From Hybrid Bodies to Haunted Bodies

Mobile Technologies, Affect and Theatre

Candidate:	Máiréad Ní Chróinín
Supervisor:	Dr. Charlotte McIvor
School:	School of Humanities
Discipline:	Drama and Theatre Studies
Institution:	National University of Ireland, Galway
Month & Year of Submission:	September, 2017

TABLE OF CONTENTS

ACKNOWLEDGMENTS

This thesis would not have been possible without the support and amazing assistance of my supervisor and friend, Dr. Charlotte McIvor. I am deeply grateful to her for her constant encouragement, her rigorous attention to detail, and her generous sharing of her time and knowledge.

I would also like to thank Professor Seán Ryder, who brought me onto the Digital Arts and Humanities programme, and made it possible for me to set out on what has proved to be an exhilarating and fascinating (if slightly exhausting) journey! Heartfelt thanks also to the members of my Graduate Research Committee, Professor Patrick Lonergan, Dr. Adrian Patterson, and Karen Young for their patience, insight and support throughout.

It has been a privilege and a pleasure to work alongside the staff and graduate students of the Centre for Drama, Theatre and Performance, NUI Galway. Many thanks to them for making me welcome among them. Thanks also to the staff and graduate students on the DAH programme, particularly those students who took part in my workshop, thereby opening up new aspects of my research. Finally, thanks to the staff of the Moore Institute, where I began my journey, particularly to Martha O'Shaughnessy for her unfailing help and advice.

I was lucky enough to have the opportunity to intern with Mads Haar and the Haunted Planet team, and I am deeply grateful to them for kindly sharing their time and skills to help me develop *Carolan's Last Tune: Galway Ghost Hunt*. Additional thanks go to Galway City Council Arts Officer James Harrold, Paraic Breathnach and the Arts Council for their very generous support of my initial Theatre Artist in Residence grant, which allowed me to explore the new (to me) field of mobile, wearable and pervasive technologies.

Thanks to the circle of friends who listened patiently to tales of PhD woe for far too long, and who offered kind words of support and encouragement all along the way: to France Fahy, Henrike Rau, Nelson and Danielle Barre, Róise Goan, Úna Ní Fhlannagáin, Kate Nic Chonnaonaigh and Christian Ellis, many thanks! Thanks also go to the fantastic Béatrice Lemoine and all at Galway Theatre Festival, for their support!

Special and heartfelt thanks to my sister Ionia Ní Chróinín, fellow co-Director of Moonfish Theatre, and to Jo Cummins, friend and producer extraordinaire, for making it possible for me to focus on this research. Thanks also to my 'Moonfish family' for the wonderful creative journeys we have been on, and for all their love and support throughout this process: to Grace, Zita, Pat, Simon, Morgan, Seán, Cherie, Lian, Elaine, Kate, Larry - many thanks!

My aunt and godmother Teresa Walsh arrived in the nick of time to provide much-needed editorial guidance and general words of wisdom. Her insight, enthusiasm and love gave me the energy I needed for the final stretch, and I am eternally grateful!

A huge thanks to my parents, Maura and Dáibhí Ó Cróinín, to my sister Sorcha, and to my brother-in-law John for their wonderful support! Special thanks to my mother Maura, both for commissioning some of the mobile experiences I've been lucky enough to design, and also for all her help in formatting this mammoth document.

Finally, much thanks and love to Esteban, who has been there since the beginning as partner, amor and friend.

LIST OF FIGURES AND TABLES

FIGURES

INTRODUCTION

This thesis seeks to found a theoretical model for representing how mobile technologies intervene in the user's lived, embodied experience by interacting *affectively* with the body as a biological, sensing entity. Building on this theoretical model, the thesis develops a design methodology that accounts for, and effectively utilizes, the affective potential of mobile technologies and media. In doing so, one of the key intentions of this thesis is to provide a 'shared vocabulary' that bridges gaps between arts practice, human-computer interaction and scholarly analysis, and that therefore forges an alternative, interdisciplinary approach to mobile technologies, one that focuses on their rich experiential potential.

To develop an alternative, affective theoretical model and design methodology this thesis investigates a number of case-studies of 'mobile experiences' (apps, games and art works) that show-case the ways in which mobile technologies (broadly understood to encompass mobile, wearable and some pervasive technologies) can operate in response to, and in tandem with, the user's sensory, visceral awareness. Drawing on these case-studies, the thesis introduces two core concepts - the 'hybrid body' and the 'haunted body' - by which to describe and explore the affective potential of mobile technologies to tap into this non-cognitive form of felt, bodily awareness. The concept of the 'hybrid body' is offered as a way of understanding how the in-the-moment interweaving of digital and physical sensory, visceral experience can transform the user's understanding of their body, and the understanding they make *through* their body. The concept of the 'haunted body' is then developed to show how the tangible experience of the 'hybrid body' can generate an ethical form of user engagement that arises from a sensory, visceral sense of the self as inter-connected with other beings (human and non-human) and embedded in a network of (unequal) socio-economic and political structures. These concepts form the basis of a practical design methodology that broadly sets out how the elements and interactions of 'mobile experiences' might be individually designed, and collectively combined, to evoke an affective response in the user that opens them up to new experiences of being and inter-connectivity.

A central claim of this thesis is that an affective approach to mobile technologies is urgently required to reveal the ways in which current practices around mobile technologies are shaped by neoliberal capitalist ideology (particularly in relation to the

emphasis placed on quantification, monitoring and commodification). Equally it argues that an affective theory and design methodology are required to challenge and resist the ways in which neoliberal values currently determine the ways users engage with their own bodies, the bodies of others and the world around them, through mobile technologies. Through its affective theoretical model and methodology for the design of 'mobile experiences', therefore, this thesis seeks to offer both scholars and practitioners a radically alternative approach to mobile technologies, one that pays attention to their unique potential to generate new experiences of being, inter-connectivity and social collaboration that reveal, challenge and resist the normative structures and discourse of present-day Western society. As such, this thesis emphasizes the unique potential of arts practice - specifically theatre and performance - to extend the range of critical discourse by providing a means to conceptualise, and materially intervene in, a powerful, bodily form of 'knowing', rooted in sensory, visceral experience.

Context: Mobile technologies and neo-liberalism in the 'bio-virtual' era

In 2016 over 1.5 billion smartphones were bought by people around the globe (Gartner), while over 102 million people bought wearable technologies such as the Apple Watch or the Fitbit health tracker (Leslie). The significance of this growth in mobile technologies was signaled six years ago by Howard Rheingold, who noted that "with the prospect of a majority of the human species walking around with powerful untethered computational devices that know where they are ... it looks like culture is already in the early stages of yet another leap" (Rheingold, 1). In the intervening five years mobile technologies have developed beyond the locative possibilities imagined by Rheingold. Not only do these devices know where the user is (through the use of GPS, bluetooth, wireless and cell tower technologies), and about the space they are moving in (through communication with sensors via wifi or bluetooth, e.g. weather sensors), they also know an increasing amount about the user's body (through the use of sensors that sense changes in pace, breath, heart-beat and even skin galvanic response). In addition, they possess ever-increasing capabilities to intervene in the user's physical, bodily experience (through digital media such as sound, images and haptic vibrations) and the user's sense of inter-connection with the space and objects around them (through the use of sensors and wifi technology to trigger everyday objects such as lights, kettles and locks). The cultural leap Rheingold signals, therefore, is a fundamental shift in how

people experience and interact with their body and the world around them as a result of their use of, and reliance on, these mobile technologies.

As the description above suggests, mobile technologies can now be understood as encompassing portable digital devices (such as mp3 players) and smartphones, as well as wearable technologies and some pervasive technologies. Wearable technologies are "miniature body-borne computational and sensory devices" (Mann) such as the FitBit health and fitness tracker[1]or the Apple Watch[2], both of which are worn on the wrist. Pervasive technologies, also known as the 'Internet of Things' (IoT), are computing technologies that are embedded in objects and spaces[3]. As such, they surround the body of the user, and the user's body is often the trigger that activates the technology - for example, as when a person walks into a dark room a motion sensor senses this movement and turns on the light. Accordingly, I include pervasive technologies within the scope of mobile technologies insofar as they interact with the body of the user. This is because the interaction of the technologies (and the media they trigger) with the body of the user opens the user up to a new awareness of the inter-connectedness of their body with the spaces and objects around them.

The significance of the rapid adoption of these mobile technologies can be understood in the context of their contribution to the creation of what Matthew Causey has termed the 'bio-virtual era', which is defined by "a *new normal* of computational interference in all areas of life" (Causey et al, 1). In the 'bio-virtual' era peoples' interactions with digital technology have become so integral to how they live their lives that they no longer distinguish between the digital and the physical as different ways of being, or consider that the digital is somehow 'less real' than, and identifiably different from, the physical. Accordingly, peoples' understanding of both their own selves and the world around them is being fundamentally changed as both the physical and the digital "are linked and superimposed upon each other to exist as part of a lived,

1 https://www.fitbit.com/ie/home
2 https://www.apple.com/ie/watch/
3 'Pervasive computing', also termed 'ubiquitous computing' is also more generally understood as the evolution of computing from being visible systems that users must consciously engage with (sitting at a laptop to type a letter), to being invisible, immediate systems that the user engages with continuously as part of their everyday 'natural' actions (speaking to a voice-sensitive device in order to play a music track) (see Weiser, 1991; Dourish, 2003; and Greenfield, 2006). Mobile and wearable computing are, therefore, sometimes understood as contributing to the overall growth of pervasive computing in everyday life. In the context of this thesis, however, I chose to discuss relevant pervasive technologies under the term 'mobile' to better understand how they interact with the movement of the user's body - both the internal movement of its sensory and visceral operations, and its external movement through space.

embodied experience" (Causey et al, 3). This hybridization of the physical and digital at the level of lived, embodied experience, and the challenges and possibilities this presents to how we understand our selves and our connections to others and the world, forms the ultimate focus of this thesis. As Causey et al note, what is at stake in our investigation of the bio-virtual era are "issues of empowerment and disempowerment, the changing boundaries of 'self', ideas of embodiment in a digital world, and the fluid and mutating experience of intersubjectivity negotiated through the interchange between bodies and technologies" (3). Thus, the bio-virtual era opens up possibilities to re-think our understandings of concepts such as 'human', 'body', 'machine', 'environment', and to imagine new ways to understand ourselves as inter-connected, and formed through our engagement with, many different entities. However, it also implies a potential for new forms of limitation, reduction, disenfranchisement and control, if and when these new practices of digital technology reproduce structures of socio-economic, cultural and political inequality, and create forms of user behavior and mindset that reinforce these in-equal structures.

In this thesis I argue that mobile technologies are in danger of re-producing the norms and values of 'neoliberalism', currently the dominant form of socio-economic and political organisation in many Western societies. I define 'neoliberalism' as a socio-economic and political theory that holds that human well-being is best achieved by ensuring individuals' freedom to seek self-reward through market exchange. David Harvey suggests that "[n]eoliberalism values market exchange as an 'ethic in itself'" (3), in that "[i]t holds that all social good will be maximized by maximizing the reach and frequency of market transactions, and ... seeks to bring all human action into the domain of the market" (3). In order to be able to operate transactions the market applies a generalised system of comparison and value. As such, core neoliberal values include quantification (measurement of an object or act in units[4]), commodification (the assignment of exchange value to an object or act, thus transforming them into a good or service) and consumption (the purchase and use of that good or service). Equally, since goods and services are held to be that of the individual, rather than a group or society as a whole, a core value of neoliberalism is privatization. As such, a key critique of neoliberal theory, as Jen Harvie points out, is that it promotes a sense of 'unreserved

4 For example, a worker's labour measured in the hours they work, rather than by the quality of the work produced.

individual self-interest' over a sense of solidarity and 'fellow feeling' with others (Harvie, 2). In *A Brief History of Neoliberalism,* Harvey suggests that, since the 1970s, neoliberal theory has become increasingly "hegemonic ... to the point where it has become incorporated into the common-sense way many of us interpret, live in, and understand the world" (3). This hegemonic mindset works to prevent people from both engaging with critiques of neoliberalism, and exploring alternative (and possibly better) political and economic theories of how best to achieve social good. Thus, neoliberal world-views can be said to frame and influence how mobile technologies are conceptualised and practiced in the 'bio-virtual' era.

This is particularly the case as mobile technologies connect, in ever closer ways, to our bodies, and the operation of our bodies through sensor technology, weaving computing into the fabric of our being. On the one hand, this new wave of computing brings with it the possibility to privatize, quantify, commodify and consume the body, bringing the material body, and its experiential potential, into the realm of market exchange. As I examine further in Chapter 1, one such example of this is employers offering their employees better health benefits if they wear a fitness tracker that monitors, measures and reports the operations of their body (such as their heart rate, amount of steps walked, amount of sleep) to their employer and health insurance provider. Such examples clearly indicate the potential for control, surveillance and unequal relationships of power inherent in the rapid - and uncritical - adoption of mobile technologies. On the other hand, I argue that mobile technologies are perhaps best placed to challenge and resist the hegemonic structures of neoliberalism because they can embrace and re-make the core concept of neoliberalism - the individual. As mobile technologies interact directly with the user's body they are inherently focused on the individual experience of the user. Yet their ability to re-make the user's experience of their body as an interwoven experience of the digital and the real opens up their potential to construct alternative forms of individualism, ones which do not, for example define individual self-interest in opposition to the interest of their fellows (as per Jen Harvie's critique above). Equally, mobile technologies hold the potential of opening the user up to an awareness that the experiential capacity of their body goes far beyond the reductive practices of quantification, commodification and consumption, opening them up to new forms of understanding and new states of being.

