the apps, different types of collective collaborations took place, where mostly all of the users felt a strong desire to either find or see others on the interface—to construct a sense of self and orientation—even though they were not necessarily looking to form life-long ties with them. This was particularly the case on Waze, where users benefited from each others' presence on the map. On Waze, the interviewees partook in individual reporting to create a localised mapping of traffic

¹⁰ I of course am not the only one which finds this topic to be relevant, nor do I suggest that it is truly new. Here writer Malcolm Gladwell's ideas on the role of social media and the Internet to foster social collaboration and change, particularly in regards to the Arab Spring crisis, can be used as an example. Gladwell upholds that despite political protests being organised via Twitter and Facebook, these collaborations are not revolutionary merely due to their nature of being organised in cyberspace: he argues that social and political revolutions occurred long before the arrival of the Internet—limitations or ubiquity of tools of communication are independent of people's ability to socially organise. This stance has created a stream of disparate opinions, among which include sociologist Zeynep Tufekci, who claims that such statements, as upheld by Gladwell, are intellectually lazy. Tufekci claims that although online activism is easy to grow, it often does not last. In a 2014 TEDGlobal talk, she claimed that this has to do with groups of people needing to think together collectively to develop policy proposals, create consensus and figure out political steps to leverage; good intentions, bravery and sacrifice are not enough. Similarly, this could be related to the 2011 London Riots, which were organised primarily via Blackberry Messenger. Protected under its software's encryption, rioters were able to come together and manifest at different locations without having their communication intercepted by the authorities.

Looking at the three app case studies together, their relationship to digital forms of community can also be placed within a larger context in media and culture theory. Historian and media theorist Charlie Gere argues that the term 'digital' not only refers to computer data, but also to the hand's fingers (digits). In his book *Community without Community in Digital Culture* (2012), Gere upholds that touch has been an inherent part of connectivity, community and participation, and in this sense, today's Western culture is more digital than ever. Constructing his arguments from philosophy (Jacques Derrida), science (Sigmund Freud and Charles Darwin) and theology, Gere acknowledges that technologies also foster separation and distance, destabilising the traditional conception of community. On the other hand, media and culture studies theorist Deborah Chambers's research looks to social media to study changing notions of interpersonal networks and connections, while also generating alternate modes of self representation and etiquette. For Chambers, this points to a theory of 'mediated intimacies' rooted in a sociological transformation of our ideas about intimacy, family and friendship. See her book *Social Media and Personal Relationships: Online intimacies and networked friendship* (2013).

conditions in real-time, and helping other Wazers navigate through the most efficient roads. In this way, a sense of collective symbiosis among the Waze network can be identified. However, they did not interact with each other nor did they feel a desire to socialise with other drivers. But the reverberations from this type of digital interaction—where users reported because it was either novel, entertaining or beneficial to others—showed how the Waze Drivers construct a sense of collective collaboration through the app. The type of subjects produced by Waze point to subjects with a sense of wanting to help themselves, while also helping others—but with a limited level of investment. They are subjects who at times feel a sense of responsibility for making an impact on the wider Waze community, which makes them report traffic conditions onto the app.

Mappiness created a different type of collaboration, in which mostly all of the Participants decided to join LSE's study to help gather data for the research. In this way, a group of people interested in national wellbeing or in learning about their moods engaged with the app at an individual scale, to create a reading of a territory at a macro scale. It was particularly observable that the Mappiness Participants—aware of the individual and anonymous nature of the survey—desired to see the moods of other people within the city, attesting that these digital subjects long for connectivity, in a manner similar to what Haraway described of the cyborg. Mappiness presents collectivities that even though are anonymised, tend to have a desire to be placed in a wider set of participants, where research meets sociability. They are a group of people that are able to introspect but that are also wishing they knew about others.

A book worth mentioning here is *Digital Dialogues and Community 2.0: After Avatars, Trolls and Puppets* (2012), edited by cultural studies theorist Tara Brabazon. The book parts from the premise that technology is redrawing the boundaries between connection, consciousness and community, while introducing alternate theories of community in relation to identity formation. Throughout its essays, the writers discuss 'new' modes and models of community, connection-building and social change. I bring this up now in relation to my case studies, particularly because the book mentions a shift in how we have used the Internet: from a mode of use rooted on *searching*, the Internet has moved to becoming a place where we started *sharing*. In the case of Grindr, Mappiness and Waze, searching and sharing play vital roles in different ways, but I would also propose that there has been a shift from searching and sharing, to *shaping*. *Digital Dialogues and Community 2.0* seeks to answer a question that is relevant to this dissertation: how can we understand the world beyond *individual* experience? This, in turn, reminds me of Sara Ahmed's *Queer Phenomenology*, as she talks about how our identities and the things we gravitate to are a product of the objects, spaces, people and conditions that surround us. By these materialities being placed around us, we move and decide on directions—not just physical directions, but also in terms of how we become subjects. An isolated view of the self fails to take into consideration that

technologies, even though they have the power of anonymising us, set up a space where we perform in relation to each other,

On Grindr, several Grindr Guys expressed how the app helped made them feel not only connected to their location, but to the wider gay community in general. By eliminating physical obstructions, the interface displays a visible queer space placing users within pixel-distance of each other and bringing together a variety of identities who might not have ‘found’ each other otherwise. In this sense, Grindr proved to be a tool that connected a group of users who throughout history have been marginalised and placeless, and gave them a forum to practice their identity, experience belonging and even foster self-acceptance amidst a network of others—in a non-heteronormative space.¹¹ However, the heavily sexualised nature of the app meant that often the importance of physical looks and highlighting certain body features was a priority, and users who are deemed unattractive are often treated harshly. This issue is further problematised by the app’s option to allow users to label themselves as members of a particular ‘tribe’, according to their physical features. Users were then able to exclude (as well as make visible) certain tribes by means of Grindr’s filtering system, rendering the body’s presence in proximate space irrelevant. In this sense, matters of exclusion became evident; in an app that aimed to bring men closer together and render physical obstructions nearly insignificant, it also produced a space in which subjects are extremely harsh and judgemental, where matters of racism and ostracisation are immediately perceptible. When these problems are foregrounded, the idea of Grindr as a communal forum is dubious because of the hostility of some users and the exclusive nature of the status quo’s preferences. Similarly, the feeling of transactional interaction and the strong link to gamification—where the Grindr Guys expressed that they perceived others on the grid as characters, not as real people—meant that technology raises serious questions about the lack of ethical behaviour from many of its users.

The issue lies here: precisely because modes of interaction and performance on the apps are transactional and users are always a step removed from each other—users interact with each other’s digital body or digital residue (i.e. a Grindr user messaging another Grindr user via the app)—there is ambiguity in ethical behaviour and social etiquette. The apps are not value-free. Although these apps liberate individuals into being able to experiment with multiples processes of becomings and identities, they are also positioned between grey areas in ethical behaviour. The novelty of the topic under study means that users still do not know how to behave or perform in regards to this newfound sense of freedom, devoid of social repercussions. The decorporealised aspect of digital technology leads digital subjects to at times feel that the persons on the screen are not entirely human, and it becomes easier to say or do anything without thinking of any material consequences

¹¹ I would like to note that the Internet has throughout the decades provided a space for marginalised identities to experience belonging and engage with others as a process of becoming subjects. Of these groups, gay men and women have appropriated it as a place hidden from view, where they can create—or perhaps cultivate—their identity. See, for instance, Jennifer Egan “Lonely Gay Teen Seeking Same” in *The New York Times* (2000).

outside of the self. In this sense, I am concerned for the type of subjects we are becoming, though I am not fatalistic about it. I do not believe that we are slaves to technologies and machines and that one day technological-thinking will dominate us. Instead, I believe that what we need is deeper thought into the subjectivities being created by technologies and perhaps even a proposition of digital ethics—or in my case, of app ethics—that might help create more responsible and socially aware subjects. This is something I did not discuss in the dissertation, but it is something that looking back on it—in my attempt to reflect on what type of subjects my Grindr Guys, Mappiness Participants and Waze Drivers are—feel might be a future project not only related to a discussion in the field of spatial theory but also digital humanities and digital culture.¹²

I mention this because there is undoubtedly a sense of freedom that comes with digital spaces, encouraging users to perform in (mostly) whatever way they like, but because online behaviour bleeds into physical behaviour, it is important that the liberations technology foster ensure that digitally constructed subjects are empowered, not barbaric. Internet technologies' extreme sense of liberation enable digital spaces to be crucial tools for twenty-first century subjects to construct and play with their identities. The three apps I have studies are a testament to this. By giving us different mediums, technology now allows us to explore our identities, because, more so than ever before we can tune into different parts of ourselves through multiple interfaces and platforms. Taking my cue from a Cyberfeminist mode of thinking in which the matrix is described as the mother, these digital apps, as mediums, provide a way for the fragmented body to search for subjective wholeness, even if in vain. We will never truly be one whole subject, but we can spend our lives trying. And so we as digital subject navigate through different digital peripheries, and whether aware of it or not—through these movements and interactions—we are deconstructed, in a way that our search for wholeness in itself ensures a fragmentation of any wholeness that we could hypothetically achieve.

Arriving at these conclusions is largely due to my readings of Cyberfeminist literature; by translating the work of Haraway, Braidotti and Hayles into a digital spatial theoretical framework, I have situated feminist digital theory within architectural discourse. I believe this where another notable contribution of my dissertation lies: in bringing together research methods from critical architecture and spatial theories, qualitative interview analysis of app users, design techniques that propose different identities and a performative method of writing which proposes the boy as a

¹² Ethics in relation to the digital is an ongoing discussion. As media technology becomes diversified, new considerations must be taken to respond to each platform. Media theorist Charles Ess's *Digital Media Ethics* (2009), for instance, is considered to be the first interdisciplinary text that looked to the ethical issues of digital media from a global perspective, rooted in ethical theories from diverse cultures. Through it, Ess discusses privacy, copyright, pornography and violence, all of which could be read alongside Grindr, Mappiness and Waze. Tangentially, moral philosopher Agustin Moratalla uses the term 'infoethics' in his work to analyse the ethical problems that have arisen throughout the past decade, while considering infoethics as an agent that enables alternate forms of citizenship. See "Infoethics and Human Rights, Possibilities and Limitations of Digital Citizenship" in *Revista de Fomento Social* vol.64 (2009). Also see Matthew K. Gold (Ed) *Debates in the Digital Humanities* (2012), Kenneth Kernaghan "Digital Dilemmas: Values, ethics and information technology" in *Canadian Public Administration* vol.57 (2014) and Amber L. Davisson and Paul Booth (Eds) *Controversies in Digital Ethics* (2016).

Cyberfeminist figuration. As a piece of research conducted in an architectural setting, this dissertation situates itself within experiential and critical approaches to architectural and urban space, through the use of mobile app technology. Theories accounting for the impact of technology on architecture and urbanism fail to acknowledge the multiplicity and specificity of spatiotemporal connections experienced by citizens, as well as the spatial practices which manifest and emerge as difference through the technologies of every day life. The figurations I discussed in this study—the cyborg, nomad, computer-mother—are excellent parting points, but I believe alternate figurations and ways to conceptualise, understand and theorise space are needed. These theories should account for subjective difference, rather than ones centred on patriarchal models of the subject or ones that isolate technology from spatial practices.

Rather than proposing the design of a new GPS-based app, which may very well be the subsequent design phase stemming from this project,¹³ I created a critical analysis of existing apps to study the way they have reconfigured spatial relations, and to create a socio-spatial reading of the types of identities they have produced—designing an all-new app would not have allowed me to study *existing* subjectivity nor patterns in processes of becoming. Apps are made at a fast pace aimed at increasing their commercial value. This is to say, though they have been vastly successful, the development and design of apps has, prior to this research, not been approached critically in terms of what their implications are regarding the social and spatial reconfiguration of urban space, as well as the formation of alternate forms of embodiments and identities. In this way, this dissertation argues that apps are not value-free commodities, but rather powerful and catalytic agents in the production of located, twenty-first century citizens. As mobile connectivity evolves and becomes reconceptualised through digital devices with alternate relations to space, more research into their different reverberations must be carried out. I do not aim to describe the apps optimistically, but portrayals of technology as a fatalistic force must be contested. What we require, and what I have been arguing for in this research, is an understanding of the cognitive, embodied, performative and affective properties that apps foster for their users. This enables us better understand and describe the relation between people, machines and their environments. In other words, instead of critiquing technology as an agent which threatens the evolution and wellbeing of humans, I looked to find ways in which we could better understand and make sense of the performative, spatial and social relations apps are enabling. This allowed me to look at GPS-based apps in ways which had not been looked at before: as performative agents with material manifestations, and as forces at play within the processes of becoming subject. However, my analyses are not meant to be prescriptive nor are they intended to be used as universal explanations of our current social and spatial conditions.

¹³ One of the design outcomes of this dissertation could be an app designed to conduct urban research. I criticise Mappiness heavily as a research app for urban space, so learning from its mistakes and creating an app that does not create such a flat reading of space, one that allows for layers of data to reveal a more complex reading of how people relate to urban space, could be interesting, informative and beneficial.