As such, the objects and design practices that utilise mobile technologies - specifically objects and practices that utilise mobile technologies to intervene in and

transform the user's lived, embodied experience of the physical world - provide a valuable forum to investigate how the challenges and possibilities of the 'bio-virtual' era are currently playing out, and how they might play out in the future. The reference to the 'biological' (as opposed to physical or material) within the term 'bio-virtual' underlines the fact that in the 'bio-virtual' era the body cannot be viewed as a cohesive whole; instead it should be understood as a biological organism comprising numerous interdependent parts. This emphasis on the body as a biological organism brings into sharp relief the visceral and sensory operations of the body, and the ways in which these operations work to produce a form of knowledge that is *affective* - a non-cognitive mode of understanding that operates differently from cognitive thought processes, what Josephine Machon terms the 'thinking body'. Mobile technologies possess a particular capacity to interact with the visceral and sensory operations of the body. The portability of mobile technologies has meant that they have always had a strong relationship to the user's body, rather than to a particular, fixed space (as with static computer technology). Mobile technologies since the CD walkman have been traveling along with the user, bringing digital media into conversation with the user's continuous experience of physical reality. This indicates a genealogy of design practice that is focused on how the digital intervenes in the physical, a genealogy I explore throughout this thesis. And, as I note above, mobile technologies can now be understood as encompassing not only portable digital devices and smartphones but also wearable technologies and some pervasive technologies, meaning that they are even better placed to intervene at a bodily, biological level with the user's sense of self, and their understanding of the world around them. Therefore, mobile technologies, both through their particular nature, and through their ubiquity, are uniquely placed to bring digital technologies into conversation with the affective mode of understanding, changing the user's sense of their physical body, and the sense they make *through* their physical body. Accordingly, I now turn to 'mobile experiences' - objects utilise mobile technologies to intervene in and transform the user's lived, embodied experience of the physical world - which I use throughout this thesis to investigate what experiences of subjectivity and inter-subjectivity are being created in the 'bio-virtual' era.

Mobile Experiences

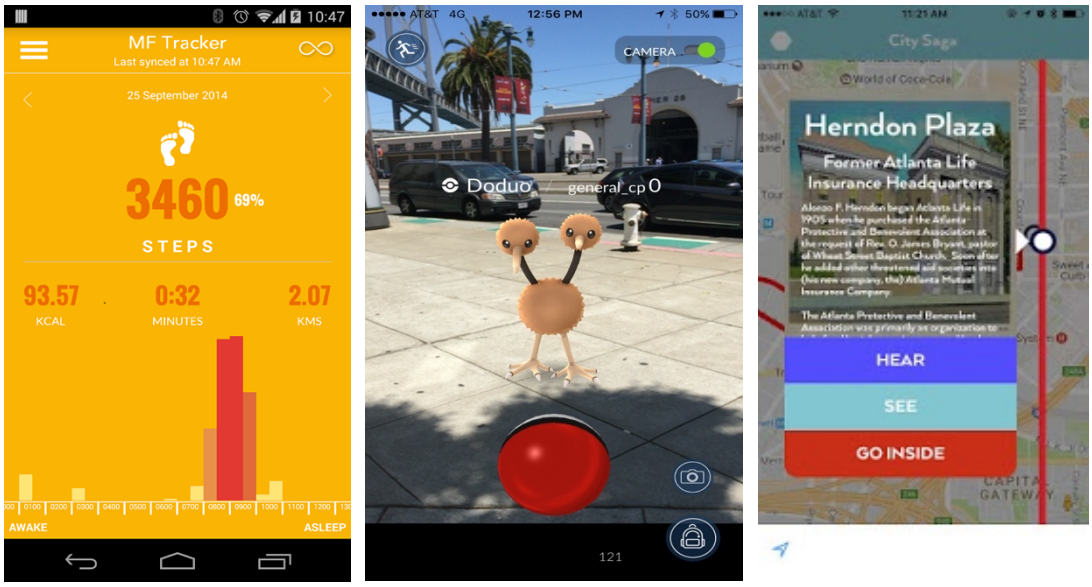

Fig. 0.1: Three examples of mobile experiences: the 'Modern Fitness' app, the 'Pokémon Go' augmented reality game; and 'CitySaga', a 'mobile digital storytelling' experience.

The objects I am studying in this thesis are 'mobile experiences', by which I mean apps, games and cultural products (art works, performances, digital stories) that engage the participant directly through mobile technologies and media, and intervene in the participant's understanding of their body and their lived, embodied experience. These can be commercial apps, such as jogging apps, which give the user real-time information about their body and their environment (e.g. steps run, route taken). They can also be mobile (often location-based) games, that seek to digitally augment the world of the participant for the purpose of entertainment - the most notable example of these is the game *Pokémon Go* in which participants use their smartphones to hunt down and capture digital pokémons that are geo-linked to specific locations in the physical world[5].

Finally, mobile experiences can be cultural products which seek to evoke a critical awareness in the participant through the participant's experience of the digital mixed with the real. An example of this is the *CitySaga* project (fig. 1, above), a location-based mobile experience created by Georgia Tech, which takes place on Auburn Avenue in Atlanta, Georgia. The project describes itself as "mobile digital

5 For an in-depth discussion of the Pokémon Go game, see Chapter 4.

storytelling", and focuses on "[s]haring the inspirational story of how this internationally significant place came to thrive in the face of great adversity and then lead the world in the quest for equality and human rights" (City Saga). Using a smartphone app, the project links audio stories and 360° visual panoramas to significant locations along Auburn Avenue in Atlanta, Georgia. Users can, via their smartphone, experience this digital intervention in the real world: as they stand physically at a location along the Avenue they can hear the voices of historical figures recounting stories of what happened at that location, and they can look through the screen of the smartphone and turn slowly to feel themselves surrounded by a 360° view of what that location looked like in the past. In this way, users' experience of the location is enriched by their understanding of the hidden personal histories of that location, and the location's connection to a wider context of social and political struggle.

A second example of mobile experiences as cultural products is the research project *Jekyll 2.0*, which I discuss in detail in Chapter 1. The project uses mobile technologies to allow the participant to control their environment - e.g. when the participant lies down on a four-poster bed, the change in their body's position is detected by a sensor and this triggers a video which is projected onto the canopy above them. The intention of the project is to use this interaction and interweaving between the digital and the real to encourage participants "to question what it means to be human" (Mandal, 96), in an age where technology is becoming ever more integrated with our bodies and our experience of the world. As these examples illustrate, mobile experiences offer new and unique ways by which to bring participants into conversation with their lived, bodily experience as an intricate interweaving of their own body with the bodies, the technologies, the objects, and the spaces around them.

'Mobile experiences' is, therefore, a broad term that allows me to consider case-studies from a wide range of areas; commercial app production, university research projects, museum and archive commissions, and artistic projects. I have kept the scope of this thesis deliberately broad (instead of focusing only on cultural products, for example) because analysing a broad spectrum of diverse works allows me to identify and critique some of the core assumptions and design methodologies that are employed across disciplines with respect to mobile technologies and media. It also allows for the fact that mobile experiences exist at "the leading edge of technology and aesthetics, where environments of production and reception currently lack definition" (Reiser, 4). One of the most innovative approaches to mobile experience design is the context-aware

audio generation code in *Inception The App* (Chapter 3), a commercial app available on the Apple App Store. In contrast, as I have noted above, research projects and artistic projects often merely reproduce conventional approaches to mobile experience design, and do not push forward the possibilities inherent in the technology. Analyzing a broad range of objects, therefore, allows me to draw on new design approaches to mobile experiences in whatever form they appear, be it a commercial app, a research project or a digital storytelling experience.

Additionally, my approach takes into account that mobile experiences often evolve: as the examples of *Jekyll 2.0* (Chapter 1) and *Viking Ghost Hunt* (Chapter 2) show, mobile experiences often begin as research projects, and are then developed into commercial products. By tracking mobile experiences through different spheres of production (commercial, research, artistic), I can therefore examine how mobile technologies and media are embedded in structures of neo-liberal consumerism, and the challenges this presents to the creation of truly transformative experiences.

Finally, as I have noted above, mobile experiences are often created by inter-disciplinary teams of coders, media artists, game designers and interaction designers, often working alongside scholars from disciplines such as history, literature, and geography. By bringing in a wide range of objects, I offer an analysis and critique of current practices in the design of mobile experiences that is both accessible and relevant across disciplines. The framework of 'affective dramaturgy' I develop in the following chapters offers a shared theoretical and methodological vocabulary to scholars and practitioners working in this inter-disciplinary field of mobile experiences, and will, I hope, allow them to move beyond current assumptions and design models, towards new approaches that place the affective, bodily understanding of the participant at the centre of the mobile experience.

Thesis Background

The genesis of this thesis lies in my own early experiences of the inter-relationship between live performance and digital computing. Growing up in the 1980s-90s I was brought frequently to the theatre, and was particularly influenced by the large-scale promenade shows created by Macnas (a Galway-based spectacle company), and the inventive and magical shows presented at the Galway Arts Festival by European companies such as Footsbarn Theatre Company. We also had a personal computer (PC) at home - first an Amstrad, and then an Apple II - and on these I played role-playing

video games such as Kings Quest III and Loom. These games are designed as 'quest' narratives, and allow players to take on the role of a character who moves through a detailed world, inter-acting with other characters and objects in order to fulfill their quest. I quickly went about bringing my theatrical experiences and my computer role-playing experiences together: together with my sisters, I designed real-life 'quests' each October that transformed the entire downstairs of our house into a live, immersive, interactive world for family and friends. At the same time, I also developed some (un-finished) 'quest' computer games using the software HyperCard, designing the games' characters, storylines, and visual images, and programming the user interface. These experiences imbued me with a long-term interest in the artistic and experiential possibilities of the live and the digital, and an awareness of how each can influence and push the boundaries of the other.

The second impetus that has shaped this thesis - particularly its focus on the ethical dimensions and potentials of mobile experiences - is my strong interest in issues of social justice, fostered during my undergraduate and MSc studies in Politics at the University of Glasgow. My time in Glasgow allowed me learn more about the ways that human beings go about the difficult business of living together on a small, finite planet, and to think more deeply about the complex web of social, economic and environmental relationships we are all a part of. My studies have had a strong influence on my subsequent theatre career, both in terms of the material I have chosen to work with and my interest in theatre practices that prompt the audiences to engage critically and imaginatively with their own lives, and with the world around them.

In 2010, following four years as a practicing theatre professional (including establishing my own company Moonfish Theatre, along with my sister Ionia, and Joanne Cummins), I received a Theatre Artist in Residence Grant from the Arts Council of Ireland to research and develop work in the genre of 'mixed reality' performance. 'Mixed-reality performance' seeks to use digital technologies to transform the audience's perception of the real, by augmenting, disrupting and extending their experience of their own selves and the world. It places the audience individually and collectively at the heart of the performance, so that they become participants whose actions and awareness are core to the creation of the work. My particular interest lay in how new digital technologies could be used to involve the public in creative forms of consultation about the future of their city. As part of my residency I researched how artists were using

technologies such as 'augmented reality'[6] to create immersive, inter-active experiences in 'real' physical locations. I travelled over to the Pervasive Media Centre, part of the WaterShed Media Centre in Bristol, UK, to see projects they had developed, and I created a mixed-reality performance for the festival 'Galway Loves Theatre'. Following on from this residency I was commissioned by the Dublin Fringe Festival 2012 to create *Just In Time*, a time-travel smartphone game that involved the audience racing around the Temple Bar area of Dublin City on a 'quest' to save the world. In keeping with the overall research question of my residency, the game had a particular political intent - to engage participants in a new, closer relationship with future generations, and so ask them to reflect on how their actions might affect those future generations. As I discuss further in Chapter 4, the experience of designing and running this game was a key turning point in my practice, highlighting for me the distinct difference between the concepts and design methodologies used to create the role-playing video games of my childhood, and the concepts and design methodologies that were needed to create immersive experiences using mobile technologies.

However, I struggled to find an alternative theory and methodology that answered this need. My research as part of the residency showed that many arts and research projects that utilised mobile technologies were repeating the same investigations and realizing the same results, often without reference to one another. I was also continually coming up against the fact that, despite the proliferation of projects that focused on methodological approaches, there was a lack of theoretical investigation of what exactly mobile technologies and media were doing, at a very fundamental level, in terms of changing how we perceived and interacted with our bodies and the world. This meant that, although these practical projects could offer design advice such as 'tying the story in with the actual location makes it more meaningful for the user'; or 'allowing users to move in a circle and experience a 360 panorama makes them feel more immersed in the experience', they did not widen the scope of this analysis to consider not just the particular but the wider conclusions of how mobile technologies and media intervene in the participant's experience. In other words, *why* did design approaches that suited computer games, virtual reality and other forms of digital media

6 'Augmented-reality' is commonly the term given to a technology that super-imposes a computer-generated image on the user's view of the real world, creating a composite view. However, 'augmented-reality' can be more broadly applied to the layering of other sensory stimuli such as sound (aural media) and touch (haptic media) over the user's real-world experience, creating a combined experience of the real and the digital.

not work in mobile experiences? And, conversely, *why* were elements such as audio (often the 'poor relation' in screen-based digital culture) so effective at transforming the user's lived experience in mobile experiences? These questions, it seemed to me, could not be answered through specific projects alone. Instead, they opened out into wider ontological questions about what makes mobile technologies and media different and unique from other forms of media, and how this difference might allow for the creation of new and transformative forms of being and engaging with the world.

I could only investigate these questions by diving into theories around digital technologies, the body, and space, and by drawing on these theories, and others, to develop a robust theoretical approach to mobile experiences. However, as a practitioner, I also wished to build upon this new theoretical approach to articulate an alternative methodology that designers of mobile experiences (including myself) could adopt. Additionally, I wanted to adopt an analytical approach that could be useful and accessible to both theatre and arts practitioners, and to designers from computing and interaction backgrounds. Through this thesis, therefore, I seek to forge what Peter Wright et al have termed 'radical interdisciplinary dialogue' - a dialogue that brings design perspectives from the arts and humanities into play with design perspectives from human-computer interaction (HCI).

Thesis Methodology

Arts Practice and alternative forms of 'knowing'

My approach in this thesis is rooted in my own background as an arts practitioner, and my belief that arts practice offers a unique and vital means of interrogating our current ways of being and exploring new, alternative ways of being. Arts practice is a rigorous methodology for exploring what we do not know already, and, from this, of offering something new that in some way changes the world. In this, Andrew Simonet compares arts practice to science, noting that, "[t]he scientific method and the artistic process are the *two most robust problem-solving methodologies ever developed* ... The scientific method works on material questions. The artistic process works on questions of culture, questions of thought" (23-4). Arts practice addresses spheres of human existence and being that go beyond the commercial - the cultural, the spiritual, the political, the emotional - and seeks to make space for, renew, and extend, this broad spectrum of human experience. It does this in a practical way, undertaking a process of research and application to create tangible objects (paintings, videos, songs, performances, books,

games) which are then experienced by the general public. However, a key difference between the scientific method and the artistic process is the form of knowledge they seek, and, consequently, the ways in which they 'prove' their experiments. The scientific method prioritizes empirical, quantifiable knowledge that can be measured and compared. 'Knowing', in this context, means a form of certainty - a conscious awareness based on direct observation and verifiable information. The artistic process, on the other hand, deals with the experiential knowledge (of both the artist and the arts audience) produced through thoughts, sensations, feelings, emotions, values, behaviors and relationships. Arts practice, therefore, prioritizes "the role imagination and intellect plays in constructing knowledge" (Sullivan, xi-x). 'Knowing', in this context, addresses "aspects of human understanding that are beyond the scope of explanatory systems where insight is not the consequence of causal, inferential, or predictive means" (ibid, xix) - where insight, may instead result from intuition, empathy, the sensing intellect, or other inter-operations of the body and mind. Crucially, this form of 'knowing' differs from the scientific form of 'knowing' in that it embraces states of uncertainty - of 'not-knowing' - as elements of experience that impact on our overall state of being. As Graeme Sullivan notes, "even if the everyday life of the artwork is short, or the encounter brief, one never really knows the outcome. This uncertainty is by no means futile, for it is at the heart of what the ... arts have to offer if we dare to see things differently[7]" (xxii).

The artistic form of inquiry, and the form of 'knowing' it prioritizes, therefore, offers a vital counter-balance to the values and practices of the quantitative mode of 'knowing' which have, so far, shaped much of our interactions with mobile technologies. Pointing out that settings such as 'digital environments' offer "new places for creative and critical inquiry", Graeme Sullivan argues that "artists explore these places in ways that disrupt assumed boundaries" (xix). In the new 'bio-virtual' setting that surrounds us arts practice can play a vital role in disrupting the normative construction of both the biological and the virtual as quantifiable, measurable and monitor-able. In doing so, arts practice can allow us to engage critically with the operation of neoliberal values on our lives, and to resist these values by developing new understandings of our 'bio-

7 While Sullivan attributes this 'uncertainty' specifically to visual arts practice, I extend this (drawing on my own experience of other art forms) to include the arts in general.

virtual' existence that prioritize the unique, ineffable, and uncertain dimensions of human experience.

A Theatre and Performance Approach

My analysis of mobile experiences is situated in the field of theatre and performance, and brings the theories and concepts of this field into conversation with the theories and concepts of other fields across the humanities and computing, including cultural studies, mobile media studies, philosophy, interaction design and digital humanities. My choice to approach mobile technologies through the the specific arts practice of theatre and performance is a result of my own early interest in the connection between performance and technology, and my subsequent practice as a theatre artist. Both experiences highlighted for me the ways in which theatre and performance studies offer a particularly suitable set of tools by which to design, analyse, and critique mobile experiences. Accordingly, I situate mobile experiences in the field of theatre and performance studies for a number of reasons:

Firstly, it allows us to examine the multiple roles that are conflated into the participant in a mobile experience - that of audience member, performer and, often, co-creator. As I examine in more detail in the following section, theatre and performance scholars have become increasingly interested in the shift in the nature and role of the audience member from passive audience member to active spectator/performer/participant[8] - particularly in non-traditional forms of theatre such as 'immersive theatre'. The work already done in theatre and performance studies around the audience/performer/co-creator offers a number of useful ways to understand how this shift places the participant's experiential engagement, through their body, at the heart of the meaning that is being created through mobile experiences.

My second reason for situating mobile experiences in the field of theatre and performance is that theatre and performance works are created in ways that speak to the design of mobile experiences. Theatre is often refered to as a 'gesamtkunstwerk' or 'total art work', in the sense that it makes use of many forms of media - sound, light, movement, imagery etc.. It has therefore developed methodologies that seek to combine various media together in a cohesive whole that is more than the sum of its

8 See, for example, Alison Oddey and Christine White, 2009

parts. Because of its live nature[9], theatre and performance practice have paid considerable attention to the three constitutive elements of a live experience - body, space and time, and how they integrate with media (both physical and digital) to create meaningful engagement with the audience member. Genres such as multimedia performance, immersive theatre, and intimate performance are particularly relevant here, as I discuss at the end of the Introduction. Theatre and performance practice and analysis therefore offers a way to think through mobile experiences as live, moment-by-moment experiences that are shaped by the interweaving of the physical elements of body, space and time with digital elements such as sounds, images, haptic pulses, etc..

Thirdly, considering mobile experiences as 'performative' allows us to consider how they involve the participant in the enacting of specific social and cultural behaviors[10]. As Martin Reiser remarks, "[m]obile devices already appear performative in their nature, with public space interpenetrating our private concerns, so that any conversation has its willing or unwilling eavesdroppers" (6). This performative power of mobile experiences opens them up to critique: for instance, Mary Flanagan notes how the mechanics of locative mobile games often bring about a consumer relationship between participants and the location they are moving through in such a way that spaces become 'playgrounds' to be used rather than rich sites of cultural histories to be discovered and appreciated. In Chapter 4, therefore, I consider critical examinations of how experiential art works (including immersive theatre works and pervasive games) can sometimes re-inscribe the behaviors and structures that they seek to critique, and I apply these critiques to the affective design methodology I propose for mobile experiences.

---

9 The 'live' nature of theatre and performance has famously been challenged by Philip Auslander, who argues that 'liveness' is not an inherent trait of any particular form (theatre, performance) - instead it is defined in relationship to other 'reproduced' forms (film, television). This approach has been critiqued by Peggy Phelan, among others, who argues that "[p]erformance's only life is in the present. Performance cannot be saved, recorded, documented, or otherwise participate in the circulation of representations of representations: once it does so, it becomes something other than performance. To the degree that performance attempts to enter the economy of reproduction it betrays and lessens the promise of its own ontology. Performance's being, like the ontology of subjectivity proposed here, becomes itself through disappearance" (Phelan, 146). While examining the question of 'liveness' in the context of mobile experiences (which contain both mediated and 'live' elements) is of definite value, this particular debate is too wide to be considered in the context of this thesis.

10 This understanding of performance derives from the field of performance studies, which encompasses both artistic performance and the performance of everyday life. In terms of the performance of the everyday, theorists such as Richard Schechner and Judith Butler point to how, by understanding our social behaviours and actions as 'performative', we can begin to look at how they embody and inscribe cultural values and norms.

Finally, theatre and performance studies encourages us to consider the creation, reception and analysis of mobile experiences within wider socio-economic, political and cultural contexts. Theatre and performance studies consider questions such as the impact of globalization on how performances are created and received, how theatre and performance works incorporate and reflect on wider social discourses around issues such as gender, diversity and social equality, and how theatre and performance works serve to either reinforce or challenge accepted social norms. Throughout this thesis, therefore, I consider how mobile experiences are framed within a larger context of increased 'digitization', calculation and measurement, and the neoliberal capitalist ideology that underpins this trend. I also consider how mobile experiences offer ways to critique and challenge the norms and behaviours this trend is producing, both through their content but, more importantly, through their design.

A Case-Study Approach

Throughout this thesis I employ a case-study analysis framework, using in-depth analysis of 'objects' (apps, games, digital storytelling, and performances) to develop and illustrate the concepts I am bringing together through this research. From this basis I then propose methods ('dramaturgical strategies') that practioners/designers can utilise to focus on, and interweave with, the user's bodily experience. This approach again helps to bridge the gaps between an arts practice mode of analysis and a HCI mode of analysis: while the scholarly approaches of these fields differ substantially, both utilise 'objects' as a focus of their investigation. Accordingly, I bring these case-studies into conversation with theoretical approaches to digital technologies, the body, and space to develop an over-arching theory of the ways in which mobile technologies and media intervene uniquely in our understanding of our body and world. I also draw on these case studies both to demonstrate the limitations of current design practices, and to begin to sketch out a new methodological approach to the creation of mobile experiences that realizes the affective potential of mobile technologies and media.

Using digital objects as case-studies in this way is not without its challenges, particularly the challenge of obsolescence. On a practical level, the availability of the case-studies I refer to has changed over time - for example, the iPhone app *Inception The App,* which I discuss in Chapter 4, was not updated by the developers and was therefore unavailable on the Apple store for two years (it has since been updated and a new version is now available). Given the continuous updating of both hardware devices

(smartphones, tablets, etc.), and their operating systems, it is almost inevitable that some of the objects I allude to will be made unavailable over the coming years. At the same time, other projects and products will emerge that take advantage of new evolutions in the technology. Accordingly, I seek to circumvent the dangers of obsolescence by using these contemporary examples to draw out a theoretical and methodological approach that speaks to the core affective potential of mobile technologies (past, present and future) to create new forms of lived, embodied user experience. In this way, my approach chimes with Rosemary Klich and Edward Scheer's discussion of multi-media performance, whereby they examine "particular examples of performance in terms of emergent patterns of practice and ... discuss theoretical arguments which allow the significance of these patterns of practice to be understood" (3).

A second key challenge of the case-study approach lies in my in-ability to directly experience, and subsequently analyze, all the 'objects' I consider. While I have been able to easily access and directly experience commercially available apps such as *Pokémon Go* (Chapter 4) and *Inception The App* (Chapter 3), I have not always been able to access and experience mobile experiences created for research projects (for example, *I Seek the Nerves Under Your Skin* - Chapter 3). Thus, while I have been a participant or creator on some of the mobile experiences I use as objects of study (*DAH Workshop* - Chapter 2 and *Just In Time* - Chapter 4), and can therefore supplement the documentation of the project with analysis of my own experience, I have not been able to do this in all cases. This has been the case particularly with regard to those objects which were conceived and delivered as live performances - for example, *Citizen X* (Chapter 5). In the case of *Citizen X* I was unable to attend the live performance in September 2015. However, I was able to download and analyze the key digital element of that performance, an mp3 track that accompanied the participant's experience for the entire duration of the performance, and to listen to the mp3 track in the location of the experience (a journey on the LUAS tram in Dublin City). This points to the ways in which some mobile experiences are composed of a number of media, both digital and physical. The act of analyzing and critiquing these forms of mobile experience, therefore, sometimes requires the researcher to perform a creative reading of the experience that imaginatively re-assembles these distributed media, and re-constructs (after a fashion) the sensory experience of the work.

Writing about a sensory experience that I did not actually have necessarily admits a trace of uncertainty into the scholarship itself. While I supplement my analysis

of *Citizen X*, for example, with the recorded experiences of reviewers, and with the anecdotal descriptions of friends who attended the performance, my description of the experience - and therefore the conclusions I draw from it - are nevertheless contingent and open to contestation. In this respect, my approach faces a challenge akin to that of history or archive studies: how to approach the traces of the past in a way that gives an accurate understanding of that past. As Alun Munslow suggests, "the historian has to work out some kind of method or means whereby he/she can grasp the relationship between knowledge and explanation in order to find a foundation of truth, if one exists" (5). Munslow goes on to highlight the role of narrative in history (as a discipline), noting that, "[b]ecause we cannot directly encounter the past ... we employ a narrative fulfilling a two-fold function, both as a surrogate for the past and as a medium of exchange in our active engagement with it" (6). Where I have not directly experienced the 'objects' I am studying, therefore, I attempt, to the best of my ability, to 're-tell' a more general, composite experience that acts as a surrogate for the experience of those in attendance and as medium of exchange in my active, analytical engagement with that experience.

A third challenge of the case-study approach arises from the fact that I was not involved in the creation of all (or indeed most) of the objects I am studying. My initial intention was that this thesis would be practice-based, and that the case-studies would be projects I created during the course of my research. However, this proved difficult for practical reasons because the projects I envisioned would have required a team to carry them out - and, indeed, most mobile experiences, whether research projects or commercial projects, have been created by inter-disciplinary teams of designers, coders, and writers. In addition, I realized that while creating projects to test a new design methodology for mobile experience was my ultimate goal, it was important that I first take the necessary time to fully investigate and develop the theory that would underpin this methodology. For practical and scholarship reasons, therefore, I moved away from a practice-based approach towards an approach that, while it foregrounds objects as case-studies, is not rooted in my own critical-reflective process as a practitioner.

Although I chose not to create projects as part of this thesis, I do draw on a number of projects I worked on outside of my academic research. In Chapter 2 I examine a workshop I conducted with students of the Digital Arts and Humanities programme (DAH) on the design of mobile experiences using the platform *7Scenes.* I also draw on *O'Carolan's Last Tune,* a project I created for the Galway Early Music

Festival while on internship with the augmented-reality company Haunted Planet. In Chapter 4 I critically reflect on *Just In Time,* a mobile experience I designed for the Dublin Fringe Festival 2012. Since they were not conceived as research projects, all these projects have limitations - for instance, because *Just In Time* and *O'Carolan's Last Tune* were created for festivals, I did not design or conduct any participant evaluations. However, I have included them as case-studies because they allow me to speak first-hand to the ways in which designers can, and must, critically engage with current design methodologies for mobile experiences.

In drawing on objects which I have not created, and which come from a number of disciplines and spheres of production, I have had to contend with the very different ways these objects are conceived, documented and discussed by their designers and by academic scholars (sometimes one and the same). For example, the discussion of *Jekyll 2.0* (Chapter 1) is led by the academic member of the design team, Dr. Anthony Mandel, and focuses on the theoretical and conceptual concerns of the project. In contrast, the designers of *Viking Ghost Hunt* (Chapter 2) utilise a human-computer interaction approach, focused primarily on testing and evaluating audience reactions to the various applications of the technology. The commercial apps *Inception The App* (Chapter 3) and *Pokémon Go* (Chapter 4*)* were not developed within a framework of academic research and, as such, I have had to evaluate their creation and reception with reference to their marketing materials, press reports and user evaluations. One avenue of investigation which I have not taken in this thesis is to interview the designers of the objects I am studying. My decision not to interview designers at this stage in the research is due to the fact that the theoretical model and design methodology that I propose took a substantial time to evolve. Until that was in place, I did not feel in a position to structure and evaluate discussions with designers in a way that would further the specific research contribution of this thesis. Accordingly, a key direction for future research will be to expand on the theoretical and methodological insights I have developed through conversations with the designers and creators of mobile experiences (including personal reflection on my own practice).