Another aspect of the thesis that must be noted is that I have purposely discussed groups of people which have either not been catered to properly in society or that have been othered, including them in conversations about data and identity, and their relationship to urban space. By celebrating subjective difference, through the interviews and avatars, I have created a record of the kind of subjects emerging through twenty-first century mobile app technology. There is space to discuss the collective subjectivities through their relation to citizenship in the future, but it is imperative that it is placed in relation to a wider discussion of citizenship and commons.¹⁴ These spatial relationships were reminiscent of communities, but rather than being based on physical interaction and exchange of goods, digital interaction triggered a system of reward—material, emotional or psychological. For this reason, I uphold that the subjects Grindr, Mappiness and Waze are producing are spatiotemporally fragmented subjects that leave behind digital residue; subjects who partake in a transactional form of interaction, benefitting themselves as well as others; and subjects who move across digital peripheries and spatial boundaries in the pursuit of subjective wholeness.

Apart from what the apps do to individual users' identities, there are also questions that arise regarding the politics of behaviour and responsibility on behalf of the apps' developers. This is particularly evident in Waze, which destabilises governmental structures of driving control. For instance, by having users map out the location of speed cameras throughout different roads, Waze challenges the strategy of placing cameras in the first place, which aim to regulate and control citizens on the road with the element of surprise. This was also the case when Waze's users reported the

¹⁴ There is a concept that I am very much interested in that surfaces now that this research has concluded and I look back on the findings I have produced: that of 'digital citizenship'. Having finalised this study on Grindr, Mappiness and Waze, and considering the ethical and behavioural questions that arise from the apps, a particularly relevant book by media psychologist Jason Ohler, *Digital Community, Digital Citizen* (2010) might help inform the elaboration of digital citizenship in relation to my research—even though his focus is in relation to education of children and teenagers, like many other researchers discussing digital citizenship. Ohler rightly states that digital citizenship is being defined largely by what is right and what is wrong. However, he upholds that this presents a series problem because in this search for righteousness, we miss an opportunity to reinvent ourselves. For Ohler, more so than about doing what is right, citizenship has to do with the choices people make in morally ambiguous situations, and as such, it considers who we are and who we wish to be, individually and collectively. Ohler therefore presents a relevant take on the role of citizenship in relation to digital spaces and processes of becoming, at individual and societal levels; it raises questions in terms of our rights, duties and levels of participation—as can be seen on Grindr, Mappiness and Waze. Similarly, it raises questions about inclusion and exclusion, as is evident in Grindr.

Another aspect that is important to mention is that with a sense of digital community and citizenship comes a strong tie to the sharing of information and its ownership rights. Here, my research could be expanded on by secondary sources operating in the field of commons or public policy, such as Lisa J. Servon's *Bridging the Digital Divide: Technology, Community and Public Policy* (2002). In it, Servon looks into the problems of unequal access to information technology, and seeks to examine what the future implications might be if the 'digital divide' continues to exist, while making recommendations for future public policy. Similarly, Karen Mossberger, Caroline J. Tolbert and Ramona S. McNeal's ideas in *Digital Citizenship: The Internet, Society, and Participation* (2007) provides insight for potentially informing my research by the fields of urban planning, political science and public administration. In *Digital Citizenship* they uphold that the Internet has the potential to benefit society as a whole because of its inclusive nature, while arguing that technology-use matters for wages and income, and for civic engagement and voting. In this way, the book creates intersections between technology, economic opportunity, democratic participation and inclusion that could provide interesting outputs for this dissertation.

presence of police vehicles while driving. These are systems of control intended to keep car speeds at the legal limit, as drivers cruise cautiously in case they are surprised by a police vehicle ahead. Disclosing the location of police on the Waze map can help users find help when they need it, but it can also send a warning to reckless drivers who may be under the influence of alcohol or may be driving at dangerous speeds.

As privately owned apps, another concern arises regarding data privacy and ownership. It is currently unclear how much data Grindr, Mappiness and Waze can make available to the public, as well as what would happen to the data (and to the users) in the case of mergers or dissolutions of the companies. The corporate decisions and backdoor politics of each app could have implications on their designs and functional properties. Changes to the interface are easier to notice, but when it comes to the data privacy of each user, the changes in policies might be explained in fine print, where most people simply scroll down and click 'next' without reading.

Waze was recently sold to Google but has had no visible changes on the interface yet. Google Maps, however, uses Waze's crowdsourced information to feed it to its own set of users. As such, non-Wazers benefit from the active contribution of the Waze community of drivers who are reporting traffic data to help members of their own group, not necessarily intended for the broader driving community. Wazers are the source for data and content, doing it for free. Meanwhile, Waze uses this information as a source of profits—and although nothing has been said about monetary remuneration regarding Mappiness thus far, the data they are producing would be valuable to companies who might want to purchase it from LSE. Braidotti writes, "It is just today's variation on the theme of bodily exploitation, which fits into the global marketing of both material commodities and Western life-styles, cultures and accents."¹⁵ Therefore, future conversations about privacy, power, control and app ethics are indispensable when it comes to Grindr, Mappiness and Waze, particularly because issues of exploitation cannot be ignored. Alexander Galloway's *Protocol: How Control Exists after Decentralization* (2004) is a useful text for elaborating on this discussion. In it, Galloway discusses technology through a material understanding of it—ontologically, as well as economically and politically—particularly by elaborating on the computer code: a set of procedures, actions and practices which are designed to achieve particular ends. As such, it places technology and programming at the centre of power relations intended to control society, while encouraging that users experiment with the code as a means to be free. In this way, the figuration of the boy might also be inserted within discussions of data coding, programming and hacking.¹⁶

Grindr has the largest database of gay, bisexual and queer men in the world, tracking the exact location of each of them while they are online. For a group of people who have been discriminated and persecuted throughout history, there is potential danger to the safety and

¹⁵ Braidotti, Rosie. *Transpositions: On Nomadic Ethics*. Cambridge, UK and Malden, MA: Polity Press, 2006. 52.

¹⁶ Also see Gilles Deleuze "Control and Becoming" in *Negotiations* (1990).

wellbeing of users should the technology be accessible to certain governments or hate groups that penalise non-heteronormative behaviour. In May 2015, *Business Insider UK* released an article on their website disclosing that Grindr hired banking firm Raine Group LLC to help find a buyer.¹⁷ The net worth of the company has not been disclosed nor have the speculations been confirmed, but—for comparison—reports on the selling of popular dating app Tinder, valued it at \$500,000,000.¹⁸ Compared to Tinder's 50 million users, Grindr has reported an approximate 10 million users.¹⁹ The power moves behind a potential selling indicates how one man and his team have built a commercial empire off of the gay community's sexual desires and their proclivity for the visual.

Mappiness users are research participants and their data is anonymised, and the researchers at LSE state on their website that they themselves do not who their users are. But whether the data can be linked back to each iPhone or even to the email account participants used to download the app on the Apple Store is unknown. Furthermore, Mappiness's data is questionable in terms of where it is going to go, what it is going to be used for and who might purchase it. The app performed self-servingly, requiring constant participation from the user and being solely relevant because of them. In return, it gave back charts—which for the purpose of this study, provided interesting data in relation to posthuman embodiments and the multiplicity of ways in which these can manifest. But for the average user interested in helping a research, the charts are mere analyses, a recollection of the data they uploaded—data that when perused, did not seem to be clear enough to know what one is looking at. In many ways—such as expressing that users are getting “the warm glow of helping increase the sum of human knowledge”—the charts come across as somewhat of a ruse. The graphed results seemed to be an easy way out, a sort of mediocre consolation prize for their rather generous participants.

The only qualms with speaking about exploitation would therefore be that for the three apps, users sign up voluntarily. In the case of Mappiness, users were made aware of what they would get out of the study and could stop participating at any moment. But if one thing showed through talking to the Mappiness Participants it was that users' good-natured intentions to help out a research sponsored by a major academic institution outweighed their desire for some sort of compensation or reward. The moment in which Mappiness took advantage of the help its users provided—all the while excluding the participants from the process, progress and outcomes of the research—it breached

¹⁷ Kosoff, Maya. "Gay Dating App Grindr Is Reportedly Looking for a Buyer." *Business Insider*. 8 May 2015. Web. 29 Sept. 2015. <<http://uk.businessinsider.com/grindr-may-be-looking-to-sell-2015-5?r=US&IR=T>>.

¹⁸ "Is Grindr about to Be Sold?" *The Daily Dot*. 11 May 2015. Web. 29 Sept. 2015. <<http://www.dailyydot.com/technology/grindr-app-sale/>>.

¹⁹ Newall, Sally. "Tinder: The Online Dating App Everyone's STILL Talking About." *Marie Claire*. 7 Sept. 2015. Web. 29 Sept. 2015. <<http://www.marieclaire.co.uk/blogs/543941/tinder-the-online-dating-app-that-everyone-is-talking-about.html>>.

ethical considerations, fostering transactional interactions, where the researchers' sense of responsibility towards their participants becomes questionable.²⁰

As I have discussed before, my original intention with the boy was to describe a type of digital subject that engages with mobile technologies in non-normative ways, at times 'misusing' the app in ways not intended by the developers, or devising his own modes of performance. Son of the motherboard, the boy is localised in space and situated in knowledge, aware of his singular position as an embodied subject. The boy acknowledges his ability to navigate and traverse through and between physical boundaries and digital peripheries. Like an offspring separated from their mother's womb upon birth, he searches for his identity by engaging in thinking technologies between himself and apps. His interactions with technology—indicative of the playful nature of boyhood—is an inherent part of his process of becoming subject.²¹ As he moves through the physical and digital, the boy's identity is deconstructed and reassembled each time, echoing Hayles's account in *My Mother Was a Computer*: "The experience of interacting with them [technologies] changes me incrementally, so the person who emerges from the encounter is not exactly the same person who began it."²² The search for identity through boyhood is not nostalgic, but nomadic; the boy is not figurative for past longings, but an investigation into the process of how and why we became digital subjects. In contrast to Braidotti's 'girl', where she skirts around the issue of who can actually be 'girl'—and whether a male could appropriate this figuration—'boy' is inclusive; it has not to do with gender but with agency and awareness of our fluidity as subjects constructed by and through the three mobile apps.

At this time, I face having to apply Hayles's words to my own experience and ask myself how my traversing through digital spaces—navigating back and forth between mobile phone and computer screen as I write this dissertation—has changed me. Indeed the person writing this conclusion is not the same subject who wrote the introduction. Like my participants, I am not unscathed by these

²⁰ According to George MacKerron and Susana Mourato in "Happiness Is Greater in Natural Environments", and In a turn of events, the group that is being exploited here are the "relatively wealthy: median household income is approximately GBP *48,000, almost twice the UK median. They are also relatively young: 66% are aged under 35, and 95% under 50, compared to 29% and 56% respectively in the UK adult population. 78% of participants are in employment and 13% are in full-time education."

²¹ Now that I have discussed my interests in expanding on the figure of 'boy' and on citizenship as a subsequent project, I believe that Robert Stephenson Smyth Baden-Powell's *Scouting for Boys: A Handbook for Instruction in Good Citizenship* (1908) would be a relevant text to look at. In it, Baden-Powell looks to his experiences of boyhood to write the first book on the Scout Movement. His discussions on signs and tracks—claiming that the mind must read them quickly and inscribes a meaning to them—could be read within a larger discussion of digital interfaces and residue, while also making references to Hanson's ideas of affect. Similarly, the book discusses health and hygiene, adventure fiction, teamwork, craftsmanship and construction, fears of degeneration, concerns about masculinity and self-restraint, all of which could be contextualised within a discussion of care, spatial design, community and citizenship, queerness and performance. Finally, *Scouting for Boys* could provide a fruitful discussion that I briefly touched upon in the first chapter of the dissertation: boyhood and its relation to caring for non-human others. Excluded from Cyberfeminist discussions of attractors and companion species, boyhood might be informed by *Scouting for Boys*'s take on plants, trees, animals and hunting, while proposing twenty-first relations to non-human others that take the form of machines and interfaces.

²² Hayles, Katherine. *My Mother Was a Computer: Digital Subjects and Literary Texts*. Chicago: U of Chicago, 2005. 243.

interactive processes and these thinking technologies with nonhuman others—these digital interfaces. The boy was my way of acknowledging my nomadic cartography by revisiting certain locations, events and situations in relation to the research process, but now I realise that I used him too passively. Although the boy certainly informed the way I approached the theory, related to the Cyberfemenists' discussions and provided new imaginaries to discuss digital spatiality in relation to embodiment, I realise that the conscious decision of creating another voice to narrate my own experience had to do with my suppressing a part of my identity I was not comfortable withholding.