The very different vocabularies and approaches used to create and document these case-studies have also proved challenging to negotiate; at the same time, however, bringing these case-studies together is valuable in that it allows us to gain a broad inter-disciplinary understanding of how mobile technologies and media are designed for, and interact with, our physical and immediate experience of our body, our world, and of

others. Accordingly my approach has been to knit these case-studies together by developing a shared vocabulary that draws on, and occasionally modifies, concepts and practices from across the humanities and computing disciplines. In doing so, I have sought to emphasize the importance of paying equal attention to the practical construction and evaluation of works, and to the abstract theoretical analysis of these works. The former allows us to understand, at a micro-level, how digital technologies are integrating with, and changing our understanding of our body. The latter allows us to situate those individual works within a much wider understanding of how digital technologies are integrating with, and continuously changing our societies. Accordingly, I begin to create this 'bridging vocabulary' by delineating the key terms and concepts that I shall draw on throughout this thesis: 'mobile experiences', 'affect' and 'dramaturgy'.

Key Terms and Concepts

Mobile Experiences

Mobile

The word 'mobile' in 'mobile experience' refers to mobile digital technologies and media. For the purposes of this thesis I am defining mobile digital technologies to encompass portable forms of digital technology - from phones, pagers and media players in the 1990s through to smartphones, wearable technologies such as Fitbit and smart watches, and some pervasive media[11]. The significance of these devices derives both from their portability and, more recently, from their computing and sensor-based capabilities, all of which work to re-configure the user's understanding of their own body and environment. Pointing to the the contrast between a geographically fixed inscription and a mobile piece of papyrus, Jason Farman argues that "[t]hroughout history, when a medium that was once understood as geographically fixed became

11 Pervasive media, also known as 'ubiquitous computing' or the 'Internet of Things' (IoT), refers to computing technology and media which is embedded in objects and spaces. Often the trigger for this pervasive media is the body of the user - e.g. when a person walks into a room, a motion sensor senses this and turns on the light. Accordingly, I include pervasive media within my understanding of mobile technologies insofar as it reacts to, or interacts with, the body of the user. This is because, although the technology and media itself does not move, its interaction with the body of the user opens the user up to a new awareness of the interconnectedness of their body with the spaces and objects around them.

mobile, a cultural shift accompanies this transformation" (Farman, 1) In this case, the move from static to mobile computing has brought about a cultural shift away from the location of the action – the computer – towards the action itself – computing. Digital technology now interweaves with our lives in a much more fluid way than before, and computing intersects with everyday actions such as finding our way to a location (moving between the real world and the digital maps app on our smartphone), engaging in fitness activities (using a jogging app to monitor steps taken and distance traveled), and communicating with friends (exchanging instant messages across physical distances). When we speak about mobile digital technologies, therefore, we are speaking about "the ways that these devices work *in tandem with* bodies and locales" (Farman, 1 - my emphasis) in shaping how we interact with and understand the world. In the next section I trace the development of mobile technologies in more detail, to show how they have brought about new ways of interacting with the body and the world around us.

Mobile digital media refers to the content that mobile digital technologies deliver to the user - audio tracks, images, video, voice, written messages[12]. However, the strong connection of the term 'media' to visual and aural media means that mobile digital technology's potential to engage with other senses is often not addressed. For instance, the editors of *The Routledge Companion to Mobile Media* state that, although touch (haptics) is addressed in several contributions to the *Companion,* "much more needs to be investigated about this, let alone research in relation to other sensory modes and extension" (Goggin and Hjorth, 3). This begs the question: how do we describe and analyse the effect of user-computer interactions that go beyond our traditional definitions of media? When a user's heartbeat is read by a smartphone and used to control the flickering of a lightbulb in the ceiling (as in *Jekyll 2.0*) what vocabularies exist to capture how this shapes the user's understanding of their body and its connection to the space around it? This thesis seeks to fill this gap by investigating how

12 The term 'mobile media' is also used by mobile media scholars to describe the practices that users engage in when they use their devices and thereby enter into a hybrid world of the digital and the real (See Farman, 2012 ; Goggin and Hjorth (eds), 2014). Although this thesis is very much about those practices I choose to retain the term 'mobile media' to refer to the material ways in which mobile digital technologies can engage with the users' experience of their body and the world (visual images, aural sound effects, haptic pulses, etc.). This is because, as I examine in Chapter 2, there is still much to be understood about how the design and delivery of these material digital elements in mobile experiences accounts for the user's experiences of the physical world - in other words, how do we 'translate' digital materiality into physical materiality in a way that effectively integrates with and transforms the sensory, bodily experience and understanding of the user.

mobile experiences interact with all the senses, and what new forms of 'media' this creates.

In addition to identifying the particular nature of the technologies and media this thesis is considering, I also use the word 'mobile' to link mobile experiences at a more abstract, theoretical level with concepts of mobility, movement, motion and change. In mobile experiences the participant rarely remains in the same static position - they walk around (often in an 'uncontrolled' environment like a city street or square), take up different positions (sitting, lying down) and perform different physical actions (running, holding hands, listening). As such, they experience a process of continuous motion and change - the feeling of their body changes, their awareness of other people changes, and their surroundings change. Mobile technologies and media are uniquely able to follow along with, tap into, and even precipitate this experience of movement and change. As I will explore further in Chapter 3, this unique ability allows mobile experiences to open the participant up to an affective understanding of subjectivity as a sense of self that is open, fluid and constantly being created and re-created.

Experience

I use the word 'experience' to describe the diverse objects I'm studying because I wish to emphasise the way in which mobile digital technology and media allows for the creation of a multi-sensory experience that places the participant - more specifically, the sensing body of the participant - at its centre. The term 'experience' has a particular significance in the field of interaction design, signaling peoples' shift away from a concern with the material object itself (owning an iPhone 7 because it's the newest product on the market, or because it 'looks nice') towards how the object will add meaning to their lives. The field of 'user experience' within interaction design is, as Marc Hassenzahl argues, "not about the technology, industrial design, or interfaces. It is about creating a meaningful experience through a device" (1). Hassenzahl points to research that argues that societies that have sustained periods of material wealth move towards a 'post-materialistic' society, where people "equate happiness with the acquisition of positive life events" (1). These events, or experiences, allow people to have a meaningful engagement both with their own self (e.g. yoga classes) or with the world around them (e.g. volunteering in a wildlife sanctuary). As Hassenzahl recognizes however, the growth of peoples' interest in 'experience' has led to the commodification of the concept. Books such as *The Experience Economy* (Pine and Gilmore, 1999) focus on how

experiences can be used to develop 'brand engagement' and encourage, rather than reduce, consumerism. The co-option of mobile experiences into neoliberal capitalist structures is, therefore, a very clear danger, and one I address in detail in Chapter 4.

Nevertheless, the term 'experience' is valuable in that it foregrounds a number of points about how mobile digital technologies and media work to bring about new forms of 'meaningful engagement' in users. Hassenzahl defines an experience as "an episode, a chunk of time that one went through ... sights and sounds, feelings and thoughts, motives and actions ... closely knitted together, stored in memory, labelled, relived and communicated to others. An experience is a story, emerging from the dialogue of a person with her or his world through action" (2010, 8). There are, therefore, two aspects to the creation of an experience - the immediate, moment-by-moment experience, and the translation of this experience into a memorized story that can be communicated to others. The focus of this thesis is on the former aspect, but it does so within the context of the latter. Therefore, while Chapters 1 to 4 engage with how mobile experiences shape the immediate moment-by-moment experience of the participant, Chapter 5 looks at how the meaning the participant makes through their immediate experience subsequently shapes both their own understanding of the experience and how they communicate this understanding to others.

My primary focus on 'immediate experience' in this thesis fills a methodological gap in the scholarship, as I seek to show that this immediate experience produces its own form of knowledge - affective, bodily knowledge - which operates outside of cognition to create a sense of meaningful engagement. Across much of interaction design the sensory basis of moment-by-moment experience is often taken for granted, and only becomes relevant once the user begins to consciously recognize and think about the the emotions these sensory operations produce (see my discussion of affect and affective design in the following section). For instance, Hassenzahl himself argues that "[w]hile the immediate moment-by-moment experience is certainly interesting, memorized experience is of more practical relevance. This is simply because most of our waking time we are feasting on vivid memories of the past (or anticipations) rather than on immediate pleasures" (1). In contrast, I argue that the sensory experience of 'immediate pleasures' is very relevant, in that it generates a non-cognitive form of knowing that both shapes how an experience is understood in the moment, and how it is subsequently remembered, relived and communicated. Additionally, from an ethical and political perspective, I contend that, by raising the participant's awareness of their

'immediate pleasures' (what they are smelling, how they are moving, what they are hearing, etc.), mobile experiences can play an important role in re-focusing participant's attention on the here-and-now in ways that allow them to reflect on, critique and perhaps resist normative neoliberal behaviors and structures.

Distinguishing between 'immediate experience' (the raw experience) and 'memorized story' (the processed experience) is also helpful in that it shows why using mobile technologies and media to communicate stories to the user is not always successful: stories have gone through a process of memorization and re-telling, and they are materially different from immediate experience. Therefore, they do not always integrate well back into the immediate experience of the user. This problematizes the genre of 'mobile digital storytelling', which focuses on using mobile locative technologies to communicating other peoples' stories to the participant - ideally in a way that is meaningful to the participant themselves[13]. The aim of these projects is often to beyond a simple 'historical tour' and to give the participant a sense of 'being there', communicating the moment-by-moment experience of the person whose story is being told in the location where the story originally happened. The strong focus on 'story' rather than 'immediate experience' in many mobile digital storytelling projects may be because many of them grow out of an interest in 're-contextualising' historical archives, which are themselves a collection of individual and collective immediate experiences that have been 'memorized', stored and labelled through processes of writing, photography, etc.[14]. As I unpack further in Chapter 2, therefore, one of the challenges that face mobile digital storytelling projects is how to 'lift' the "sights and sounds, feelings and thoughts, motives and actions" (Hassenzahl) back out of these stories and communicate these to the participant in a way that allows them to integrate them into their own immediate experience, and, subsequently, into their own memorized - and meaningful - story.

Underlying this challenge is the wider question of how digital data can capture and integrate with our physical, immediate moment-by-moment experience in a way that is *meaningful.* If we look at the two images below we can see the gap that exists

13 For a number of examples of this genre see The Mobile Story (Farman, 2014), particularly Part VI: Memory, History and Community.

14 I In addition to the examples in The Mobile Story (Farman, 2014), see examples such as CitySaga (www.citysaga.tech), Lower Manhattan's Hidden History (available via the 7scenes platform - web.7scenes.com) and the project Finding Alberta, developed by researchers at Malmő University, Sweden (Engberg).

between how we physically experience a rainy, windy day and how our devices talk to us about this experience:

Fig. 0.2: How we experience rain and wind

Fig. 0.3: How our devices describe rain and wind

Although digital mobile devices are very good at information provision, they - or, more correctly, our design methodologies - are less good at using the digital data they collect and create in a way that renders this data *effective in the physical world*. This thesis attempts to answer this challenge by providing an in-depth analysis of how our immediate experience is created, how the mobile technologies and media of mobile experiences can intervene can in this immediate experience, and how this can create new forms of meaningful engagement in participants. Accordingly, I now turn to the concept of 'affect', which offers a vocabulary by which to analyse and describe 'immediate experience' and the bodily understanding it generates. I then turn to the concept of 'dramaturgy', which suggests how mobile experiences can be conceived and constructed in order to interweave with this immediate experience and produce meaningful forms of engagement in participants.

Affect

To articulate the ways in which mobile technologies can intersect with the user's experience of their body, and the knowledge they create through their body, I utilise the concept of 'affect'[15]. I take 'affect' to mean "those forces – visceral forces beneath,

15 Thus, this thesis also intersects with the cross-disciplinary field of 'affect studies' (see Greg and Steigworth, 2010).

alongside, or generally *other than* conscious knowing" (Gregg and Steigworth, 1). To break this definition of affect down, it focuses firstly on the sensory system of the body[16]. Our sensory system is comprised of receptors and nerves which receive messages from different parts of the body, and transmit these messages to be processed in the brain. This process of reception and interpretation is constantly taking place within our body although we are rarely conscious of it - as Jason Farman correctly notes, "our body parts recede from perception so that we can exist as a whole body rather than a culmination of disparate sensory pieces... We notice the world and places within it through what we perceive, those things which are obvious to us through our senses. However, just as important are those things we do not notice" (2012, 28). This continuous process of sensing sets up a *space of affect* that is separate from conscious, cognitive thought: alongside the flow of thought and experience that we consciously register there also runs a flow of non-cognitive, non-conscious bodily experience.

To delineate my approach to affect I draw, in particular, on cultural philosopher Brian Massumi's argument that 'affect' and 'cognition' are two separate modes of understanding that operate according to very different rules: the 'affective' mode of understanding is "not semantically or semiotically ordered" (Massumi, 24) and operates according to non-linear processes such as resonance and feedback, whereas the 'cognitive' mode of understanding is semantically and semiotically ordered, creating meanings by linking in with learnt, cognitive meanings and structures. Massumi also argues that these two modes of understanding work in tandem with one another. Therefore 'affect' is not prior to 'cognition' - instead the the sensory and visceral operations of the body give rise to a form of knowledge that operates in a space that is distinct from, though it may interweave with, conscious, cognitive thought.