As I close this part of my research, I no longer feel the need to actively fragment my voice to choose between an academic persona or a performative one. Instead, I am excited by the possibility that as a subject immersed within the fields of design, research and writing, I can be fluid in my future projects. Maybe aside from describing a twenty-first century digital subject that partakes in non-normative use of apps, the boy has to do with my own shift of voice and philosophy as a researcher operating within a traditional academic setting. In this way, the boy could play a part in challenging pre-established conventions of research, theory and play. Whether I ever fragment my writing to narrate the boy's experiences as I did in this dissertation, I cannot say. But perhaps the next step is to appropriate his playful nature myself and *become* the boy—by writing from the pronoun 'I', by theorising about technology through its 'misuse', by partaking in parodical disruptive performances or even by learning how to code and manipulating softwares. In this way, and in true Cyberfeminist form, the figuration of the boy might be my tool to be playful yet rigorous, allowing me to shrewdly test limits by moving through the peripheries of not just the digital and the physical, but also the serious and the humorous.

Bibliography/References

Acker, Kathy. *In Memoriam to Identity*. New York: Grove Press, 1990.

Adler, J.L. "Investigating the Learning Effects of Route Guidance and Traffic Advisories on Route Choice Behavior." *Transportation Research Part C: Emerging Technologies* 9.1 (2001): 1-14.

Agrest, Diana. *Architecture from Without: Theoretical Framings for a Critical Practice*. Cambridge: MIT, 1991.

Agrest, Diana, Patricia Conway, and Leslie Kanes Weisman, eds. *The Sex of Architecture*. New York: Harry N. Abrams, Inc, 1996.

Ahmed, Sara. *The Cultural Politics of Emotion*. New York: Routledge, 2004.

Ahmed, Sarah. *Queer Phenomenology: Orientations, objects, others*. Durham and London: Duke University Press, 2006.

Ahn, Kyoungho, and Hesham Rakha. "The Effects of Route Choice Decisions on Vehicle Energy Consumption and Emissions." *Transportation Research Part D: Transport and Environment* 13.3 (2008): 151-167.

Ahn, Kyoungho, Hesham Rakha, Antonio Trani, and Michelle Van Aerde. "Estimating Vehicle Fuel Consumption and Emissions Based on Instantaneous Speed and Acceleration Levels." *Journal of Transportation Engineering* 128.2 (2002): 182-190.

Alaimo, Stacy. "Cyborg and Ecofemenist Interventions: Challenges for an Environmental Feminism." *Feminist Studies* 20.1 (1994): 133-152.

Albrechtslund, Anders. "Online Social Networking as Participatory Surveillance." *First Monday* 13.3 (2008).

Allison, Anne. "Cyborg Violence: Bursting borders and bodies with queer machines." *Cultural Anthropology* 16.2 (2001): 237-265.

Allsopp, Ric. "Performance Writing." *PAJ: A Journal of Performance and Art* 21.1 (1999): 76-80.

Andrejevic, Mark. "Surveillance in the Digital Enclosure." *The Communication Review* 10 (2007): 259-317.

Andres, Lesley. *Designing and Doing Survey Research*. London, Thousand Oaks, New Delhi and Singapore: Sage, 2012.

Apostle-Mitchell, M., and G. MacDonald. "An Innovative Approach to Pain Management in Critical Care: Therapeutic touch." *Official Journal of the Canadian Association of Critical Nurses* 18.3 (1997): 19-22.

Argyle, Michael, and Janet Dean. "Eye-Contact, Distance and Affiliation." *Sociometry* 28.3 (1965): 289-304.

Auslander, Philip. *Performance: Critical Concepts in Literary and Cultural Studies*. London: Routledge, 2005.

Austin, J. L. *How to Do Things with Words*. Cambridge: Harvard University Press, 1962.

Axelrod, Robert M. *The Complexity of Cooperation: Agent-based Models of Competition and Collaboration*. Princeton: Princeton University Press, 1997.

Axelrod, Robert M. *The Evolution of Cooperation*. New York: Basic, 1984.

Baker, Paul. *Polari—The Lost Language of Gay Men*. London: Routledge, 2002.

Balsamo, Anne. "Forms of Technological Embodiment: Reading the Body in Contemporary Culture" in J. Price and M. Shildrick (Eds) *Feminist Theory and the Body: A Reader*. Edinburgh: Edinburgh University Press, 1988.

Banfield, Ann. *Unspeakable Sentences: Narration and Representation in the Language of Fiction*. Boston: Routledge & Kegan Paul, 1982.

Barkhuus, Louise, and Anind Dey. "Location-Based Services for Mobile Telephony: A Study of Users' Privacy Concerns." INTERACT 2003, 9TH IFIP TC13 International Conference on Human-Computer Interaction Conference Proceedings. Zurich. July 2003. Conference Paper.

Barthes, Roland. *Camera Lucida: Reflections on Photography*. New York: Hill and Wang, 1981.

Bartle, Caroline, Erel Avineri, and Kiron Chattarjee. "Online Information-Sharing: A qualitative analysis of community, trust and social influence amongst commuter cyclists in the UK." *Transportation Research Part F: Traffic Psychology and Behaviour* 16 (2013): 60-72.

Batty, Michael. *Cities and Complexity: Understanding Cities with Cellular Automata, Agent-based Models, and Fractals*. Cambridge: MIT Press, 2005.

Bauman, Zygmunt. *The Individualized Society*. Cambridge: Polity Press, 2001

Baym, Nancy K. *Personal Connections in the Digital Age*. Cambridge: Polity Press, 2010.

de Beauvoir, Simone. *The Second Sex*. New York: Knopf, 1953.

BEEFCAKE: Gay Men and the Body Beautiful. Cruciform Building, UCL, London. 6 Feb. 2012. Conference.

Ben-akiva, Moshe, and Michel Bierlaire. "Discrete Choice Methods and Their Applications to Short Term Travel Decisions." *Handbook of Transportation Science*. Ed. Randolph W. Hall. 2nd ed. Boston: Kluwer Academic, 2003.

Ben-Akiva, Moshe, J. Bottom, and M. S. Ramming. "Route Guidance and Information Systems." *Journal of Systems and Control Engineering* 215.4 (2000): 317-324.

Akiva, Moshe E., and Steven R. Lerman. *Discrete Choice Analysis Theory and Application to Travel Demand*. Cambridge: MIT Press, 1985.

Bednarzek, Wolfgang. The Art and Promise of Network Analysis. *IEEE Multimedia* 12.3 (2005): 19-21. Web. 6 June 2016.

Bendelow, Gillian, and Simon Williams, eds. *Emotions in Social Life: Critical Themes and Contemporary Issues*. London: Routledge, 1998.

Ben-Elia, Eran, Ido Erev, and Yoram Shiftan. "The Combined Effect of Information and Experience on Drivers' Route-Choice Behavior." *Transportation* 35.2 (2008): 165-177.

Benedek, Christine M., and Laurence R. Rilett. "Equitable Traffic Assignment with Environmental Cost Functions." *Journal of Transportation Engineering* 124.1 (1998): 16-22.

Berenstein, Rhona. "Mommie Dearest: *Aliens*, *Rosemary's Baby* and Mothering." *The Journal of Popular Culture* 24.2 (1990): 55-73.

Berger, Michael L. "The Car's Impact on the American Family." *The Car and the City: The Automobile, the Built Environment, and Daily Urban Life*. Ed. Martin Wachs. Ann Arbor: University of Michigan Press, 1992.

Berlant, Lauren. "Love (A Queer Feeling)." *Homosexuality & Psychoanalysis*. Ed. Tim Dean and Christopher J. Lane. Chicago: University of Chicago Press, 2001.

Berlant, Lauren, and Michael Warner. "Sex in Public." *Critical Inquiry* 24.2 (1998): 547-566.

Bermann, Karen. "The House Behind" in H. Nast and S. Pile (Eds) *Places Through the Body*. London: Routledge, 1998.

Berns, Ute. "Performativity" in P. Hühn et al (Eds) *The Living Handbook of Narratology*. Hamburg: Hamburg University Press, 2015.

Betsky, Aaron. *Queer Space: Architecture and Same-Sex Desire*. New York: William Morrow and Company, Inc, 1997.

Blackwell, Courtney, and Jeremy Birnholtz. "Seeing and Being Seen: Co-situation and impression formation using Grindr, a location-aware gay dating app." *New Media & Society* (2014): 1-20.

Blinka, Lukas. "The Relationship of Players to Their Avatars in MMORPGs: Differences between adolescents, emerging adults and adults." *Cyberpsychology: Journal of Psychosocial Research on Cyberspace* 2.1 (2008).

Bloomer, Jennifer. "Architecture and the Feminine: Mop-Up Work." *ANY* 1.4 (1994): 54-55.

Blundell Jones, Peter, Doina Petrescu, and Jeremy Till. *Architecture & Participation*. London/New York: Taylor & Francis, 2005.

Boellstorff, Tom. *Coming of Age in Second Life: An Anthropologist Explores the Virtually Human*. Princeton: Princeton University Press, 2008.

Bonnevier, Katarina. *Behind Straight Curtains: Towards a Queer Feminist Theory of Architecture*. Stockholm: Axl, 2007.

Bond Stockton, Kathryn. "Growing Sideways, or Versions of the Queer Child: the ghost, the homosexual, the Freudian, the innocent and the interval of animal." *Curioiuser: The queerness of children*. Eds. Steve Bruhm and Natasha Hurley. Minneapolis and London: University of Minnesota Press, 2004.

Bonsall, Peter W., and M. Joint. "Driver Compliance with Route Guidance: The Evidence and Its Implications." Vehicle Navigation and Information Systems Conference Proceedings. 1991. Conference Paper.

Booth, Wayne C. *The Rhetoric of Fiction*. Chicago: University of Chicago Press, 1961.

Borden, Iain. *Drive: Journeys Through Films, Cities and Landscapes*. London: Reaktion Books Ltd, 2013.

Bordo, Susan. *Unbearable Weight: Feminism, Western Culture, and the Body*. Berkeley: University of California, 1993.

Botsman, Rachel, and Roo Rogers. *What's Mine Is Yours: The Rise of Collaborative Consumption*. New York: Harper Business, 2010.

Bovy, Piet H. L. and Eliahu Stern. *Route Choice: Wayfinding in Transport Networks*. Dodrecht, Boston, and London: Kluwer Academic Publishers, 1990.

Boyer, M. Christine. *Cybercities: Visual Perception in the Age of Electronic Communication*. New York: Princeton Architectural Press, 1996.

Braidotti, Rosi. "Cyberfeminism with a Difference." *New Formations*. No. 29 (Autumn 1996): 9-25. Reprinted in: *Zones of Disturbance*. Ed. Silvia Eiblmayer.

Braidotti, Rosi. "Discontinuous Becomings: Deleuze and the Becoming-Woman of Philosophy." *Journal of the British Society of Phenomenology* 24.1 (1993): 44-55.

Braidotti, Rosi. *The Posthuman*. Cambridge: Polity Press, 2013.

Braidotti, Rosi. *Transpositions: On Nomadic Ethics*. Cambridge and Malden: Polity Press, 2006.

Braidotti, Rosi. *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*. 2nd ed. New York: Columbia UP, 2011.

Braidotti, Rosi. Rosi Braidotti Seminar. The Bartlett School of Architecture, UCL. Foster Court, London. 21 Mar. 2012. Seminar Response.

Brandon, Ruth. *Automobile: How the Car Changed Life*. London: Macmillan, 2002.

Brickell, Chris. "Masculinities, Performativity, and Subversion: A Sociological Reappraisal." *Men and Masculinities* 8.1 (2005): 24-43.

Briley, Donnel. "Looking Forward, Looking Back: Cultural Differences and Similarities in Time Orientation." *Understanding Culture: Theory, Research, and Application*. Ed. Robert S. Wyer, Chi-yue Chiu, and YIng-yi Hong. New York: Psychology, 2009.

Brown, Gavin. "Mutinous Eruptions: Autonomous Spaces of Queer Radical Activism." *Environment and Planning A* 39.11 (2007): 2685-2698.

Brown, Graham, B. Maycock, and S. Burns. "Your Picture is Your Bait: Use and Meaning of Cyberspace Among Gay Men." *Journal of Sex Research* 42.1 (2005): 63-73.

Brown, Michael. "Gender and Sexuality II: There goes the gayborhood?" *Progress in Human Geography* (2013): 1-9.

Brubaker, Jed R., Mike Ananny, and Kate Crawford. "Departing Glances: A sociotechnical account of 'leaving' Grindr." *New Media & Society* (2004): 1-18.

Bryson, Alex, and George MacKerron. "Are You Happy While You Work." *Centre for Economic Performance* 13 (2013): 2042-2695.

Buchbinder, David. *Performance Anxieties: Re-producing Masculinity*. St. Leonards: Allen & Unwin, 1998.

Bull, Michael. "The World According to Sound: Investigating the World of Walkman Users." *New Media & Society* 3.2 (2001): 179-197.

Bundtzen, Lynda K. "Monstruous Mothers: Medusa, Grendel, and now Alien." *Film Quarterly* 40.3 (1987): 11-17.

Burns, Karen. "A Girl's Own Adventure: Gender in the Contemporary Architectural Theory Anthology." *Journal of Architectural Education* (2012): 125-134.

Bush, Elizabeth. "The Use of Human Touch to Improve the Well-Being of Older Adults: A Holistic Nursing Intervention." *Journal of Holistic Nursing* 19.3 (2001): 256-270.

Butler, Brian. "Membership Size, Communication Activity, and Sustainability: A Resource-Based Model of Online Social Structures." *Information Systems Research* 12.4 (2001): 346-362.

Butler, Chris. *Henri Lefebvre: Spatial Politics, Everyday Life and the Right to the City*. Oxon and New York: Taylor & Francis Group, 2012.

Butler, Judith. *Bodies That Matter: On the Discursive Limits of "sex"*. New York: Routledge, 1993.

Butler, Judith. *Gender Trouble: Feminism and the Subversion of Identity*. New York and London: Routledge, 1999.

Butt, Gavin. *After Criticism: New Responses to Art and Performance*. Malden and Oxford: Blackwell Publishing Ltd, 2005.

Butt, Gavin. "Joe Brainard's Queer Seriosuness, or, How to Make Fun out of the Avant-Garde" in D. Hopkins (Ed) *Neo-Avant-Garde*. Amsterdam and New York: Rodopi, 2006.

Butt, Gavin. "Should We Take Performance Seriously?" in O. Ashery (Ed) *Dancing with Men*. London: Live Art Development Agency, 2009.

Califia, Patrick. "Sluts in Utopia: The Future of Radical Sex." *Public Sex: The Culture of Radical Sex*. Pittsburgh: Cleis, 1994.

Cameron, Judy, W. David Pierce, Katherine M. Banko, and Amber Gear. "Achievement-Based Rewards and Intrinsic Motivation: A Test of Cognitive Mediators." *Journal of Educational Psychology* 97.4 (2005): 641-655.

Campbell, John. *Past, Space, and Self*. Cambridge: MIT Press, 1994.

Campbell, Marilyn A. "The Impact of the Mobile Phone on Young People's Social Life." Social Change in the 21st Century Conference Proceedings. Brisbane. 28 October 2005. Conference Paper.

Campbell, Scott W., and Yong Jin Park. "Social Implications of Mobile Telephony: The Rise of Personal Communication Society." *Sociology Compass* 2.2 (2008): 371-387.

Castells, Manuel. *The Rise of the Network Society*. Malden, Mass: Blackwell Publishing Ltd, 1996.

Castells, Manuel. "Space of flows, space of places: materials for a theory of urbanism in the Information Age" in *Rethinking Technology: A Reader in Architectural Theory*. Comp. Braham, William W., Comp. Sadar, John Stanislav and Comp. Hale, Jonathan A. London: Routledge, 2001.

Cavanagh, Sheila L. *Queering Bathrooms: Gender, Sexuality, and the Hygienic Imagination*. Toronto: University of Toronto Press, 2010.

de Certeau, Michel. *The Practice of Everyday Life*. Translated by Steven Rendall. Berkeley/ Los Angeles/ London: University of California Press, 1988. 40.

Chambers, Deborah. *Social Media and Personal Relationships: Online Intimacies and Networked Friendship*. New York: Palgrave Macmillan, 2013.

Chang, Heewong. *Autoethnography as Method*. Walnut Creek: Left Coast Press, Inc, 2008.

Chesebro, James W. *Gayspeak: Gay Male & Lesbian Communication*. New York: Pilgrim, 1981.

Clifford, James, and N.M. Fe. *Writing Culture: The Poetics and Politics of Ethnography: A School of American Research Advanced Seminar*. Berkeley: University of California Press, 1986.

Cobb, Michael L. "Childlike: Queer Theory and Its Children." *Criticism* 47.1 (2005): 119-30.

Coffey, Amanda. *The Ethnographic Self: Fieldwork and the Representation of Identity*. London: Sage, 1999.

Cohan, Peter. "Four Reasons Google Bought Waze." *Forbes*. Forbes Magazine, 11 June 2013. Web. 11 Sept. 2015. <<http://www.forbes.com/sites/petercohan/2013/06/11/four-reasons-for-google-to-buy-waze/>>.

Colander, David. "Edgeworth's Hedonimeter and the Quest to Measure Utility." *Journal of Economic Perspectives* 21.2 (2007): 215-225.

Coleman, Debra, and Elizabeth Danze, eds. *Architecture and Feminism*. New York: Princeton Architectural Press, 1996.

Collins, Christy M., and Susan M. Chambers. "Psychological and Situational Influences on Commuter-Transport-Mode Choice." *Environment and Behavior* 37.5 (2005): 640-661.

Colomina, Beatriz. *Archive*. Cambridge, Ma ; London: MIT Press, 1996.

Colomina, Beatriz. *Sexuality & Space*. New York: Princeton Architectural Press, 1992.

Conley, Jim, and Arlene Tigar McLaren, eds. *Car Troubles: Critical Studies of Automobility and Auto-mobility*. Farnham: Ashgate, 2009.

Connell, Sean. *The Car and British Society: Class, Gender and Motoring, 1896-1939*. Manchester: Manchester University Press, 1998.

Connor, A., and M. Howett. "A Conceptual Model of Intentional Comfort Touch." *Journal of Holistic Nursing* 27.2 (2009): 127-135.

Consolvo, Sunny, Ian E. Smith, Tara Matthews, Anthony La Marca, Jason Tabert, and Pauline Powledge. "Location Disclosure to Social Relations: Why, When, & What People Want to Share." SIGCHI Conference on Human Factors in Computing Systems Conference Proceedings. Portland. April 2007. Conference Paper.

Corea, Gena. *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs*. New York: Harper & Row, 1985.

Crary, Jonathan. Techniques of the Observer: On Vision and Modernity in the Nineteenth Century. Cambridge: MIT, 1990.

Curtis, Neal. *The Pictorial Turn*. London: Routledge, 2010.

Dant, Tim, and Peter J. Martin. "By Car: Carrying Modern Society." *Ordinary Consumption*. Ed. Jukka Gronow and Allan Ward. London: Routledge, 2001.

Davidihizar, R., and R. Shearer. "A touch of Care." *Nursing Management* 15.3 (1998): 28-31.

Davidson, Guy. "'Contagious Relations': Simulation, Paranoia, and the Postmodern Condition in William Friedkin's *Cruising* and Felice Picano's *The Lure*." *GLQ: A Journal of Lesbian and Gay Studies* 11.1 (2005): 23-64.

Davis-Floyd, Robbie, and Joseph Dumit, eds. *Cyborg Babies: From Techno-sex to Techno-tots*. New York: Routledge, 1998.

Davission, Amber L., and Paul Booth, eds. *Controversies in Digital Ethics*. New York: Bloomsbury Academic, 2016.

Deci, Edward L., and Richard M. Ryan. *Intrinsic Motivation and Self-determination in Human Behavior*. New York: Plenum, 1985.

Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press, 1987.

"Developing a framework." *National Accounts of Wellbeing*. NEF, 2009. Web. 21 Sep 2012. <<http://www.nationalaccountsofwellbeing.org/learn/measuring/developing-framework.html>>.

Diener, Ed, and Shigehiro Oishi. "The Nonobvious Social Psychology of Happiness." *Psychological Inquiry* 16.4 (2005): 162-167.

Dittmar, Helga. *The Social Psychology of Material Possessions: To Have Is to Be*. Hemel Hempstead: Harvester Wheatsheaf, 1992.

Doge, Martin, Rob Kitchen, and Chris Perkins. *The Map Reader: Theories of Mapping Practice and Cartographic Representation*. Oxford, West Sussex, and Hoboken: Wiley-Blackwell, 2011.

Donath, Judith. "Artificial Pets: Simple Behaviors Elicit Complex Attachments." *Encyclopedia of Animal Behavior*. Ed. Marc Bekoff. Westport: Greenwood, 2004.

van Doorn, Niels. "Digital Spaces, Material Traces: How matter comes to matter in online performances of gender, sexuality and embodiment." *Media, Culture & Society* 33.4 (2011): 531-547.

Downey, Gary Lee, Joseph Dumit, and Sarah Williams. "Cyborg Anthropology." *Cultural Anthropology* 10.2 (1995): 264-269.

Drennan, Judy, and Diana James. "Exploring Addictive Consumption of Mobile Phone Technology." ANZMAC 2005: Broadening the Boundaries Conference Proceedings. Fremantle. 5-7 December 2005. Conference Paper.

Driscoll, Catherine. *Girls Feminine Adolescence in Popular Culture & Cultural Theory*. New York: Columbia University Press, 2002.

Dunn, James A. *Driving Forces: The Automobile, Its Enemies and the Politics of Mobility*. Washington DC: Brookings Institution Press, 1998.

Durning, Louise, and Richard Wrigley. *Gender and Architecture*. Chichester: Wiley, 2000.

Edelman, Lee. *No Future: Queer Theory and the Death Drive*. Durham: Duke University Press, 2004.

Edwards, Elizabeth. "Beyond the Boundary: A Consideration of the Expressive in Photography and Anthropology." *Rethinking Visual Anthropology*. Ed. Marcus Banks and Howard Morphy. New Haven: Yale University Press, 1997.

Egan, Jennifer. "Lonely Gay Teen Seeking Same." *The New York Times*. New York: The New York Times Company, 2000.

Ekman, Paul, and Wallace V. Freisen. "The Repertoire of Nonverbal Behavior: Categories, Origins, Usage, and Coding." *Semiotica* 1.1 (1969): 49-98.

Ellaway, Anne, Sally Macintyre, Rosemary Hiscock, and Ade Kearns. "In the Driving Seat: Psychosocial benefits from private motor vehicle transport compared to public transport." *Transportation Research Part F: Traffic Psychology and Behaviour* 6.3 (2003): 217-231.

Ellis, Carolyn. *The Ethnographic I: A Methodological Novel about Autoethnography*. Walnut Creek: AltaMira, 2004.

Ericsson, Eva. "Independent Driving Pattern Factors and their Influence on Fuel Use and Exhaust Emission Factors." *Transportation Research Part D: Transport and Environment* 6.5 (2001): 325-345.

Ericsson, Eva, Hanna Larsson, and Karin Brundell Freij. "Optimizing Route Choice for Lowest Fuel Consumption: Potential effects of a new driver support tool." *Transportation Research Part C: Emerging Technologies* 14.6 (2006): 396-383.

Ess, Charles. *Digital Media Ethics*. Cambridge: Polity, 2009.

Findlay, Heather. "'Freud's Fetishism' and the Lesbian Dildo Debates" in J. Price and M. Shildrick (Eds) *Feminist Theory and the Body: A Reader*. Edinburgh: Edinburgh University Press, 1988.

Fitzgerald, Joseph M. "Autobiographical Memory and Conceptualizations of the Self." *Theoretical Perspectives on Autobiographical Memory*. Ed. Martin A. Conway, David C. Rubin, Hans Spinnler, and Willem A. Wagenaar. Dordrecht: Kluwer Academic, 1992.

Flink, James J. *The Car Culture*. Cambridge: MIT Press, 1975.

Florida, Richard, Charlotta Mellander, and Peter J. Rentfrow. "The Happiness of Cities." *Regional Studies* 47:4 (2013): 613-627.

Forty, Adrian. *Words and Buildings: A Vocabulary of Modern Architecture*. London: Thames & Hudson, 2000.

Franklin, Sarah. "Kinship Beyond Biology: BMW's DNA." 4S Meeting. Halifax. 27-31 October 1998. Unpublished Paper.

Franklin, Sarah. "Sciences as Culture, Cultures of Science." *Annual Review of Anthropology* 24 (1995): 163-184.

Franks, Helen. *Goodbye Tarzan (RLE Feminist Theory) Men After Feminism*. New York: Routledge, 2012.

Freundschuh, Scott M. "Is There a Relationship Between Spatial Cognition and Environmental Patterns?" *Theories and Methods of Spatio-Temporal Reasoning in Geographic Space* 639 (1992): 288-304.

Friedman, Batya, and Lynette Millett. "It's the Computer's Fault': Reasoning about Computers as Moral Agents." CHI 1995 Human Factors in Computing Systems Conference Proceedings. Denver. 7 May 1995. Conference Paper.

Fultz, Lucille P. *Toni Morrison: Playing with Difference*. Urbana: University of Illinois Press, 2003.

Gabilondo, Joseba. "Postcolonial Cyborgs: Subjectivity in the age of cybernetic reproduction" in C. H. Gray et al. (Eds) *The Cyborg Handbook*. New York: Routledge, 1995.

Gaggioli, Andrea, Marco Vettorello, and Giuseppe Riva. "From Cyborgs to Cyberbodies: The Evolution of the Concept of Techno-Body in Modern Medicine." *Psychology Journal* 1.2 (2003): 75-86.

Gamson, Josh. "Sexualities, Queer Theory, and Qualitative Research." *The SAGE Handbook of Qualitative Research*. Ed. Norman K. Denzin and Yvonna S. Lincoln. 3rd ed. Thousand Oaks: Sage, 2005.

Gandy, Matthew. "Cyborg Urbanization: Complexity and Monstrosity in the Contemporary City." *International Journal of Urban and Regional Research*. <<http://www.geog.ucl.ac.uk/about-the-department/people/academics/matthew-gandy/files/pdf1.pdf>>.