This philosophical understanding of 'affect' stands in contrast to understandings of affect in the field of human-computer interaction, which equate affect specifically

16 Although 'visceral' more properly refers solely to the soft organs of the body, it is used more generally here to indicate deep, inward bodily feelings. Although these feelings may be said to arise from all biological operations of the body, I focus on the sensory system of the body, and the awareness and knowledge it generates. This is because, although the body as a biological organism contains a multitude of elements (cells that are constantly regenerating, gut bacteria, etc.), most of them operate at a level that we cannot (yet) interact with. With mobile technologies, however, it is already possibly to interact with individual senses - audio interacts with the aural sense, the screen with the visual sense, and vibration with the haptic (touch) sense - while sensor technologies are beginning to allow us to interact with other, less well-documented senses such as proprioceptive sense (senses that relate to our feeling of the body in the world) and interoceptive senses (senses that relate to internal bodily operations such as breathing).

with physiological sensation and emotion[17]. In the field of theatre and performance there is often a similar equation of affect with physiological effects (see Erin Hurley, 13), and with emotion (see Jill Dolan). However, the term 'affect' is also used to describe the non-cognitive understanding that arises from the sensory, visceral aspects of theatre and performance (see Hans-Thies Lehmann), and it is with this latter understanding of affect that my approach chimes.

My rationale for adopting this philosophical understanding of affect is that it allows us to better understand how bodies and technologies might interweave at a sensory, visceral level, and the form of knowing that might result. As Lisa Blackman notes, this concept of affect "moves away from a distinctive focus on the human body to bodies as *assemblages* of human and non-human processes" (1). As such, "bodies are not considered stable things or entities, but rather are processes which extend into and are immersed in worlds" (ibid.). Affect, therefore, offers a way to theorize, and open up, the ways in which mobile technologies can engage with the body of the user, creating 'brain-body-world entanglements' that lead to new forms of subjectivity and inter-subjectivity.

Used in this way, the concept of 'affect' offers a way to critique and counter-balance dominant cognitive approaches to mobile technologies. It offers a critical vocabulary that places a particular focus on the sensory, visceral operations of the body and seeks to carve out a space for these operations, and the form of knowledge they produce. In this way, it offers a way of accounting for embodied modes of experience that cannot be accurately analysed or described using current modes of analysis. However, in focusing on affect in this thesis my intention is not to substitute an affective approach for cognitive approach, nor to suggest that one is 'better' than the other. As Brian Massumi notes, cultural theories that focus on signification or coding are not wrong - it is just that they are not universally applicable. He argues that "their sphere of applicability must be recognised as limited to a particular mode of existence, or a particular dimension of the real (the degree to which things coincide with their own

17 In the area of 'affective computing', for example, the term 'affect' refers to neuro-biological sensations that indicate specific emotions. This area of HCI focuses on teaching computers to 'read' emotions by monitoring physiological changes in the user (see Höök, "Affective Computing"). The related area of 'affective interaction' in HCI moves away from mapping physiological sensation using computers and instead focuses on ways in which technology can be designed to account for, and interact with, emotion as "an embodied social, bodily and cultural product" (Höök, "Affective Computing"). However, like 'affective computing', 'affective interaction' equates affect directly with emotion – i.e. with a state of being that the user can cognitively recognise and account for.

arrest). Einstein's theories of relativity did not prove Newton's laws wrong. It showed them to be of limited applicability - accurate, but only at a certain scale of things" (7). Similarly theatre scholar Josephine Machon suggests that her goal in articulating an affective, '(syn)aesthetic' approach to performance is to extend the spectrum of critical analysis in a way that gives equal weight to the "holistic interpretive capabilities of the human body" (6). By focusing exclusively on mobile technologies through the lens of affect, therefore, my goal is to question the normative stance of current theories and methodologies of mobile technologies, and to reveal an alternative, very different, theory and methodology that 'gives equal weight to' to a bodily form of understanding and the states of being this form of understanding generates. I structure this theory and methodology as an 'affective dramaturgy' of mobile experiences.

Dramaturgy:

I adopt and adapt the term 'dramaturgy' from the field of theatre and performance studies as a three-fold concept that allows us to consider the composition/aesthetics of a work, the context in which it is created, and its curation/reception[18]. In this sense, the 'dramaturgy' of a work can be understood to encompass both the concepts and strategies that shape the design of the work (its internal elements and structures) and the external, contextual aspects of the creation and reception of the work. It therefore considers the socio-economic, political and cultural structures within which work is made, the ways in which these structures shape the intent of the designers (performers, artists, playwrights, theatre programmers, etc.), and the ways in which the work is both made available to, and received by, an audience. As such, the rigorous theorization around the term 'dramaturgy' in theatre and performance studies renders it broader than the term 'design methodology' as it is frequently used in human-computer interaction studies to indicate a material practice aimed at "designing the behaviour and visual appearance of a system to match the user's tasks, goals and action possibilities" (Wright, 1). Equally, 'dramaturgy' offers a more substantive and detailed lens than terms such as

18 As the The Routledge Companion to Dramaturgy (ed. Romanska) demonstrates, the term 'dramaturgy' has a wide range of meanings in theatre and performance studies, stemming from its use in the diverse (Western) traditions of Germany, the United States and the United Kingdom. I am mindful, therefore, that in applying it outside the field of theatre and performance, my definition may be taken up as definitive: on the contrary, my definition of 'dramaturgy' responds to the particular needs of this research and should not, therefore, obscure the complexity of 'dramaturgy' as a discourse within theatre and performance studies.

'composition' from the field of music studies, which again emphasize a material 'forming' of the musical piece itself.

When speaking about a 'dramaturgy' of mobile experiences, therefore, I seek to articulate a broad form of 'design methodology' for mobile experiences that is material and practical, and also contextual and critical. A 'dramaturgy' of mobile experiences allows us to consider the internal elements of mobile experiences in detail - to examine how the various media and technologies are placed in combination with one another and with other non-digital elements of the experience, including the participant's body and location. A dramaturgy of mobile experiences also allows us to consider the external elements of mobile experiences - elements such as the original source of the hardware or software, the limitations and affordances of the coding/media platform used, the cultural influences brought to the project by the design team, the economic considerations involved in the development of the experience, and the more philosophical-ideological world-views shaping the design and participant reception of the experience. As such, 'dramaturgy' allows us to engage with practical strategies for the design of mobile experiences, as well as with concepts that allow us to situate mobile experiences within a wider theoretical context that considers both their epistemological impact on what we understand and accept as 'knowledge' and their ontological impact on how we understand the nature of 'being' in the 'bio-virtual' world.

As objects that bring bodies, technologies and performance together, mobile experiences intersect with a number of discourses in diverse fields, and with discourses that cut across fields (particularly in relation to the concept of 'affect'). Accordingly, I briefly engage with these discourses in order to delineate my own analytical approach and focus, and to suggest ways in which this thesis could contribute to, and extend, these discourses.

Mobile Experiences: Critical Discourses

Mobile Technologies and Media

While researchers and developers in the field of mobile technologies have underlined the need for mobile design methodologies to understand the user's experience as "an immediate, living moment of experience, defined by real places and times, by real states of being" (Bentley and Barrett, 17), most objects and design practices that utilise mobile technologies continue to be underpinned by a theoretical framework that emphasizes cognitive engagement. As such, scholarship and practice in mobile technologies (across

all fields, both in the humanities and in computing) have not addressed the ways a user's 'immediate experience' and 'real states of being' are formed through their affective, bodily processes of understanding. Two notable exceptions to this are Martin Reiser's edited volume The Mobile Audience (2011) and Jason Farman's Mobile Interface Theory (2012). Martin Reiser brings together theoretical and practical approaches to mobile technologies in cultural studies, visual arts, theatre and performance and offers an "attempt to chart the underlying debates and document early experiments in the field" (Preface). Reiser's volume is valuable in that it shows how mobile technologies emphasize the user as the primary locus of interweaving between the digital and physical. His overview also provides valuable case-studies which indicate the potential of mobile technologies to create new and very different experiences of inter-connection between bodies and technologies (one such case-study is Mobile Feelings, which I discuss in Chapter 1). However, his approach does not address the theoretical questions that arise from mobile technologies' connection to the body of the user, or the fundamental changes in design practice needed to allow mobile technologies to intervene meaningfully in the immediate, affective experience of the user.

Jason Farman, conversely, does focus on the theoretical concerns that underpin mobile technologies' role in forming the user's sense of self in a hybrid world of the digital and the physical. Farman argues that a user's experience and state of being is shaped both by their sensory engagement with the physical and digital, and by their awareness of how their body is being 'read' in the context of social norms and behaviours. He therefore draws on theories of phenomenology and post-structuralism to suggest that, in their daily interactions with mobile technologies, the user experiences their body as both 'sensory' and 'inscribed'. Farman's model of the 'sensory-inscribed' body is a vital contribution to a theory of the understanding that emerges through the user's interaction with mobile technologies. However, Farman does not engage directly with the 'bio-virtual' nature of mobile technologies: while he does note that "any theory of embodiment must ... account for the fact that embodiment is conceived out of biological factors" (2012, 29 - original emphasis) he goes on to state that this particular approach to the body is beyond both his expertise and the scope of his book. Accordingly, while Farman's analysis sets out a broad approach to re-conceptualising how mobile technologies intervene in the user's 'state of being', there is still much more to be unpacked on the 'sensory' side of the 'sensory-inscribed' body, both theoretically and methodologically. This thesis therefore adopts Farman's model of the 'sensory-

inscribed' body, and seeks to deepen and extend this model by contributing to our understanding of how the senses in our body work individually and together to create an affective form of understanding, and how mobile technologies can intervene at this biological level in the formation of the user's lived, embodied experience.

My approach to mobile technologies incorporates both wearable technologies and some (body-related) pervasive technologies. Accordingly, this thesis is in dialogue with theories of wearable computing and pervasive computing which articulate ways of conceiving the interconnection of the user's body, technology, and the world. For example, Steve Mann's 'humanistic intelligence theory', developed in the context of wearable technologies, "thinks of the wearer and the computer with its associated input and output facilities not as separate entities, but regards the computer as a second brain and its sensory modalities as additional senses, in which synthetic synaesthesia merges with the wearer's senses" (Mann). This thesis pushes at this theoretical approach by showing it assumes that data can pass unproblematically from computer to user. In contrast, I argue that data must undergo a process of *affective translation* before it can synaesthetically fuse with the sensory modalities of the user, and I propose an affective design methodology that assists with this process of translation.

A further theoretical space this thesis carves out is a space of mobile technologies as technologies that have the potential to evoke an "ethical citizenship born of a 'care of the self' (Schiphorst, xvi). This implies an (initial) focus on the individual self (and the body) in communion with technology. Therefore, whereas much of the scholarship on mobile technologies from the early 2000s onwards has focused on their capacity to create "a more extensive means of communication and interaction among people … promoting sociability in urban spaces" (de Souza e Silva, "Are Cell Phones New Media"), this thesis focuses on the capacity of mobile technologies to create a more introspective means of communication and interaction between the user, their own body, and the technology. The 'care of self' this interaction evokes turns outward again, and re-works the user's relationship to others and the world around them, producing a form of 'ethical citizenship'. What the case-studies in this thesis build on, therefore, is an alternate genealogy of mobile technologies – from walkmans, to mp3

players, to wearable fitness monitors – as 'technologies of the self', which place the user in dialogue with their own body and subjectivity[19].

On the methodological front, the last ten years have seen an exponential growth in the number of research projects across the arts, humanities and computing which explore the interweaving of the digital and the real using mobile technologies[20]. There has also been a steady growth in the number of commercial mobile products (apps) designed to capture and re-present the user's immediate experience back to them in the form of digital data (e.g. fitness apps). Individual projects have produced valuable insights into specific aspects of mobile experiences - for example, how to combine user interaction with visual panoramic augmented reality in *The Westwood Experience*; the potential of sound to augment reality in *Songs of the North*; or the ways in which social norms constrain user behaviour in *REXplorer*. However, to date, there has been little work done to bring together a wide array of these projects and products in order to gain a broad understanding of the theoretical and methodological implications of how these projects and products intervene in the user's 'immediate, living moment of experience'.

Theatre and Performance

In the context of theatre and performance this thesis' focus on the entanglement of bodies and technologies places it within the wider field of digital performance, which encompasses "performance works where computer technologies play a *key* role rather than a subsidiary one in content, techniques, aesthetics, or delivery forms" (Dixon, 3). In particular, my argument follows on from scholars such as Susan Kozel who have interrogated this 'entanglement' of bodies and technologies through the lens of phenomenology and embodiment[21]. This thesis is also in conversation with Susan Broadhurst's theory of neuroaesthetics, which address the body as a biological

19 This alternative genealogy of mobile technologies has been particularly addressed in music and audio studies, where attention has been drawn to their capacity to act as technologies that 'isolate' and 'cocoon' users (see Bull).

20 Research projects include The Westwood Experience (Wither et al); REXplorer (Ballagas et al); Media Portrait of the Liberties (Nisi et al); Riot! 1831 (Reid); Interference (Wetzel et al); Songs of the North (Lankoski et al). See also the projects detailed in The Mobile Story (ed. Farman, 2014)

21 The theory of phenomenology, as articulated by 20th century scholars such as Merleau-Ponty, Husserl and Heidegger, is concerned with how we form knowledge through direct experience, or 'being in the world'. 'Embodiment' emerges from this discourse, and is used to express the concept of a form of knowledge that emerges from the body's engagement with the world – 'lived experience' (see Kozel, 2007). 'Embodiment' has also been used to theorize the ways in which digital technologies intervene in this form of bodily knowledge – see, for example, Farman, 2012).

'assemblage'[22]. Kozel, Broadhurst, and others primarily examine the entanglement of technologies with the body of the performer. In contrast, this thesis examines the entanglement of technologies with the body of the audience member; as such it responds to Rosemary Klich and Edward Scheer's observation that "[t]he corporeality of the actor has been the foundational site of meaning in performance … However, as this body is being remediated, relocated and reframed, the corporeal dimension in multimedia theatre is being transferred from the body of the performer to the body of the spectator" (204). Accordingly, this thesis seeks to contribute to the field by exploring some of the challenges and potentials that arise through the transference of the 'corporeal dimension' of digital/multimedia performance to the body of the participant in mobile experiences.

My focus on the entanglement of the participant and technology brings this thesis into conversation with Steve Benford and Gabriella Giannachi's concept of 'mixed-reality performance', which examines how real and digital elements can be combined through performance to create a *hybrid* experience that foregrounds the participant's sense of self and subjectivity, "precisely because different points of view can be occupied" (Benford and Giannachi, 4). However, the term 'mixed-reality' covers a wide range of digital technologies that can be used to engage the participant (for example Virtual Reality headsets, smartphones, and screen-based projection). I favor the term 'mobile experiences', therefore, because it allows me to focus specifically on those technologies that move with, or respond to, the participant's body. Equally, while valuable, Benford and Giannachi's work notably does not address the ways in which technology intervenes with, and reworks, the participants own engagement with their body, and the understanding they create through their body. In Chapter 1, therefore, I draw on Benford and Giannachi's concept of 'hybridity' and utilise it to identify and develop my concept of the 'hybrid body', which, I argue, is created through the affective design of mobile experiences.