Gane, Nicholas. "When We Have Never Been Human, What Is to Be Done? Interview with Donna Haraway." *Theory, Culture & Society* 23.7-8 (2006): 135-158.

Garbarino, James. *Lost Boys: Why Our Sons Turn Violent and How We Can Save Them*. New York: Free, 1999.

Gardiner, Judith Kegan. "Men, Masculinities, and Feminist Theory" in M. Kimmel et al (Eds) *Handbook on Men and Masculinities*. London: Sage, 2004.

Gardner, Benjamin, and Charles Abraham. "What Drives Car Use? A grounded theory analysis of commuters' reasons for driving." *Transportation Research Part F: Traffic Psychology and Behaviour* 10.3 (2007): 187-200.

Genette, Ge. *Narrative Discourse: An Essay in Method*. Ithaca: Cornell University Press, 1980.

Gere, Charlie. *Community without Community in Digital Culture*. New York, NY: Palgrave Macmillan, 2012.

Gere, Charlie. "The History of Network Art". *Network Art: Practices and Positions*. Ed. Tom Corby. London: Routledge, Taylor & Francis Group, 2006.

Gergen, Kenneth J. "Cell Phone Technology and the Challenge of Absent Presence." *Perpetual Contact Mobile Communication, Private Talk, Public Performance*. Ed. James Everett Katz and Mark Aakhus. Cambridge: Cambridge University Press, 2002.

Gergen, Kenneth J. *The Concept of Self*. California: Holt, Rinehart and Winston, 1971.

Geser, Hans. "Is The Cell Phone Undermining the Social Order? Understanding Mobile Technology from a Sociological Perspective." *Thumb Culture: The Meaning of Mobile Phones for Society*. Ed. Peter Glotz, Stefan Berischi, and Chris Locke. Bielefeld: Transcript, 2005.

Geyh, Paula. *Cities, Citizens, and Technologies: Urban Life and Postmodernity*. New York and London: Routledge-Taylor & Francis Group, 2009.

Gibson, H. W. *Boyology; Or; Boy Analysis*. New York: Association, 1916.

Gissen, David. *Subnature: architecture's other environments*. New York: Princeton Architectural Press, 2009.

Goffman, Erving. *Stigma: Notes on the Management of Spoiled Identity*. 3rd ed. New Jersey: Penguin Books, 1990.

Goffman, Erving. *The Presentation of Self in Everyday Life*. Garden City: Doubleday, 1959.

Gold, Matthew K. *Debates in the Digital Humanities*. Minneapolis: Univ Of Minnesota, 2012.

Golledge, Reginald G. *Wayfinding Behavior: Cognitive Mapping and Other Spatial Processes*. Baltimore: Johns Hopkins University Press, 1999.

Gonzalez, Deborah. *Managing Online Risk: Apps, mobile, and social media security*. Oxford: Butterworth-Heinemann, 2014.

Gottman, Jean. "Megalopolis and Antipolis: The Telephone and the Structure of the City." *The Social Impact of the Telephone*. Ed. Ithiel De Sola Pool. Cambridge: MIT Press, 1977.

Graham, Elaine L. *Representations of the Post/human: Monsters, Aliens, and Others in Popular Culture*. New Brunswick: Rutgers University Press, 2002.

Gray, Mary L. *Out in the Country: Youth, Media, and Queer Visibility in Rural America*. New York: New York University Press, 2009.

Green, Adam Isaiah. "Gay but Not Queer: Towards a Post-Queer Study of Sexuality." *Theory and Society* 31 (2002): 521-545.

Grosz, Elizabeth. "Conclusion: A Note on Essentialism and Difference." *Feminist Knowledge: Critique and Construct*. Ed. Sneja Marina Gunew. London: Routledge, 1990.

Grosz, Elizabeth. "Women, Chora, Dwelling." *ANY* 1.4 (1994):22-28.

Groves, Robert M., Floyd J. Fowler, Jr., Mick P. Couper, James M. Lepkowski, Eleanor Singer, and Roger Tourangeau. *Survey Methodology*. 2nd ed. New Jersey: Wiley, 2009.

Guillot, Romain. "ICTs and the Engineering of Encounters: A Case Study of the Development of a Mobile Game Based on the Geolocation of Terminals." *Mobile Technologies of the City*. Ed. Mimi Sheller and John Urry. London: Routledge, 2006.

Guimaraes, Mario J.L. "Doing anthropology in cyberspace: fieldwork boundaries and social environments." *Virtual Methods: Issues in Social Research on the Internet*. Ed. Hine Christine. Oxford and New York: Wiley-Blackwell, 2006.

Gürel, Meltem Ö., and Kathryn H. Anthony. "The Canon and the Void: Gender, Race, and Architectural History Texts." *Journal of Architectural Education* 59.3 (2006): 66-76

Gurian, Michael. *The Wonder of Boys: What Parents, Mentors, and Educators Can Do to Shape Boys into Exceptional Men*. New York: Putnam, 1996.

Haklay, Muki. "Beyond Quantification: We Need A Meaningful Smart City." *Urban Pamphleteer #1: Future & Smart Cities*. London, 2013.

Hammersley, Martyn, and Paul Atkinson. *Ethnography: Principles in Practice*. London: Tavistock, 1983.

Hampson, Martha. "Mappiness: Transforming wellbeing research one chirp at a time." *Innovation Unit*. The Innovation Unit LTD, n.d. Web. 7 Jun 2012. <<http://www.innovationunit.org/blog/201106/Mappiness-transforming-wellbeing-research-one-chirp-time>>

Handle, Mark, Jeremy Birnholtz, and Irina Schklovski. "Grindr-ing Down the Walls between Physical and Virtual: Location-Based Social Enablers." iConference 2014 Proceedings. Copenhagen. 8 March 2014. Conference Paper.

Hansen, Mark B.N. *New Philosophies for New Media*. Cambridge: MIT Press, 2006.

Hao, Wang, and Sun Chuen-Tsai. "Game Reward Systems: Gaming Experiences and Social Meanings." 2011 Think Design Play DiGRA International Conference Proceedings. Utrecht School of Arts, Utrecht. 2011. Conference Paper.

Haraway, Donna. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century" in *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991.t

Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14.3 (1988): 575-99.

Haraway, Donna. *The Companion Species Manifesto: Dogs, People, and Significant Otherness*. Chicago: Prickly Paradigm, 2003.

Hardey, Michael. "Life Beyond the Screen: Embodiment and identity through the Internet." *The Sociological Review* 50.4 (2002): 570-585.

Hartsock, Nancy. "The Feminist Standpoint: Toward a Specifically Feminist Historical Materialism." *Feminist Theory Reader: Local and Global Perspectives*. Eds. C. McCann and S. Kim. New York and London: Routledge, 2003.

Hayles, Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: University of Chicago Press, 1999.

Hayles, N. Katherine. *My Mother Was a Computer: Digital and literary texts*. Chicago/London: The University of Chicago Press, 2005.

Heathcote, Elizabeth. "George MacKerron: 'I Can Measure How Happy You Are - and Why'" *The Observer*. The Guardian, 13 Feb. 2011. Web. 25 Sept. 2014. <<http://www.theguardian.com/technology/2011/feb/13/bright-idea-Mappiness-happiness-app>>.

Heidegger, Martin. "Building dwelling thinking" in *Basic writings from "Being and time" (1927) to "The Task of thinking" (1964)*. Comp. Heidegger, Martin and Comp. Krell, David Farrell. London: Routledge, 1993.

Heynen, Hilde, and Gülsüm Baydar, eds. *Negotiating Domesticity: Spatial Productions of Gender in Modern Architecture*. London: Routledge, 2005.

Hill, Kevin A., and John E. Hughes. *Cyberpolitics: Citizen Activism in the Age of the Internet*. Lanham: Rowman & Littlefield, 1998.

Hine, Christine, Geoff Cooper, Janet Rachel, and Steve Woolgar. "Ethnography and Human-computer Interaction." *The Social and Interactional Dimensions of Human-computer Interfaces*. Ed. Peter J. Thomas. Cambridge: Cambridge University Press, 1995.

Hine, Christine. *Virtual Methods: Issues in Social Research on the Internet*. Oxford/New York: Berg, 2005.

Hochman, Nadav, and Lev Manovich. "Zooming into an Instagram City: Reading the local through social media." *First Monday* 18.7 (2013).

Hochschild, Arlie Russell. *The Managed Heart: Commercialization of Human Feeling*. Berkeley: University of California Press, 1983.

Hoelzl, "Ingrid. Screens — The Place of the Image in Digital Culture." *Leonardo* 45.5 (2012): 474-75.

Höflich, Joachim R. "A Certain Sense of Place: Mobile Communication and Local Orientation." *A Sense of Place: The Global and the Local in Mobile Communication*. Ed. Kristóf Nyíri. Wien: Passagen, 2005.

"Home." *Mappiness*. ISE, n.d. Web. 7 Jun 2012. <<http://www.Mappiness.org.uk/>>.

Houlbrook, Matt. *Queer London: Perils and Pleasures in the Sexual Metropolis, 1918-1957*. Chicago and London: The University of Chicago Press, 2005.

Hutcheon, Linda. *Narcissistic Narrative: The Metafictional Paradox*. Waterloo: Wilfrid Laurier University Press, 1980.

Hyman, Ira and Jeremiah Faries. "The Functions of Autobiographical Memory." *Theoretical Perspectives on Autobiographical Memory*. Ed. Martin A. Conway, David C. Rubin, Hans Spinnler, and Willem A. Wagenaar. Dordrecht: Kluwer Academic, 1992.

Jacobs, Jane M., Stephen Cairns, and Ignaz Strebel. "Highrise Project." University of Edinburg. <<http://www.ace.ed.ac.uk/highrise/>>.

Kendon, Adam. "Some Functions of Gaze-Direction in Social Interaction." *Acta Psychologica* 26 (1967): 22-63.

Ihde, Don. *Bodies in Technology*. Minneapolis: University of Minnesota Press, 2002.

Irigaray, Luce. *Speculum of the Other Woman*. Ithaca: Cornell University Press, 1985.

Iser, Wolfgang. *The Fictive and the Imaginary: Charting Literary Anthropology*. Baltimore: J. Hopkins University Press, 1993.

Jacobs, Jane. *The Death and Life of Great American Cities*. New York: Vintage Books, 1993.

Jagose, Annamarie. *Queer Theory: An Introduction*. New York: New York University Press, 1993.

Jankowski, Piotr, and Timothy L. Nyerges. *Geographic Information Systems for Group Decision Making towards a Participatory, Geographic Information Science*. London: Taylor & Francis, 2001.

Jariyasunant, Jerald, Andre Carrel, Venkatesan Ekambaram, DJ Gaker, Thejovardhana Kote, Raja Dengupta, and Joan L. Walker. "The Quantified Traveler: Using Personal Travel Data to Promote Sustainable Transport Behavior." 91st Annual Meeting of Transportation Research Board. Washington DC. January 2012.

Jeffrey, P., and Gloria Mark. "Constructing Social Spaces in Virtual Environments: A Study of Navigation and Interaction." *Workshop on Personalised and Social Navigation in Information Space*. <<http://www.ece.ubc.ca/~phillipi/papers/ConstructingSocialSpaces.pdf>>.

Jha, Mitlesh, Samer Madanat, and Srinivas Peeta. "Perception Updating and Day-to-Day Travel Choice Dynamics in Traffic Networks with Information Provision." *Transportation Research Part C* 6 (1998): 189-212.

Joinson, Adam N. "Internet behaviour and the design of virtual methods." *Virtual Methods: Issues in Social Research on the Internet*. Ed. Hine Christine. Oxford and New York: Wiley-Blackwell, 2006.

Jones, Amelia, and Andrew Stephenson. *Performing the Body/Performing the Text*. London: Routledge, 1999.

Jones, Donald. E. "I, Avatar: Constructions of self and place in *Second Life* and the Technological Imagination." *Gnovis, Journal of Communication, Culture and Technology* 6 (2006): 1-32.

Kahn, Jr., Peter A., Batya Friedman, and Jennifer Hagman. "I Care About Him as a Pal: Conceptions of Robotic Pets in Online AIBO Discussion Forums." CHI 2002 Extended Abstracts on Human Factors in Computing Systems Conference Proceedings. Minneapolis. 2002. Conference Paper.

Kauffman, Linda S. "The Long Goodbye: Against Personal Testimony, or an Infant Grifter Grows up." *American Feminist Thought at Century's End: A Reader*. Cambridge: Blackwell Publishing Ltd, 1993.

Karandinou, Anastasia. *No Matter: Theories and Practices of the Ephemeral in Architecture*. Surrey and Burlington: Ashgate, 2013.

Katz, James Everett, and Mark Aakhus, eds. *Perpetual Contact Mobile Communication, Private Talk, Public Performance*. Cambridge: Cambridge University Press, 2002.

Keen, Andrew. The Cult of the Amateur: *How Today's Internet Is Killing Our Culture*. New York: Doubleday/Currency, 2007.

Kelly, Mark G. E. "Foucault, Subjectivity, and Technologies of the Self" in C. Falzon et al (Eds) *A Companion to Foucault*. West Sussex, Malden and Oxford: Wiley-Blackwell, 2013.

Kernaghan, Kenneth. Digital Dilemmas: Values, Ethics and Information Technology. *Canadian Public Administration Can Public Admin* 57.2 (2014): 295-317.

Khattak, Asad J., Joseph L. Schofer, and Frank S. Koppelman. "Effect of Traffic Information on Commuters' Propensity to Change Route and Departure Time." *Journal of Advanced Transportation* 29.2 (1995): 193-212.

Kidd, Kenneth B. *Making American Boys: Boyology and the Feral Tale*. Minneapolis and London: University of Minnesota Press, 2004.

Kiesler, Sara. *Culture of the Internet*. Mahwah: Lawrence Erlbaum Associates, 1997.

Kim, Yooh-Hoon, H. Cai, M. Gilliland, C. Y. Chiu, S. Xia, and K.P. Tam. "Standing in the Glory or Shadow of the Past Self: Cultures Differ in How Much the Past Self Affects Current Subjective Well-Being." *Emotion* 12.5 (2012).

King, Daniel Luke, Paul Delfabbro, and Mark D. Griffiths. "Video Game Structural Characteristics: A New Psychological Taxonomy." *International Journal of Mental Health Addiction* 8 (2010): 90-106.

Knopp, Larry. "Ontologies of Place, Placelessness and Movement: Queer Quests for Identity and Their Impacts on Contemporary Geographic Thought." *Gender, Place & Culture: A Journal of Feminist Geography* 11.1 (2004): 121-134.

Knopp, Larry, and Michael Brown. "We're Here! We're Queer! We're Over There Too! Queer Cultural Geographies." *Handbook of Cultural Geography*. Ed. Kay Anderson, Mona Domosh, Steve Pile, and Nigel Thrift. London: Sage, 2003.

Knopp, Larry, and Michael Brown. "Queer Diffusions." *Environment and Planning D: Society and Space* 21.4 (2003): 409-424.

Koh, Jooh, Young-Gul Kim, Brian Butler, and Gee-Woo Bock. "Encouraging Participation in Virtual Communities." *Communications of the ACM: Spam and the Ongoing Battle for the Inbox* 50.2 (2007): 68-73.

Kollock, Peter. "Social Dilemmas: The Anatomy of Cooperation." *Annual Review of Sociology* 24 (1998): 183-214.

Kristeva, Julia, and Leon S. Roudiez. *Powers of Horror: An Essay on Abjection*. New York: Columbia University Press, 1982.

Kunstler, James Howard. *The Geography of Nowhere: The Rise and Decline of America's Man-made Landscape*. New York: Simon & Schuster, 1993.

Kurzweil, Ray. *The Age of Intelligent Machines*. Cambridge: MIT Press, 1990.

Kurzweil, Ray. *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*. New York: Viking, 1999.

Kurzweil, Ray. *The Singularity Is Near: When Humans Transcend Biology*. New York: Viking, 2005.

Kwan, Mei-Po. "Affecting Geospatial Technologies: Toward a Feminist Politics of Emotion." *The Map Reader: Theories of Mapping Practice and Cartographic Representation*. Ed. Martin Dodge. Chichester, West Sussex and Hoboken: Wiley-Blackwell, 2011.

Ladd, Brian. *Autophobia: Love and Hate in the Automotive Age*. Chicago: University of Chicago Press, 2008.

Lancaster, Roger N. "Autoethnography: When I Was A Girl (Notes on Contrivance)" in F. Mascia-Lees (Ed) *A Companion to the Anthropology of the Body and Embodiment*. Malden and Oxford: Blackwell Publishing Ltd, 2011.

de Lauretis, Teresa. *Queer Theory: Lesbian and Gay Sexualities*. Bloomington: Indiana University Press, 1991.

Launis, Tapani. *Space, Time and the Virtual: New Scientific, Practical and Representational Methods for Architecture and a Digital Modeling Experiment of the Built Environment*. Diss. Tampere University of Technology, Tampere, 2006.

Leap, William. *Public Sex/gay Space*. New York: Columbia University Press, 1999.

"Learn More." *Grindr*. N.p., n.d. Web. 23 Jul 2012. <<http://grindr.com/learn-more>>.

Lees, Frances E. *A Companion to the Anthropology of the Body and Embodiment*. Chichester and West Sussex: Wiley-Blackwell, 2011.

Lefebvre, Henri. *The Production of Space*. Trans. by Donald Nicholson-Smith. Massachusetts, Oxford and Victoria: Blackwell Publishing Ltd, 1991.

Lefebvre, Henri. *The Urban Revolution*. Minneapolis: University of Minnesota Press, 2003.

Levy, David N. L. *Love Sex with Robots: The Evolution of Human-robot Relations*. New York: HarperCollins, 2007

Lévy, Pierre. *Collective Intelligence: Mankind's Emerging World in Cyberspace*. New York: Plenum Trade, 1997.

Licoppe, Christian, and Yoriko Inada. "Geolocalized Technologies, Location-Aware Communities, and Personal Territories: The Mogi Case." *Journal of Urban Technology* 15.3 (2009): 5-24.

Linstead, Stephen. "From Postmodern Anthropology to Deconstructive Ethnography." *Human Relations* 46.1 (1993): 97-120.

Lotan, Tsippy. "Effects of Familiarity on Route Choice Behavior in Presence of Information." *Transportation Research Part C: Emerging Technologies* 5.3-4 (1997): 225-243.

Lozanovska, Mirjana. "Uomo Universale: The Imaginary Relation Between Body and Mathematic(s) in Architecture." *Architectural Theory Review* 14.3 (2009): 234-247.

Lykke, Nina and Rosi Braidotti. *Monsters, Goddesses and Cyborgs: Feminist Confrontations with Science, Medicine and Cyberspace*. London: Zed Books Ltd, 1996.

Lyon, David. *The Electronic Eye: The Rise of Surveillance Society*. Minneapolis: University of Minnesota Press, 1994.

MacKerron, George and Susana Mourato. "Happiness is Greater in Natural Environments." *Global Environmental Change* 23 (2013): 992-1000.

Maclean, Marie. *Narrative as Performance: The Baudelairean Experiment*. London: Routledge, 1988.

Madden, Mary, and Lee Rainie. "Adults and Cell Phone Distractions." *Pew Research Center Internet Science Tech RSS*. Pew Research Center, 17 June 2010. Web. 1 Oct. 2015.

Madsen, Deborah L. *Feminist Theory and Literary Practice*. London: Pluto, 2000.

Manovich, Lev. "Database as a Symbolic Form." *The Language of New Media*. Cambridge: The MIT Press, 2001.

Marinucci, Mimi. *Feminism Is Queer: The Intimate Connection between Queer and Feminist Theory*. London: Zed, 2010.

Marsh, Peter, and Peter Collett. *Driving Passion: The Psychology of the Car*. Boston: Faber and Faber, 1987.

Massey, Doreen. "Politics and Space/Time." *New Left Review* 96 (1992).

McCann, Carole R. and Seung-Kyung Kim. *Feminist Theory Reader: Local and Global Perspectives*. New York and London: Routledge, 2003.

McKernan, Brian, Rosa Mikeal Martey, Jennifer Stromer-Galley, Kate Kenski, Benjamin A. Clegg, James E. Folkestad, Matthew G. Rhodes, Adrienne Shaw, Emilie T. Saulnier, and Tomek Strzalkowski. "We Don't Need No Stinkin' Badges: The impact of reward features and feeling rewarded in educational games." *Computers in Human Behavior* 45 (2015):229-306.

McLuhan, Marshall. *Understanding Media: The extensions of man*. London/New York: Routledge, 2010.

McQuire, Scott. *The Media City: Media, Architecture and Urban Space*. Los Angeles, London, New Delhi and Washington DC: Sage, 2008.

Merleau-Ponty, Maurice. "Eye and mind" in *The primacy of perception, and other essays on phenomenological psychology, the philosophy of art, history and politics*. Comp. Merleau-Ponty, Maurice and Comp. Edie, James M. Evanston, III: Northwestern University Press, 1964.

Merriman, Peter. "Driving Places: Marc Augé, Non-Places, and the Geographies of England's M1 Motorway." *Theory, Culture & Society* 21.4-5 (2004): 145-167.

Merriman, Peter. *Driving Space*. Malden, Oxford, and Victoria: Blackwell Publishing Ltd, 2007.

"Meters." *Mappiness*. LSE, n.d. Web. 7 Jun 2012. <<http://www.Mappiness.org.uk/>>.

Miller, Daniel. *Car Cultures*. Oxford: Berg, 2001.

Miller, Daniel. *Tales from Facebook*. Cambridge: Polity Press, 2011.

Miller, Daniel. *The Comfort of Things*. Cambridge, Malden: Polity Press, 2008.

Miller, Harvey J. "Beyond Sharing: Cultivating cooperative transportation systems through geographic information science." *Journal of Transport Geography* 31 (2013): 296-308.

Miller, Hugh. "The Presentation of Self in Electronic Life: Goffman on the Internet." Embodied Knowledge and Virtual Space Conference. Goldsmiths' College, University of London, London. June 1995. Conference Paper.

Miller, Nancy K. *Getting Personal: Feminist Occasions and Other Autobiographical Acts*. New York: Routledge, 1991.

Miller, Vincent. *Understanding Digital Culture*. Los Angeles, London, New Delhi, Singapore and Washington DC: Sage, 2011.

Mitchell, William J. *City of Bits: Space, Place, and the Infobahn*. Cambridge and London: The MIT Press, 1997.

Mitchell, William J. *E-topia: Urban Life, Jim - But not as we know it*. Cambridge and London: The MIT Press, 1999.

Mitchell, William J. *Iconology: Image, Text, Ideology*. Chicago: University of Chicago Press, 1986.

Mitchell, William J. "Metapictures." *Picture Theory: Essays on Verbal and Visual Representation*. Chicago: University of Chicago Press, 1994.

Mitchell, William J. *What Do Pictures Want? The Lives and Loves of Images*. Chicago and London: The University of Chicago Press, 2005.

"Mobile Phone Use: A Growing Problem of Driver Distraction." *World Health Organization*. 2011. Web. 1 Oct. 2015.

Monmonier, Mark S. *Spying with Maps: Surveillance Technologies and the Future of Privacy*. Chicago: University of Chicago Press, 2002.

Moores, Shaun. *Media, Flows and Places*. London: Media@LSE, London School of Economics, 2003.

Moravec, Hans P. *Mind Children: The Future of Robot and Human Intelligence*. Cambridge: Harvard University Press, 1988.

Moravec, Hans P. *Robot: Mere Machine to Transcendent Mind*. New York: Oxford University Press, 1999.

Moratalla, Agustín. "Infoethics and Human Rights, Possibilities and Limitations of Digital Citizenship." *Revista de Fomento Social* vol.64 (2009): 735-754.

Moss, Mitchell L., and Anthony M. Townsend. "How Telecommunications Systems Are Transforming Urban Spaces." *Cities in the Telecommunications Age: The Fracturing of Geographies*. Ed. James O. Wheeler, Yuko Aoyama, and Barney Warf. New York: Routledge, 2000.

Mossberger, Karen, Caroline J. Tolbert, and Ramona S. McNeal. *Digital Citizenship: The Internet, Society, and Participation*. Cambridge, MA: MIT Press, 2007.

Motavalli, Jim. Forward Drive: The Race to Build "clean" Cars for the Future. San Francisco: Sierra Club, 2000.

Mowlabocus, Sharif. *Gaydar Culture: Gay Men, Technology and Embodiment in the Digital Age*. England: Ashgate, 2010.

Muncey, Tessa. *Creating Autoethnographies*. Los Angeles, London, New Delhi, Singapore, and Washington DC: Sage, 2010.

Nader, Ralph. *Unsafe at Any Speed: The Designed-in Dangers of the American Automobile*. New York: Pocket Books, 1966.

Nait-Sidi-Moh, Ahmed. *Geopositioning and Mobility*. London: ISTE, 2013.

Nalebuff, Barry J., and Joseph E. Stiglitz. "Prizes and Incentives: Towards a General Theory of Compensation and Competition." *The Bell Journal of Economics* 14.1 (1983): 21-43.

Nash, Catherine. "Performativity in Practice: Some recent work in cultural geography." *Progress in Human Geography* 24.4 (2000): 653-664.

Nass, Clifford, Youngme Moon, and Nancy Green. "Are Computers Gender Neutral? Gender-Stereotypic Responses to Computers With Voices." *Journal of Applied Social Psychology* 27.10 (1997): 864-876.

Nass, Clifford, Youngme Moon, B.J. Fogg, Byron Reeves, and Christopher Dryer. "Can Computer Personalities be Human Personalities?" CHI 1995 Human Factors in Computing Systems Conference Proceedings. Denver. 7 May 1995. Conference Paper.

Nelson, Claudia. *Boys will be Girls: The Feminine Ethic and British Children's Fiction, 1857-1917*. New Brunswick and London: Routledge, 1991.