Finally, through its focus on the sensory operations of the body of the participant, and the affective understanding it evokes, this thesis intersects with 'immersive theatre', a form of theatre that focuses on the direct participation of the

22 Broadhurst addresses the biological nature of the body through the lens of neuro-biology and cognitive science. Whereas this takes a scientific approach to the senses (drawing on research into brain-imaging and neural mapping) my approach, while recognizing the physiological aspect of the senses (how sensory stimuli are received and interpreted by the body), focuses more on the phenomenological way this plays out in forming the participant's sense of their own body and self.

audience member within the 'playing-area' of the performance. Accordingly, in 'immersive theatre' "the participant's physical body responding within an imaginative, sensual environment is a tangible fact and a pivotal element of the immersive experience" (Machon, *Immersive Theatres*, 61). I draw on Josephine Machon's theory of immersive theatres (and her related theory of (syn)aesthetic performance) throughout this thesis, therefore, to help articulate how mobile technologies can evoke and intervene with the sensory operations of the participant's body, and why, aesthetically and ethically, they should seek to do so.

Chapter Breakdown

I begin this thesis by laying the foundations of the theoretical model that underpins my affective dramaturgy of mobile experiences. Accordingly, in Chapter 1 I examine in more depth the ways in which mobile technologies are now allowing technology to integrate with the body at the level of discrete organs and bodily elements such as skin. This requires us to rethink the body not as a whole but as a collection of sensory systems, each of which mobile technologies and media can interact with separately. The danger that this new integration of the biological with the virtual brings is the quantification of the body - monitoring of heart-beats, steps taken, etc. - and the consequent dominant consensus that bodies can be measured, quantified and compared through 'neutral' data. This, according to Jill Rhetberg-Walker, is the 'data body', which negates the importance of individual subjectivity, and qualitative, experiential knowledge in favor of 'normative', quantitive forms of 'knowing' and control. However, this approach to the use of mobile technologies is not the only approach: I argue that mobile technologies can also be used to challenge this consensus by creating a 'hybrid body', in which the technology complicates our experience of our own body, and so focuses our attention on that experience, making it strange and unique.

To develop this argument I examine three mobile experiences - *Mobile Feelings* (which uses heart-beat and breath sensors to allow two participants not in the same space to experience each other's heartbeat and breath), *World Ripple* (which uses a body-suit that generates aural and haptic (touch) stimulii to allow participants to create and 'feel' invisible sculptures) and *Jekyll 2.0* (which uses bio-sensors that detect heart-beat and breath rate to create a responsive environment that challenges the participant's perception of their body's boundaries). By separating out and integrating with certain sensory systems in the body, these mobile experiences demonstrate that mobile

technologies have the power to reveal an alternative approach to designing the digital, where quantified data is transformed into a qualitative experience that allows us to understand our body as a 'hybrid body' - an 'assemblage' of digital and physical elements. Drawing on insights into the characteristics of 'hybrid spaces' developed by Adriana de Souza e Silva, Steve Benford and Gabriella Giannachi, I show how the 'hybrid body' produces experiences of enfolding, disjunction and emergence that stand in contrast to the 'knowing' and control created through the 'data body' and that present an alternative, open model of self and subjectivity.

Current design methodologies for mobile experiences do not generate the experience of a 'hybrid body' because they do not focus on tapping into, and interweaving with, the affective understanding of the participant. Accordingly, over the next three chapters I develop an alternative design methodology for mobile experiences that reveals and utilizes their affective potential. This design methodology is the material, practical aspect of my affective dramaturgy of mobile experiences, and focuses on the individual elements of mobile experiences (Chapter 2), the ways in which these elements can be structured and combined (Chapter 3), and the mechanics of mobile experiences - what responses, mindsets and behaviors they enable and produce in the participant (Chapter 4).

In Chapter 2 I examine the individual dramaturgical elements of mobile experiences to show how they might be re-conceptualized and re-designed in order to engage the participant's sensory understanding, and create an affective response. To do this I bring together the writing of theatre critic Hans Thies Lehmann and the philosopher Brian Massumi with two case-studies: a workshop in creating mobile experiences which I conducted with students of the Digital Arts and Humanities (DAH) programme using the design tool 7Scenes, and the augmented reality games *Viking Ghost Hunt* and *O'Carolan's Last Tune*. Lehmann's model of what he terms 'postdramatic theatre' re-works how key internal theatrical elements (e.g. the performer's body, the space of the performance, visuals, script, etc.) are designed and used to bring about audience understanding, and re-works the nature of that understanding as an affective one. I also draw on Brian Massumi's close examination of how media elements can be designed to produce 'quality' (a cognitive response) or 'intensity' (an affective response). Together, Lehmann and Massumi's work offer an alternative approach to the design of the individual internal elements of mobile experiences, and the potential affective response they can evoke.

I illustrate this by examining how the same individual elements of the soundwalks produced in the DAH workshop using 7Scenes were designed to work as 'quality' (cognitive) elements by one group, and 'intensity' (affective) elements by the other group. My second case-study, the games *Viking Ghost Hunt* and *O'Carolan's Last Tune* (two iterations of the same game platform), demonstrates both how individual elements such as audio can be designed affectively, and how the normative practices involved in mobile game design can shut down the overall affective potential of mobile experiences. This points to the importance of not only designing individual elements to evoke affect, but also to attend to the composition or construction of the entire piece. To achieve an affective response in the participant the piece as a whole must be affective, a question I turn to in Chapter 3.

Chapter 3 continues to develop an affective dramaturgy of mobile experiences, focusing on the combination of internal elements of the mobile experience. I examine how, in order to structure and bring these elements together, we must move away from a coherent structural model that prioritizes a singular, linear dynamic and instead employ a model comprised of inter-linking, non-hierarchical, porous states with internal scenic dynamics. I again draw on Lehmann and Massumi to develop this aspect of affective dramaturgy, and illustrate it using two case-studies - *I Seek the Nerves Under Your Skin*, and *Inception The App*. Massumi's concept of affect as non-linear movement - the continuous resonance of sensation - maps onto Josephine Machon's theory of (syn)aesthetics in theatre and performance. Both theories suggest that, in order to generate an affective response in the participant, mobile experiences must be designed in a way that allows the sensations evoked through the piece to resonate with one another, producing meaning through the resonance, or synaesthetic inter-weaving of sensation. *I Seek the Nerves Under Your Skin* demonstrates how the participant's sensations of running fast, becoming out of breath, and sweating, merge with the visceral sound of a performance poet performing a poem, creating a melding of the body of the participant with the body of the (virtual) performer.

Lehmann's theory of post-dramatic theatre again provides a means of modeling this alternative method of composition - as the creation of inter-linking, non-hierarchical, porous states that have internal scenic dynamics. I examine the application of this model through the case-study of *Inception The App*, a mobile experience that seeks to give the participant the experience of the 'dream worlds' experienced by the characters in the movie *Inception*. Each dream world is unlocked only when certain

parameters are met (the participant must be lying down, it must be after 8pm, etc.). The dream worlds consist of a soundscape that is built in real-time using re-active, generative audio software. As such, each dream-world is a state with its own internal dynamics. The movement within and between each state is based on rhythms of repetition, echoing, resonance, rather than on singular, linear development. In this way the app produces a non-linear tapestry of interwoven digital and real sound that taps into the participant's affective, bodily understanding. However, *Inception The App* also points up the complex inter-connection between mobile experiences and capitalist structures - in this case the Hollywood blockbuster industry. I therefore turn to the ethical questions raised by mobile experiences and the behaviors and ideologies they may re-inscribe.

In Chapter 4 I consider the mechanics of mobile experiences - i.e., what participants are being asked to do as part of the experience, and what understanding of their body and the world they are taking from these actions. The mechanics of mobile experiences have an ethical dimension, in that they can - either deliberately or unconsciously - involve participants in practices that re-inscribe dominant, normative logics and structures. To discuss this I examine the mobile game phenomenon *Pokémon Go*, an augmented reality, location-based game where participants move around a real location, collecting digital 'pokémon' and engaging in virtual actions such as 'battles' and 'raids'. I argue that although the game's designers intention is to provide the participant with 'enriching' forms of experience based on physical well-being, engagement with the environment, and social inter-connection, the game instead incorporates 'mechanics of monetization' which ultimately involve the participant in the physical re-inscription of norms and practices of commodification, consumption and profit. To develop this argument I draw on critical perspectives on participatory art and performance (Jen Harvie), immersive theatre works (Adam Alston, Karen Zaiontz), and location-based mobile games (Mary Flannagan). Taken together, these perspectives point to the need to critically engage with ways in which current design methodologies for mobile experiences incorporate mechanics that re-inscribe the practices and mindset of neoliberal capitalism. They also point to the need to explore how alternative design methodologies might yield different mechanics.

I therefore go on to explore how we might conceive of, and design, affective mechanics that involve the participant in alternative practices and behaviors based on process rather than product. To illustrate this I draw on Jason Farman's concept of

'dwelling', which reworks the traditional movement/stillness binary through the idea of 'stillness-as-movement'. I show how this affective re-conceptualization of movement could form the basis of an affective mechanic that involves the participant in the practice of re-calibrating their perception and 'becoming aware' of the 'invisible' processes of movement around them. Re-thinking the mechanics of mobile experiences in this way, however, requires what Mary Flanagan and Helen Nissenbaum term 'reflective practice': a deliberate reflection on the values and ethics that are embedded in the design. Accordingly, I turn to my second case-study, *Just In Time*, a location-based mobile game I designed and ran for the Dublin Fringe Festival 2012. Critically interrogating the mechanics of this game I show how my design (unintentionally) involved the participant in practices that disconnected them from a sense of the lived time and space around them. I then reflect on how mechanics founded on an affective concept of movement might have involved the participant in alternative practices of being and inter-connectivity.

The critical and ethical concerns of Chapter 4 serve to bring the material, practical aspect of an affective dramaturgy of mobile experiences back into conversation with the theoretical model I introduced in Chapter 1. In Chapter 5 I examine how the 'hybrid body' - a sense of the body as an inter-connected 'assemblage' of the digital and the real - can become a 'haunted body' - a bodily sense of the self as inter-connected with other beings (human and non-human) and embedded in a network of (unequal) socio-economic and political structures. The question I address in this chapter is the aesthetic purpose of mobile experiences - in what ways can mobile experiences uniquely capture and convey human experience through their affective design? In order to address this question I first engage with criticisms of affect as an aesthetic, as articulated by Ruth Leys and Lisa Blackman. They argue that, because affective works of art focus on visceral and sensory 'non-cognitive' operations, they do not enable the viewer/audience to engage with the concepts of self and subjectivity, and the constructs of power, value and difference. In response to this, I contend that affective mobile experiences can embody an 'aesthetics of haunting' that allows participants to feel, think through, and respond to the visceral, sensory manifestations of people, things and social relationships which have been elided or ignored in normative discourse.

To develop this 'aesthetic of haunting' I draw on Lisa Blackman's studies on affect and psychological phenomena and Avery Gordon's sociological study on ghosts

and haunting. Blackman's work on the body and affect interrogates specific 'para-psychological' phenomena such as voice hearing and telepathy. As such, her work addresses haunting directly as a phenomenon that offers a model of subjectivity that is open and porous. Gordon, conversely, interrogates ghostly phenomena as the manifestation of the ways in which systematic 'compulsions' work on and through people. As such, haunting offers a means of acknowledging and interrogating 'unseen' socio-economic and political structures, and asymmetrical relationships, as they are made manifest through a felt and sensuous experience of the ghost. I examine how this 'aesthetic of haunting' shapes the experience of the participant both during, and after, the experience through my final case-study, *Citizen X*, a location-based mobile experience which conjured up a layering of voices and times using a single, long mp3 track, played by the participant on their mobile device.

In my Conclusion I bring the aspects of affective dramaturgy that I have explored in previous chapters together in a cohesive whole. I also discuss this thesis' contribution to the wider critical and ethical discussion around affective practices, and note this thesis' intervention in revealing the often complex inter-connected relationships between mobile experiences and neoliberal capitalist structures. Returning to my own artistic practice, I show how the 'affective dramaturgy' I propose will frame the design of a new mobile experience *Shelter from the Storm.* Finally, I offer a number of thoughts on three future directions for research that could both explore and expand the affective dramaturgy I have proposed – 1) the interrogation of mobile experiences through the lens of disability studies; 2) the use of mobile experiences to explore human interconnection with environmental rhythms and patterns, as called for in environmental and sustainability studies, and; 3) the design of 'memory projects' that bring experiential, affective design practices into conversation with the fields of memory, museum and archive studies.

CHAPTER 1

Hybrid Bodies

In this chapter I lay the foundations of a theoretical model to underpin an affective dramaturgy of mobile experiences. To do this I examine how mobile technologies can produce the affective experience of the 'body-as-assemblage' of the digital and the real. From this I develop the concept of the 'hybrid body' - the body as an assemblage of the digital and real, created through affective practices that 'translate' quantitative digital data into qualitative sensory information that is 'effective' in the physical world. I argue that the 'hybrid body' produces new modes of subjectivity in the participant that have the power to critique and counter the dominant, normative trends of the 'bio-virtual' era.