Newman, Isadore and Keith McNeil. *Conducting Survey Research in the Social Sciences*. Maryland and Oxford: University Press of America, Inc, 1998.

Nicholas, Cheryl L. "Contextualized Cues as Identity Recognition: An ethnography on Gaydar." Central States Communication Association's Annual Conference Proceedings. 2003. Conference Paper.

Nicholas, Cheryl L. "Gaydar: Eye-Gaze as Identity as Identity Recognition Among Gay Men and Lesbians." *Sexuality and Culture* 8.1 (2004): 60-86.

Norton, Rictor. *The Myth of the Modern Homosexual: Queer History and the Search for Cultural Unity*. London: Cassell, 1997.

Ochs, Elinor, and Lisa Capps. *Living Narrative: Creating Lives in Everyday Storytelling*. Cambridge: Harvard University Press, 2001.

Ohler, Jason. *Digital Community, Digital Citizen*. Thousand Oaks, CA: Corwin, 2010.

Oishi, Shigehiro. "The Experience and Remembering of Well-Being: A Cross-Cultural Analysis." *Personality and Social Psychology Bulletin* 28.10 (2002): 1398-1406.

Orgad, Shani. "From Online to Offline and Back: Moving from Online to Offline Relationships with Research Informants." *Virtual Methods: Issues in Social Research on the Internet*. Ed. Hine Christine. Oxford and New York: Wiley-Blackwell, 2006.

Pagnucci, Gian S. *Living the Narrative Life: Stories as a Tool for Meaning Making*. Portsmouth, NH: Boynton/Cook, 2004.

Palen, Leysia, Marilyn Salzman, and Ed Youngs. "Going Wireless: Behavior & practice of new mobile phone users." 2000 ACM Computer Supported Cooperative Work Conference. CSCW. 2000.

Papinski, Dominik, Darren M. Scott, and Sean T. Doherty. "Exploring the Route Choice Decision-Making Process: A Comparison of Planned and Observed Routes Obtained Using Person-Based GPS." *Transportation Research Part F: Traffic Psychology and Behaviour* 12.4 (2009): 347-358.

Parker-Starbuck, Jennifer. *Cyborg Theatre: Corporeal/technological intersections in multimedia performance*. Great Britain: Palgrave Macmillan, 2011.

Pease, Bob. *Recreating Men: Postmodern Masculinity Politics*. London: Sage, 2000.

Pickles, John. *A History of Spaces: Cartographic reason, mapping and the geo-coded world*. London and New York: Routledge, 2004.

Picon, Antoine. *Digital Culture in Architecture: An introduction to the design professions*. Basel: BirkhauserGmbH, 2010.

Pierce, W. David, Judy Cameron, Katherine M. Banko, and Sylvia So. "Positive Effects of Rewards and Performance Standards on Intrinsic Motivation." *The Psychological Record* 53.4 (2003).

Pilcher, Jeremy. "Network Art Unbound?" *Leonardo* 45.5 (2012): 470-71.

Pink, Sarah. *Doing Visual Ethnography: Images, Media, and Representation in Research*. London: Sage, 2001.

Plummer, Ken. "Symbolic Interactionism and the Forms of Homosexuality." *Queer Theory/sociology*. Ed. Steven Seidman. Cambridge, Mass: Blackwell Publishing Ltd, 1996.

Pollack, William S. *Real Boys: Rescuing Our Sons from the Myths of Boyhood*. New York: Random House, 1998.

Pollock, Della. "Performing Writing." *The Ends of Performance*. Ed. Peggy Phelan and Jill Lane. New York: New York University Press, 1998.

Pollock, Della. "The Performative 'I'." *Cultural Studies Critical Methodologies* 7.3 (2007): 239-255.

Pooley, Colin G., Jean Turnbull, and Mags Adams. *A Mobile Century: Changes in Everyday Mobility in Britain in the Twentieth Century*. Hampshire and Vermont: Ashgate, 2005.

Porter, David, ed. *Internet Culture*. New York and London: Routledge, 1997.

Rawes, Peg. *Irigaray for Architects*. London: Routledge, 2007.

Reed-Danahay, Deborah E. "Auto/Ethnography: Rewriting the Self and the Social." *Journal of American Folklore* 113.449 (2000): 328-330.

Reibstein, David J., Christopher H. Lovelock, and Ricardo de P. Dobson. "The Direction of Causality Between Perceptions, Affect and Behavior: An Application to Travel Behavior." *Journal of Consumer Research* 6.4 (1980): 370-376.

Rendell, Jane, Barbara Penner, and Iain Border, eds. *Gender, Space, Architecture: An Interdisciplinary Introduction*. London: Routledge, 1999.

Rendell, Jane. "Confessional Construction." *Site-Writing: The Architecture of Art Criticism*. London and New York: I.B. Tauris & Co Ltd, 2010.

Rendell, Jane. "Undoing Architecture." *Site-Writing: The Architecture of Art Criticism*. London and New York: I.B. Tauris & Co Ltd, 2010.

Repacholi, Michael H. "Health Risks from the Use of Mobile Phones." *Toxicology Letters* 120 (2001): 323-331.

Rheingold, Howard. *The Virtual Community: Homesteading on the Electronic Frontier*. Reading: Addison-Wesley Pub., 1993.

Rose, Gillian. *Visual Methodologies an Introduction to the Interpretation of Visual Materials*. London: Sage, 2001.

Ross, Michael, and Anne E. Wilson. "Autobiographical Memory and Conceptions of Self: Getting Better All the Time." *Current Directions in Psychological Science* 12.2 (2003): 66-69.

Ross, Stephen David. *The Ring of Representation*. Albany: State University of New York Press, 1992.

Rugg, Linda Haverty. *Picturing Ourselves Photography & Autobiography*. Chicago: University of Chicago Press, 1997.

Sachs, Wolfgang. *For Love of the Automobile Looking Back into the History of Our Desires*. Berkeley: University of California Press, 1992.

Salen, Katie, and Eric Zimmerman. *Rules of Play: Game Design Fundamentals*. Cambridge: MIT Press, 2003.

Salerno, Rob. "Twenty Questions for Grindr Creator Joel Simkhai." *Twenty Questions for Grindr Creator Joel Simkhai*. Daily Xtra, 27 July 2011. Web. 29 Sept. 2015.

Sánchez-Franco, Manuel J., Eva Buitrago-Esquinas, and Rocío Yñiguez. "How to Intensify the Individual's Feelings of Belonging to a Social Networking Site? Contributions from community drivers and post-adoption behaviours." *Management Decision* 50.6 (2012): 1137-1154.

Sandberg, Roy, and Mark Rollins. *The Business of Android Apps Development Making and Marketing Apps That Succeed on Google Play, Amazon App Store and More*. Berkeley: Apress, 2013.

Sanford, Charles L. "'Woman's Place' in American Car Culture." *The Automobile and American Culture*. Ed. David Lanier Lewis and Laurence Goldstein. Ann Arbor: University of Michigan Press, 1983.

Sardar, Ziauddin. *Cyberfutures: Culture and Politics on the Information Superhighway*. New York: New York UP, 1996.

Schroeder, Ralph. "Cyberculture, Cyborg, Postmodernism and the Sociology of Virtual-Reality Technologies: Surfing the soul in the information age." *Futures* 26.5 (1994): 519-528.

Schacht, Steven P. "Teaching About Being an Oppressor: Some Personal and Political Considerations." *Men and Masculinities* 4.2 (2001): 201:208.

Scharff, Virginia. "Gender, Electricity, and Automobility." *The Car and the City: The Automobile, the Built Environment, and Daily Urban Life*. Ed. Martin Wachs and Margaret Crawford. Ann Arbor: University of Michigan Press, 1992.

Scharff, Virginia. *Taking the Wheel: Women and the Coming of the Motor Age*. New York: Free, 1991.

Schwebel, David C., Despina Stavrinos, Katherine W. Byington, Tiffany Davis, Elizabeth E. O'Neal, and Desiree de Jong. "Distraction and Pedestrian Safety: How talking on the phone, texting, and listening to music impact crossing the street." *Accident Analysis & Prevention* 45 (2012): 266-271.

Scott, Joan. "Experience." *Feminists Theorize the Political*. Ed. Judith Butler and Joan Scott. New York: Routledge, 1992.

Sedgwick, Eve Kosofsky. *Between Men: English Literature and Male Homosocial Desire*. New York: Columbia University Press, 1985.

Sedgwick, Eve Kosofsky. *Epistemology of the Closet*. Berkeley: University of California Press, 1990.

Sennett, Richard. *The Conscience of the Eye: The Design and Social Life of Cities*. New York: Knopf, 1990.

Sennett, Richard. *The Fall of Public Man*. Malden, Oxford, and Victoria: Penguin Books, 2002.

Segal, Lynne. *Slow Motion: Changing Masculinities, Changing Men*. New Brunswick: Rutgers University Press, 1990.

Servon, Lisa J. *Bridging the Digital Divide: Technology, Community, and Public Policy*. Malden, MA: Blackwell Pub., 2002.

Sheller, Mimi. "Automotive Emotions: Feeling the Car." *Theory, Culture & Society* 21 (2004): 221-242.

Sheller, Mimi. "Mobile Publics: Beyond the network perspective." *Environment and Planning D: Society and Space* 22 (2004): 39-52.

Sheller, Mimi, and John Urry. "Mobile Transformations of 'Public' and 'Private' Life." *Theory, Culture & Society* 20.3 (2003): 107-125.

Sheller, Mimi, and John Urry. "The City and the Car." *International Journal of Urban and Regional Research* 24.4 (2000): 737-757.

Shirky, Clay. *Here Comes Everybody: How change happens when people come together*. London: Penguin Books, 2009

Slater, Don. "Social Relationships and Identity Online and Offline." *Handbook of New Media: Social Shaping and Consequences of ICTs*. Ed. Leah A. Lievrouw and Sonia Livingstone. London: Sage, 2002.

Sniader Lansen, Susan. "Sexing Narratology: Toward a Gendered Poetics of Narrative Voice." *Narrative Theory: Critical Concepts in Literary and Cultural Studies*. Ed. Mieke Bal. London: Routledge, 2007.

Solove, Daniel J. *The Digital Person Technology and Privacy in the Information Age*. New York: New York University Press, 2004.

de Souza e Silva, Adriana. "From Cyber to Hybrid: Mobile technologies as interfaces of hybrid spaces." *Space & Culture* 9.3 (2006): 261-278.

de Souza e Silva, Adriana. "Hybrid reality and location-based gaming: Redefining mobility and game spaces in urban environments." *Simulation & Gaming* 40.3 (2009): 404-424.

de Souza e Silva, and Daniel M. Sutko. "Theorizing Locative Technologies Through Philosophies of the Virtual." *Communication Theory* 21.1 (2011): 23-42.

de Souza e Silva, and Daniel M. Sutko. *Digital Cityscapes: Merging Digital and Urban Playspaces*. Ed. Adriana De Souza E. Silva. New York: Peter Lang, 2009.

de Souza e Silva, Adriana, and Jordan Frith. *Mobile Interfaces in Public Spaces: Locational Privacy, Control, and Urban Sociability*. New York: Routledge, 2012.

Springer, Clauia. "The Pleasure of the Interface: Language and sexual cyborg imagery in technological culture" in *Screen* 32 (1991): 302-23.

Stanek, Lukasz. *Henri Lefebvre on Space: Architecture, Urban Research, and the Production of Theory*. Minneapolis and London: University of Minnesota Press, 2011.

Steed, Anthony. "Supporting Mobile Applications with Real-Time Visualisations of GPS Availability." *Mobile Human-Computer Interaction* 3160 (2004): 373-377.

Steg, Linda. "Car Use: Lust and must. Instrumental, symbolic and affective motives for car use." *Transportation Research Part A: Policy and Practice* 39.2-3 (2005): 147-162.

Stern, Eliahu. "Choice Behavior in Congestion Situation: Modeling and Research Needs." *Theoretical Foundations of Travel Choice Modeling*. Ed. Tommy Gärling, Thomas Laitila, and Kerstin Westin. Amsterdam: Elsevier, 1998.

Stoltenberg, John. *Refusing to Be a Man: Essays on Sex and Justice*. New York: Routledge, 1989.

Sutter, John D.. "CNN." *With new GPS dating apps, it's love the one you're near*. N.p., 6 Aug 2010. Web. 23 Jul 2012. <<http://edition.cnn.com/2010/TECH/innovation/08/06/gps.dating.apps/>

Tarver, Erin C. "New Forms of Subjectivity: Theorizing the Relational Self with Foucault and Alcoff." *Hypatia* 26.4 (2011): 804-825.

Taylor, T. L. "Living Digitally: Embodiments in Virtual Worlds." *The Social Life of Avatars: Presence and Interaction in Shared Virtual Environments*. Ed. Ralph Schroeder. London: Springer, 2002.

Thayer, M. B. "Touching With Intent: Using therapeutic touch." *Pediatric Nursing* 16.1 (1990): 70-72.

Thrift, Nigel and John-David Dewsberry. "Dead Geographies—And how to make them live." *Environment and Planning D: Society and Space* 18 (2000): 411-432.

Thorndyke, Perry W., and Barbara Hayes-Roth. "Differences in Spatial Knowledge Acquired from Maps and Navigation." *Cognitive Psychology* 14.4 (1982): 560-589.

Thulin, Eva, and Bertil Vilhelmson. "Mobiles Everywhere: Youth, the mobile phone, and changes in everyday practice." *Young* 15.3 (2007): 235-253.

Ticineto Clough, Patricia. *The End(s) of Ethnography: From Realism to Social Criticism*. Newbury Park: Sage, 1992.

Tomas, David. "Feedback and Cybernetics: Reimagining the body in the age of the cyborg" in M. Featherstone and R. Burrows(Eds) *Cyberpunk/Cyberspace/Cyberbodies: Cultures of Technological Embodiment*. London: Sage, (1995)

Tong, Stephanie, and Chad van de Wiele. "Breaking Boundaries: The Uses & Gratifications of Grindr." 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing Proceedings. September 2014. Conference Paper.

Townsend, Anthony M. "Life in the Real-Time City: Mobile Telephones and Urban Metabolism." *Journal of Urban Technology* 7.2 (2000): 85-104.

Toye, Margaret E. "Donna Haraway's Cyborg Touching (Up/On) Luce Irigaray's Ethics and the Interval Between: Poethics as Embodied Writing." *Hypatia* 27.1 (2012): 182-200.

Tufte, Edward R. *Beautiful Evidence*. Cheshire, CT: Graphics, 2006.

Tufte, Edward R. *Envisioning Information*. Cheshire, CT: Graphics, 1991.

Tufte, Edward R. *Visual Explanations: Images and Quantities, Evidence and Narrative*. Cheshire, CT: Graphics, 1997.

Turkle, Sherry. *Alone Together: Why We Expect More from Technology and Less from Each Other*. New York: Basic Books, 2011.

Turkle, Sherry. *Life on the Screen: Identity in the Age of the Internet*. London: Weidenfeld & Nicolson, 1996.

Turkle, Sherry. *The Second Self: Computers and the Human Spirit*. New York: Simon and Schuster, 1984.

Turner, Mark W. *Backward Glances: Cruising the Queer Streets of New York and London*. London: Reaktion Books, 2003.

Turner, William B. *A Genealogy of Queer Theory*. Philadelphia: Temple University Press, 2000.

Tzonis, Alexander and Liane Lefaivre. *Classical Architecture: The Poetics of Order*. Cambridge: The MIT Press, 1992.

Wachs, Martin and Margaret Crawford. *The Car and the City: The automobile, the built environment, and daily urban life*. Michigan: The University of Michigan Press, 1992.

Wajcman, Judy, Michael Bittman, and Judith E. Brown. "Intimate Connections: The Impact of the Mobile Phone on Work/life Boundaries." *Mobile Technologies: From Telecommunications to Media*. Ed. Gerard Goggin and Larissa Hjorth. New York: Routledge, 2009.

Walker Rettberg, Jill. *Blogging*. Digital Media and Society Series. Cambridge/Malden: Polity Press, 2009.

Walsh, Andrea. "Visualizing Histories: Experiences of space and place in photographs by Greg Staats and Jeffrey Thomas." *Visual Studies* 17.1 (2010): 37-51.

Wei, Ran. "Staying Connected While on the Move: Cell phone use and social connectedness." *New Media & Society* 8.1 (2006): 53-72.

Wellman, Barry. "Physical Place and Cyberplace: The Rise of Personalized Networking." *International Journal of Urban and Regional Research* 25:2 (2001): 227-252

Whatmore, Sarah. "Dissecting the Autonomous Self: Hybrid cartographies for a relational ethics." *Environment and Planning D: Society and Space* 15 (2000): 37-53.

Wigley, Mark. "Untitled: The Housing of Gender." *Sexuality & Space*. Ed. Beatriz Colomina. New York: Princeton Architectural Press, 1992.

Wilken, Rowan. "Mobilising Place: Mobile Media, Peripatetics, and the Renegotiation of Urban Places." *Journal of Urban Technology* 15.3 (2008): 39-55.

Wilbur, Shawn P. "An Archaeology of Cyberspaces- Virtuality, Community, Identity." *Internet Culture*. Ed. David Porter. New York/London: Routledge, 1997.

Wolf, Jean, R. Guensler, and W. Bachman. "Elimination of the Travel Diary: An experiment to derive trip purpose from GPS travel data." *Transportation Research Record* 1768 (2001): 125-134.

Wolfendale, Jessica. "My Avatar, My Self: Virtual harm and attachment." *Ethics and Information Technology* 9.2 (2007): 111-119.

Woo, Jaime. *Meet Grindr: How one app changed the way we connect*. Marston Gate: Amazon.co.uk, Ltd, 2013.

Woolgar, Steve. "The Turn to Technology in Social Studies of Science." *Science, Technology, & Human Values* 16.1 (1991): 20-50.

Wright, John K. "Map Makers Are Human: Comments on the Subjective in Maps." *The Map Reader: Theories of Mapping Practice and Cartographic Representation*. Ed. Martin Dodge, Rob Kitchin, and Chris Perkins. Chichester and West Sussex: Wiley-Blackwell, 2011.

Vanderbilt, Tom. *Traffic*. London: Penguin Books, 2009.

Vaughn, Thomas. "Voices of Sexual Distortion: Rape, Birth, and Self-Annihilation Metaphors in the *Aliens* Trilogy." *Quarterly Journal of Speech* 81.4 (1995): 423-435.

Verstraete, Ginette, and Tim Cresswell. *Mobilizing Place, Placing Mobility: The Politics of Representation in a Globalized World*. Amsterdam: Rodopi, 2002.

Zylinska, Joanna. *The Cyborg Experiments: The extension of the body in the media age*. London and New York: Continuum, 2002.

Appendix

Grindr Interview Questions

Use and Experience

1. Where do you normally use Grindr?
2. At what time do you normally use the app?
3. Why do you use it?
4. What are you primarily using it for?
5. Do you ever meet people off Grindr in person?
6. What persuaded you to use Grindr?
7. What sense of privacy, or of being in public, does the app give you?
8. Do you get the impression your feelings are more protected by talking to guys on Grindr instead of in person?
9. Have you ever experienced problems with the Grindr software/interface? If so, what are they?
10. What's the least successful part of the Grindr app? What's the most successful part of it?
11. If you could make any changes to Grindr, would you? What would it/they be?

Location

12. In which places does your Grindr experience usually start at?
13. In what places do you meet Grindr guys at?
14. Does using Grindr make you feel more connected to the city? If yes, how so? If not, do you think it could?
15. Does it change the way you perceive your surroundings?
16. Have you used Grindr in other cities? If so, what for?
17. Have you noticed any changes in the way guys use Grindr depending on which city they're in?
18. What's the main difference between interacting with guys on Grindr and interacting with a guy in person? What are some similarities between interacting with guys on Grindr and interacting with a guy in person?

Identity

19. Are you out?
20. What information does your profile give?
21. What do you take into account when selecting your profile picture?

22. Does your profile show your face?
23. Does your profile show your body?
24. Do you send additional pictures to guys if they request them? If so, do you send them to any guy that asks?
25. Are you selective about who you decide to send more pictures to? If so, what criteria do you look for? Similarly, what kind of pictures do you send?
26. Does seeing attractive men on Grindr motivate you to work out or to look after or modify your appearance?
27. How does the range of images/pictures on Grindr change your perspective about yourself and others?
28. How do you aim to be perceived on Grindr?
29. How does your profile suggest what kind of people you want to interact with?
30. Are there any ways in which Grindr changes the way you perceive yourself?
31. Are there any ways in which Grindr changes the way you perceive others?

Mappiness Interview Questions

Use and Experience

1. In your own words and to your understanding, what is Mappiness?
2. Why do you use it?
3. What prompted you to want to download it?
4. How many times a day does the app beep you?
5. Could you describe the experience of using Mappiness?
6. What sense of privacy does it give you?
7. How many times a day do you answer?
8. How timely do you respond to the Mappiness chime?
9. What are you primarily using it for?
10. If you could make any changes to Mappiness, would you? What would it/they be?
11. Do you ever submit your mood voluntarily? If so, what encourages you to do so?
12. After registering a mood state that isn't very happy, would/do you make a conscious effort to do something to make you happier?
13. What is the best part about the app?
14. What is the worst part about the app?
15. What motivates you to keep participating?
16. When did you stop using it, or when do you think you'll stop using it?
17. Why would you stop?
18. When using Mappiness do you feel like a research participant?
19. Would you rather have a researcher call you every day to ask "How do you feel?" or would you rather receive it via Mappiness's push notification? What's the difference between the two?

Location

20. Where do you usually use it?
21. Does Mappiness make you feel more connected to the city? If yes, how so? If not, do you think it could?
22. Does assessing your mood on Mappiness contribute to you becoming aware of your surroundings?
23. Does assessing your mood on Mappiness contribute to you becoming aware of how you truly feel?

24. Does assessing your mood on Mappiness contribute to you becoming aware of how your mood varies when you're with a friend/family member?
25. Where do you think you are usually happiest?
26. Does Mappiness help you to create memories of a particular location and how you felt when you were there? How so?
27. Does using Mappiness make you feel more conscious and aware of your location? If yes, how so? If no, why not?
28. Would you be able to say that Mappiness is a study directed towards the built environment? If yes, how so? If no, why not?
29. Does the application give you a better understanding of how the built environment affects your mood? If yes, how so? If no, why not?
30. Do you think that the questions that Mappiness currently asks are able to give LSE researchers a good understanding of how happiness is affected by the built environment? If yes, how so? If no, why not?
31. Do you feel that the link between the questions and the built environment is weak, as it is right now? If yes, how so? If no, why not?
32. What could Mappiness do, display, or ask in order to make it more related to the built environment?

Interface

33. Do you adjust the app's settings or did you leave them to their default setting?
34. If Mappiness were a paper-based survey, would you still have participated in the study? If yes, how so? If no, why not?
35. What do you think is the main difference between having it be a mobile survey rather than a paper survey?
36. Mappiness asks you how you feel, and it presents a bar with a slidable button for you to quantify your mood. How do you assess your own mood? This is to say, how do you know when to stop sliding the button and when to keep going?
37. Do you think that the tactile aspect (the fact that you can physically feel your finger moving on the screen) of the scale helps you to assess your mood? If yes, how so?
38. Would you rather assess your mood through numbers or through a slidable button? This it so say, which do you think works best: rating your mood from 1-10 or having the Mappiness format as is? Why?
39. When using Mappiness, do you actually feel like you're taking a survey?
40. Did you ever see it as game?

41. Is it easier to reveal personal information through a digital device than it is through face-to-face interaction?
42. Do you ever visit the Mappiness website to download your information?
43. How important is seeing your statistics to you?
44. What is your overall opinion of Mappiness?
45. What is your overall critique of Mappiness?

Waze Interview Questions

Use and Experience

1. When do you normally use Waze?
2. What prompted you to want to download it?
3. At what time do you normally use the app?
4. Why do you use it? What are you primarily using it for?
5. What's the least successful part of the Waze app? What's the most successful part of it?
6. If you could make any changes to Waze, would you? What would it/they be?
7. How often do you use Waze? Do you use it every time you drive? How much do you depend on Waze to get around?
8. Does Waze help you to understand the city better?
9. Do you enjoy driving? Do you enjoy walking?
10. Do you feel that Waze is a social network? Why or why not?
11. Have you ever been close to having or had an accident because of using Waze?
12. Did you ever see it as a game?
13. Do you think the interface is easy to understand?
14. Do you ever submit data such as traffic reports, presence of police, or road damages onto Waze? If so, what prompts you do to so?

Location

15. Does using Waze make you feel more connected to the city? If yes, how so? If not, do you think it could?
16. Does it change the way you perceive your surroundings?
17. How is your navigational experience in the city altered/enhanced by Waze? Has Waze ever directed you to go through places that you wouldn't have driven through before?
18. Have you used Waze in other cities? How was your experience?
19. Does Waze alter the way you experience a city?
20. Does using Waze make you feel more conscious and aware of your location? If yes, how so? If no, why not?
21. Do you feel like a part of a community of people/drivers?
22. How does traffic affect you?
23. How do you usually commute around the city?
24. How well does Waze help you understand the streets of London?

25. Do you see the street as a public space? Do you see the car as a private space?

Identity

26. Do you find pleasure in driving?

27. How is your sense of sociability affected by driving?

28. Does driving grant you a sense of freedom? Which is more liberating, walking or driving?

29. How does your sense of freedom change when commuting via public transport?

30. How do you normally orient yourself in space when you don't have a GPS?

31. Why do you drive?

32. Have you had intimate moments inside your car? If so, can you elaborate?

33. Do you usually drive alone or with a passenger? Which do you prefer? Why?

34. Do you listen to music while driving? Why or why not?

35. Do you ever text while driving? Do you talk on the phone while driving?

36. Do you notice other people while driving?

37. What's the main difference between walking somewhere and driving?

38. Are there any ways in which Waze changes the way you perceive others?