To unpack this argument I first turn to two case-studies, *Mobile Feelings,* developed by Christa Sommerer and Laurent Mignonneau, and *World Ripple,* created by Stahl Stenslie. Both these projects represent innovative investigations into the use of mobile, sensor-based technologies in live performance. *Mobile Feelings* utilizes pulse and breath sensors to allow two participants not in the same space to experience each other's heartbeat and breath, enfolding remote bodies into each other. *World Ripple* uses a body-suit that generates aural and haptic (touch) stimulii to give the participant a tangible, yet disjunctive experience of empty space and absent bodies. Both projects reveal how mobile technologies, through the specificity and sensitivity of their sensors, now have the ability to isolate, and speak to, a broad number of sensory operations in the body. Accordingly, I consider these sensory operations, and their affective, non-cognitive impact. In the context of *Mobile Feelings* I investigate the tactile sense (sense of touch) and the interoceptive system (a number of senses internal to the body, such as breathing and heartbeat). In *World Ripple* I examine the aural sense (sense of sound), and the proprioceptive sense (the sense of the body in space). By examining how these projects isolate and then re-combine these senses and sensations through an affective combination of the digital and the physical, I show how mobile experiences can create new forms of 'brain-body-world entanglements' (Blackman) that re-shape the participant's understanding of their selves and their inter-connection with others and the world.

However, the ability of mobile technologies to isolate the body sense by sense also has potentially negative consequences. To investigate this, I turn to Jill Rhetberg Walker's concept of the 'data body', and examine Rhetberg Walker's argument that the ability to quantify and calculate the inner workings of our body is being used to present a reductive experience of the body based on practices of 'knowing' and control. The tension between the use of bio-data to monitor and control, and the use of bio-data to open up new experiences of being human is aptly explored in my third case-study, *Jekyll 2.0*. *Jekyll 2.0,* developed by Dr. Anthony Mandal and the company Slingshot, uses bio-sensors that detect heart-beat and breath rate to create a responsive environment that challenges the participant's perception of their body's boundaries. Drawing on the novella *The Strange Case of Dr. Jekyll and Mr. Hyde*, by Robert Louis Stevenson, the project examines the possibilities inherent in mobile technology to break down and re-assemble bodies in new forms, through the lens of Victorian concerns with scientific experimentation and 'progress'. I argue that, in this way, *Jekyll 2.0* co-opts and critiques contemporary cultural-technological practices by evoking an experience of the 'hybrid body' in the participant.

In the final sections of this chapter I develop the concept of the 'hybrid body' by drawing on the concept of 'hybridity' in mobile media and technology studies, particularly as it has been applied to space. Utilizing Adriana de Souza e Silva's examination of how mobile experiences create the experience of 'hybrid space', I examine the ways in which mobile experiences can create the experience of 'hybrid bodies'. I then go on to develop the characteristics of the 'hybrid body' drawing on Steve Benford and Gabriella Giannachi's discussion of the characteristics of 'hybrid space' in mixed-reality performances. Utilizing the three case-studies in this chapter I show how the three characteristics of 'hybrid bodies' - enfolding, disjunction and emergence - offer ways of critiquing and resisting the practices of 'knowing' and control exemplified by the 'data body'. In this way, the 'hybrid body' becomes a theoretical tool by which to interrogate the ways in which mobile technologies are used to reveal and represent new forms of bodies, self and interconnection in the 'bio-virtual' era.

Case-Study 1: Mobile Feelings

Christa Sommerer and Laurent Mignonneau's 'mobile art project', *Mobile Feelings*, enables bodily communication between remote users, focusing on heart-beat, touch, and breath as sensory processes. The intention of the project is to explore the nature of non-verbal, non-visual communication, and the ways in which mobile technologies both challenges our sense of privacy and enables new forms of "intuitive, emotional and private" communication (Sommerer and Migonneau, 270). As such, the focus of the project is not on the technology itself, but on the ways in which the sensory processes of bodies can be isolated, translated into data, and re-combined to create new, meaningful experiences.

The project consists of separate egg-shaped, portable devices which allow two participants to remotely see and feel each other's heartbeat and to feel each other's breath (exhalation), through the use of micro sensors, actuators and micro-controllers. As such, the devices individuate a number of sensory processes. The first is the heart-beat: holding the egg in one hand, the user places their finger on a pulse sensor. The pulse sensor translates their heart-beat into digital data, and this data is then re-translated into a visual response in the form of an LED light on the egg that blinks, showing the strength and frequency of the heartbeat. In isolating the heart-beat of the participant, and re-presenting it to them visually, Sommerer and Mignonneau exploit the ability of digital technology both to relate to, and shape our awareness of, the 'interoperative' sensory processes that underpin our 'interior' sense of embodied subjectivity.

Interoception is the name given to the internal sensory systems that provide information on the physiological condition of the body. This includes heart rate, respiratory rate, salivation, digestion, perspiration, pupillary dilation, and sexual arousal. Although in the past interoception has largely been studied as a system of automatic control, with no connection to awareness, in recent years there has been substantial research on the system's relationship to the generation of changes in mood and feeling. The connection between seemingly automatic operations (such as the beating of our heart, our breathing, and our digestion) and our state of being has been traced back to the existence of 'afferent neurons' which carry nerve impulses from receptors, or sense organs, to the central nervous system. With the development of scientific tools such as functional imaging, neuroscientists have been

able to trace the operation of stimulii on the interoceptive system to changes in a subject's subjective sense of well-being. As such, the definition of interoception has widened from 'visceral sensations' to the "ability of visceral afferent information to reach awareness and affect behaviour, either directly or indirectly. The system of interoception as a whole constitutes "the material me" and relates to how we perceive feelings from our bodies that determine our mood, sense of well-being and emotions" (Fowler, 1). In the *Mobile Feelings* project, the ability of this visceral information to 'reach awareness' is enhanced through digital technology by making perceptible a sensory process that we rarely consciously 'feel' - our continuous heart-beat, and the heart-beat of another person.

The sensory process of touch is also utilised in a number of ways in the project. The heart-beat data collected by the pulse sensors of one device is communicated to the other device using wireless Bluetooth technology. This data is then translated into both a visual sensory response (a second LED light blinks, showing the strength and frequency of the remote participant's heartbeat) and a tactile sensory response (a micro motor generates a strong rhythmic pulsing in the egg which corresponds to the actual heartbeat of the remote user). As such, each participant experiences two heart-beats; their own and that of the remote participant. Because the heartbeat of the remote participant is re-presented as a pulse, and not just as a light, the participants experience a strong sense of literally "holding each other's heart in their hands" (Sommerer and Migonneau, 273). Similarly, the devices allows the participant to sense the breath of the remote participant. This is achieved by translating an interoceptive sensory process (breath, or the act of exhalation) into data, and then re-presenting this data through touch. Each device contains a breath sensor and a micro-ventilator (fan). When the remote participant breaths on the sensor, the data is captured and sent wirelessly to the participant's device. The participant's device then uses the micro-ventilator to blow a small wind onto the face of the particpant, generating a tactile sensory response. As the capturing, communication and translation of the data happens almost instantaneously, both participants experience a strong connection between the interoceptive sensation of exhalation and the tactile sensation of breath on the skin.

Sommerer and Mignonneau note that, by re-presenting data (heart-beat and exhalation) through the sensory process of touch, the project elicited strong

emotional responses from the participants. They note that some participants described their experience as "very unusual and slightly unsettling" (274), while, at the same time, finding the experience "to be very comforting and sensual, reminding them to (sic) touching a lover, a child, their mother or other persons with whom we usually share private feelings through touch" (274). They go on to suggest that this strong emotional impact derives in part from the sensory process of touch, which focuses the awareness of the participant, and 'dampens down' other sensory inputs such as vision or sound. Touch often by-passes cognitive thought and instead acts directly on and through the body. As such, isolating and appealing to the sensory process of touch focuses the attention of the participant on their embodied, non-cognitive response. This allows the project to move the participant away from a cognitive understanding of their body as a single, whole entity and to blur and re-define the boundaries of the body in such a way that "bodies are seen to … extend and connect to other bodies, human and non-human, to practices, techniques, technologies and objects which produce different kinds of bodies and different ways, arguably, of enacting what it means to be human" (Blackman, ix - x). In this case, the extension and connection of the two participants' bodies, through mobile technologies and specific sensory processes, enfolds the heart-beat and breath of two people into one body. As such, *Mobile Feelings* demonstrates how mobile experiences can 'dis-assemble' the participant's understanding of their body as a cohesive, delimited whole, and 'reassemble' it as an interwoven 'assemblage' of two bodies, involving both participants in a new, inter-connected understanding of what it means to be human.

Case-Study 2: World Ripple

Whereas *Mobile Feelings* focused on eliding the space between bodies the project *World Ripple*, developed by Stahl Stenslie, addresses how we experience space, and the bodies of others, through our own body. By individuating the aural, tactile and proprioceptive sensory processes of the participant, and re-combining them with data and space, the project challenges our conception of the body as a cohesive entity that occupies a certain space at a certain time. Instead, it suggests that bodies "are not stable things or entities, but rather are processes which extend into and are immersed in worlds" (Blackman, 1).

World Ripple combines the use of binaural soundscapes, which the participant experiences through headphones, and vibro-tactile stimulations, which the user experiences through specially constructed body-suits. Through the sensory response generated by these mobile technologies the participant experiences 'sculptures' rendered through audio and vibro-tactile stimuli. The audio-tactile sculptures created through *World Ripple* are "made sensually senseable by a tactile, wireless, mobile bodysuit with a binaural sound system. The sculptures are triggered by GPS co-ordinates. They are expressed as physical stimulations and soundbased compositions … [and] … are experienced - and sensed - in the open, outdoor landscape" (Stenslie, 1). Each sculpture is composed of a pattern of haptic vibrations, communicated through actuators in the bodysuit, and a pattern of spatialized sound, communicated through the binaural headphones. The sculptures are geo-tagged to specific zones; when the participant enters one of these zones the GPS sensor on the bodysuit triggers the sculpture to 'appear' as an invisible and yet tangible presence in the space. The participant can then change the sculpture by touching the pressure and biometric sensors in the bodysuit, physically interacting with the sculpture in the space. Participants that follow on after can sense the changes the previous participant has made to the sculpture, and make their own changes[23].

The project deliberately sets out to create a non-cognitive experience by focusing on mobile technology's ability to generate direct, sensory responses, rather than on its ability to communicate cognitive content. As such, the project engages the sense of sound, the sense of touch, and the sense of proprioception. The sense of sound (aural sense) responds to vibrations that produce sounds, volume, pitch, and resonance in, and around, the body. As Jan Rohlf notes, "[a]coustic vibrations transmit impulses that obtrude and invade the body and its tissues; they are not only processed on a conscious level, but can also provoke unconscious psychological and uncontrollable physiological reactions" (Rohlf). What we hear is often processed cognitively - we recognize a musical or a linguistic pattern. However, everything we hear is first transmitted through the body's aural sensory system. In this sense, sound is "a physical experience, a bodily encounter based upon affective response, sensory reception and involuntary reactions beyond the realm of consciousness" (Rohlf).

23 The sculptures can also be changed online via a web-based editor (see Stenslie).

World Ripple, as with many of the other mobile experiences discussed in this thesis, utilizes headphones to deliver digital sound stimuli to the participant. This brings the acoustic vibrations closer to the body, allowing them to interact directly with and through the body to generate a physical, non-cognitive response. The aural design of the project also emphasizes the non-cognitive mode of understanding by focusing on sound patterns and recordings which are experienced by the participant as sounds in 3-dimensional space, through the spatialized design and binaural headphones[24]. As such, the audio in *World Ripple* is not intended to function as a semiotic system - it is not seeking to communicate a narrative, or to call specific images to the participant's mind - it is, instead, intended to work as sensory stimuli that interact, and fuse, with other senses to produce a bodily-felt sense of space.

This non-cognitive spatialized experience is underpinned by the project's focus on the tactile sensory system. The projects evoke a synthetic sense of touch in the participant through the careful design of tactile feedback; Stenslie notes that the "shape of the sculpture, that is its walls, borders, and consistency are rendered through different combinations and strengths in the effectors of the suit" (3). Both the tactile and aural sensory systems work together in a multi-modal relationship that strengthens their non-cognitive evocation of virtual space: Stenslie suggests that the "combination of physical stimulus with sound gives a strong and immediate sense of physical consistence and spatial experience" (3)[25].

In this way the project intervenes in the participant's sense of proprioception - a person's sense of their own body in space. The term proprioception captures the interworking of two sensory systems; the vestibular system, which allows a person to sense balance, head position, acceleration and de-acceleration, and the kinesthetic system, which allows a person to sense the position and movement of limbs in the body, and of the body as a whole. At its most basic level, proprioception allows us to walk upright without falling over, and without having to look at our feet. Proprioception also gives us a sense of the space around us, telling us, for example,

24 For an illuminating and in-depth account of research on the aural sense, and its practical application to the use of headphone-based digital sound in theatre and performance, see Barton and Windeyer.

25 The interplay and fusion of the senses, and the ways in which this fusion can generate the experience of 'imagined' sensations is usefully articulated in Josephine Machon's theory of (syn)aesthetics, which I examine in detail in Chapter 3.

about the proximity of other objects or bodies[26]. Farman suggests that proprioception also allows us to "locate ourselves in relational space" (31) in that it allows us to map spaces with the body, and creates 'memories' of these spaces that reside in the body[27]. Proprioception primarily operates non-cognitively - we do not consciously think about balancing or moving our limbs, or even walking through a space between two objects. Equally, we do not think about how our body is 'mapping' our space, or question how we 'sense' relational distance to other bodies and objects around us. In this way, as Mark Hansen notes, proprioception is "a form directed toward the bodily projection of affection (affectivity)" (qtd. in Farman, 31).

In *World Ripple* the participant's 'real' sense of proprioception is fused with a digital sense of proprioception; through their real-world exploration and gestures, they can discover, feel and shape the virtual sculptures, placing them in a new relationship to their own body, the bodies of others, and the 'empty' space they move through. When we walk through an empty, open space we rarely focus on the 'feeling' of that space, and of how our bodies feel in that space, as there are no objects or bodies to interact with, apart from the ground we walk on. Through these projects, however, the participant becomes conscious of where and how they are moving through the space, in relation to the sculptures they experience. Stenslie notes that "[u]sers wearing one of the systems noticeably changed their movement in space, becoming more aware of how they were moving to find both new and previous zones of experience" (8). The ability to feel the sculptures also prompts the participants to consciously move parts of their body in new ways through empty space, reaching out their hand and arm to touch, stroke, or mould the sculpture.

The projects therefore prompt participants to move in and through public spaces in unusual ways, such as circling around empty space, stepping erratically, and moving their arm around in the air; however, although participants acknowledged that they were mindful of how their actions would be 'read' by bystanders when they began the experience, they quickly became immersed in the sensory experience of

26 In some categorisations of the senses this aspect of proprioception is allocated to the tactile sense. However, as it ultimately provides us with a sense of spatial awareness (rather than an awareness of what is happening at the surface of the skin) I consider it separately.

27 To illustrate this, Farman points to how a city dweller is able to 'know' the location of the nearest tube station in relation to their home, even if they can't physically see it. He suggests that they can call up a proprioceptive, bodily 'memory' of walking to the tube, and in this way they are able to 'sense' roughly how far away they are, and in what direction they need to go to reach the tube station.

the project and “forgot about possible onlookers” (Stenslie, 8). This suggests that although participants began the experience in a cognitive mode of understanding, ‘reading’ and interpreting the world around them, the projects quickly shifted them into a non-cognitive mode of understanding. In the non-cognitive mode of understanding their focus moved from the perception of the world around them to their experience of their own body, and their own body in space, “strengthening users’ sense of an intimate, personal and ‘inner’ experience” (Stenslie, 8).

In *World Ripple*, participants experience other participants’ bodies through the impressions they leave in the virtual matter; through their interaction with the sculptures each participant creates a ‘ripple’ that changes the experience of the sculpture for another participant. Stenslie outlines how “[i]n the zones of collision between different structures and users new patterns of interference will arise, forming new, interpersonal and social ripples. Over time the sculptures will be changed by the users’ personal tracks - becoming a social construction zone for shared feelings”(1). The participant experiences this in the changing aural and tactile pattern of the sculpture, which is ‘constructed’ through the amplification of the sound and vibro-tactile stimuli, or ‘deconstructed’ through the diminishing of these stimuli. Again, in this way, the real sense of proprioception, which gives us information on the proximity of other bodies and their relationship to us through movement or gesture, is merged with a synthetic, digital sense of proprioception, which gives the participant a bodily sense of other users, even when they are not physically there.

In this project, therefore, the body is a site of matter and other bodies; the participant moves through an empty space, and yet their experience is of a space filled both with tangible objects they can touch and mould, and with other bodies which are also touching and moulding these objects. The experiences this generates are not projected externally into the real world; instead they are felt and realized non-cognitively through the body as complex “brain-body-world entanglements” (Blackman, 1) that re-work the participant's sense of their body, and the bodies of others, as entities distributed out over space and time.

Mobile Feelings and *World Ripple* therefore speak to Jan Rohlf's assertion that "[t]he sensitivity of technical devices and the universal transformability of electronic data is allowing artists to analyze the invisible and process-based aggregate states of the body, to manipulate them, and to ultimately intertwine them with technology"

(Rohlf). Through these artistic processes, he notes, "borders are increasingly dissolving between inner and outer, between biology and technology, and between individual and collective, mirroring our altering perception of the body" (Rohlf). However the ability of mobile (particularly wearable, biometric) technologies to read and convert sensory processes into digital data is also being used far beyond the artistic sphere in ways that negatively impact on our perception of the body. This is because the digital tools we use are increasingly representing our bodies back to us as digital data that can be quantified, calculated, measured and 'tracked'.

One example of the new impetus to use sensitive sensor technology and the transformability of electronic data to 'track' the body is the Apple wearable technology product, Apple Watch Series 1, which lists 'Track your daily activity' as one of its key uses ("Apple Watch"). The sale of other wearable devices that allow users to track and monitor their activity have surged over the past year; in July 2017 the company Fitbit, makers of a wristband that monitors, among other things, steps, distance travelled, and sleep, announced that they had sold 3.4 million devices in the previous three months (Newman). Crucially, these devices do not re-present the data gathered by their sensors back to the user in qualitative ways. Instead, they present the user with a quantitive representation of themselves, as captured in the number of steps they have taken, the distance they have travelled, the calories they have burnt, or the hours they have spent in deep sleep. Unlike the projects discussed above, these devices apply digital processes of dis-assemblage and calculation to the body, but as an end, rather than a means. The data is not re-presented through new, qualitative processes, instead it remains data. This reformulates and advances N. Katherine Hayles' critique that, in the 'posthuman' era, digital technology has led to a dislocation of body from information: now, through the evolution of mobile technologies the body is *becoming* information, and we are increasingly representing ourselves, both to ourselves and to others, as 'data bodies'.

The Data Body

Seeing ourselves as 'data bodies' has disturbing implications for the nature and role of subjectivity in contemporary societies. In *Seeing Ourselves Through Technology* (2014) Jill Rettberg Walker describes the challenges posed by the quantification of the body as ones of control, commodification, and machine-vision. Central to all three is the assumption that data is an objective representation of reality. Thus, when

a user who has taken a walk sees their steps as a number, or visualised on a graph, they are inclined to take this as an authoritative account of their activity, rather than relying on their subjective experience. However, there may be many reasons for the data to be inaccurate; the user may not have turned the phone on precisely when they started walking, or the battery on the phone may have died before they finished their walk. More importantly, as Rettberg Walker argues, data is not a 'given', it is fundamentally determined by its context. When it is removed from its context it may appear to have significance, but, in reality, it does not convey any knowledge. An example of this is the sleep monitoring data of fitness trackers. Citing her use of the Misfit tracker, Rettberg Walker notes that, although the tracker can quantify how much 'deep sleep' she has had, it cannot explain either what constitutes a 'deep sleep', or how many hours of 'deep sleep' might be optimal.

Nevertheless, a belief in the authority of data allows users to adopt strategies of control and containment that counteract the 'messiness' of subjectivity. Rettberg Walker suggests that "idea that technology can be a neutral, objective observer that can alleviate the uncertainty of human perception is alluring to many" (74). By handing the final say over to technology, rather than relying on their own subjective experience or evaluation, many users feel that they are receiving external, 'factual' insights into their daily lives. They can then use these insights to accurately compare themselves, either to past 'factual' records of themselves, or to other people. The danger of these strategies of control is that they lead users to shut out uncertainty, instead of helping them to engage with it. As such, users are placed in an antagonistic relationship with their own subjective selves. A user's device may, for example, mis-calculate the number of calories he is consuming and alert him that he is consuming far too many. Although he may subjectively feel energetic and healthy, if he subscribes to the authority of the data then he is immediately required to reject his own inner experience in favour of the external, 'objective' insight of technology.

As the belief in the authority of data, and the use of mobile devices that track and monitor this data become more prevalent, the idea that tracking and monitoring are necessary, positive actions becomes more normative. Rettberg Walker cites the shift from the use of devices in hospitals to monitor at-risk babies to the development and marketing of these devices to all new parents, to use in the home "as though every baby needs this kind of constant monitoring" (68). This shift marks the way in

which capitalism has identified 'knowing' (or the perceived lack of uncertainty) as a new 'need' that can be fostered on the one hand through clever marketing campaigns, and fed, on the other hand, by devices that transform an ever-increasing range of activities and contexts into quantifiable, calculable and comparable data. This commodification is reflected in a number of ways; employers are sold the idea that they can increase the productivity of their workers by tracking and monitoring them, and using this data to identify and improve individual and group work patterns. Inevitably, this leads to an emphasis on the elements of the work that the data can monitor and track, and negates those elements which are not quantifiable. An example of this is a recent story posted on Facebook, of a Dublin bus driver who stopped his bus to get out and tie the shoe-lace of one of his elderly customers because he saw she was in danger of tripping. While the Facebook comments all lauded this driver as a 'true gentleman', my first thought was that the systems that track how long it took him to get to his next stop, and measured this time against the 'standard' time, would register that he had 'failed' to meet the bus company's target. The decision to stop was a subjective decision that could not be quantified, and therefore loses its value in the face of a commodified system that measures productivity through quantifiable data.

The commodification of 'knowing' has also re-framed the sharing of personal data with companies and government organisations as a positive act which will yield specific monetary, health and safety benefits. Rettberg Walker notes how several health insurance companies are now offering discounts to employees who agree to wear a Fitbit activity tracker that is monitored by the company. As such there is an irony inherent in the sense of control that these monitoring and tracking devices perpetuate: even while we translate so much of our daily life into data in an effort to resist uncertainty, the narrative around data is being re-orientated to encourage us to share this data with companies - and, consequently, to abdicate control over that data and how it is used to represent us.

As I have noted above, the use of quantifiable data as a means of representation begs the question of what is measured and what is un-measurable. Rettberg Walker suggests that, as we slowly adopt the 'machine-vision' of our devices to engage in self-representation, we increasingly come to view ourselves directly as 'data bodies'. This represents a serious eliding of both the value we place on the specificity and uniqueness of bodily experience as a means of understanding what it is to be human,

and of our ability to engage in the practices and processes that generate a sense of embodied subjectivity. However it comes about not because our devices are reading our bodies as quantitive data, but *because they are re-presenting our bodies back to us* as quantitive data.

As the art works I discussed above illustrate, however, there are alternative modes of re-presenting digital data back to the user/participant. These alternative modes respond to the challenge to make data 'meaningful' by linking it in with affective, embodied processes of understanding. In so doing they reveal an alternative to the 'data body' - the 'hybrid body'. In contrast to the 'data body', which embraces uniformity, homogeneity and certainty, the 'hybrid body' embraces contingency, disjunction and emergence. It is important to note that both the 'data body' and the 'hybrid body' are products of mobile technology's ability to isolate and gather quantitive digital data from the body. As such, we should bear in mind the contention of cultural philosopher Bernard Steigler, that technological developments in societies always carry with them both negative and positive potential - "the cure immanent within the poison" (O'Dwyer, 46). The ability of mobile technology to relate to the interior, and to discretely isolate the body sense by sense, can be seen, therefore, as both 'poison and cure'. If the 'data body' is the 'poison', the 'hybrid body' may be the cure.

Before I develop the concept of the 'hybrid body' in more detail I turn to my third case-study, *Jekyll 2.0.* The research project *Jekyll 2.0* looks at Victorian fears and concerns of scientific progress, exemplified by the Gothic novella *The Strange Case of Dr. Jekyll and Mr. Hyde*, and reframes these fears and concerns in the context of the 'bio-virtual' era. As such, it directly addresses the 'poison' of the 'data body', and the affective potential of mobile technologies to effect a 'cure' by complicating, critiquing, and resisting the promise of 'knowing' and control offered by technology.

Case-Study 3: Jekyll 2.0

The project *Jekyll 2.0: Embodying the Gothic Text*, developed by Dr. Anthony Mandal of Cardiff University and the game company Slingshot (Bristol), explores the ways in which the body can extend into and connect with non-human objects in the world around them, thus re-formulating the body as a mixture of organic and inorganic elements. In so doing, it challenges the model of the body as a single,

organic entity that operates through processes that are radically different from the processes of inorganic objects and matter. It therefore raises fundamental questions regarding the 'authenticity' of human identity and agency in ways that address both the dangers of the digital's penetration of the body, and reveal its transformative potential.

Developed first in 2013 as a prototype under the umbrella of the Research & Enterprise in Arts & Creative Technology (REACT) Hub, the project was then re-titled *Hyde* and re-developed as a commercial gaming idea by Slingshot. Slingshot sought crowd-funding for the new iteration via the platform Kickstarter but were unsuccessful, and the company itself was dissolved in 2015. In November 2015 the founders of Slingshot presented *The Black Maze* (a pared down version of the game mechanisms developed for *Hyde*) as part of the REACT Hub project showcase *The Rooms* (Bristol), which I attended. The evolution of the project from research prototype to gaming concept to technology show-case can be examined along-side the project itself as a real-life example of the challenges that confront artistic attempts to re-direct and re-formulate the concepts and ideologies embedded in the current development of digital technologies. As I suggest later in this case study, in attempting to reach out to new and wider audiences such projects run the risk of being co-opted into the very social, cultural, economic and political structures that they strive to interrogate.

The intentions and methodologies of the original research prototype, *Jekyll 2.0*, are captured by the initial project statement. It is worth quoting this statement at length, as it offers a succinct jumping-off point from which to develop my analysis. Accordingly, the project developers write that:

> "Our project draws on the ambiguous relationship between technology (of print, in the digital age) and humanity (the relationship between mind/body and experience/perception). Using *Jekyll and Hyde* as a narrative frame, we will immerse participants in an uncannily distorted vision of the recognisable world… Using a smartphone to guide them, they will nevertheless find themselves monitored by the same device. To effect this, bio-sensors attached to participants will dynamically control the environment and the storyline, both assisting and hindering the participant. This literal "embodiment" of Stevenson's novel as an immersive experience will take

> participants on a gothic [sic] journey that will encourage them to question what it means to be "human"." (Mandal, 96).

As outlined in the statement, the initial research project drew on the Gothic novella *Strange Case of Dr. Jekyll and Mr. Hyde*, by Robert Louis Stevenson, and applied a Gothic lens to the possibilities inherent in mobile technology to break down and re-assemble bodies in new forms. Anthony Mandal notes that the Gothic literature of the late Victorian era - exemplified by novels such as *Dracula* and *Frankenstein* - engages with social anxieties of the time around the development of science, technology and mass media, particularly in relation to its effect on the human body and human identity. As such, by utilizing one of the definitive examples of the genre, the project sought to bring modern-day developments in digital technologies into conversation with the genre's "persistent concern with body horror that emerges from a modernity governed by urbanization, industrialization, and science" (Mandal, 96).

In addition to adopting one of the Gothic's key thematic concerns, the project also sought to realize the genre's aesthetic through new digital media. The Gothic aesthetic is, Mandal notes, rooted in the affective engagement of the reader; thus, bodies are the subject of the narrative but are also what the narrative seeks to operate on, stimulating non-cognitive, embodied responses that elicit emotions such as fear, repulsion, excitement and apprehension. The project's concern with 'embodying' the Gothic aesthetic led the developers to identify a key challenge presented by digital technology which often goes unrecognized by both industry and scholarship - that the quantitive digital data captured by digital technologies (such as bio-sensors) does not, in itself, generate affective, bodily engagement. As such, two of the research questions examined through the project were "Can bio-data be made legible and *meaningful* to participants?" (Mandal, 96 - my emphasis), and, "How can actuations be rendered *effectively* in the physical world?" (ibid - my emphasis). The first question identifies an epistemological gap between the way quantitive data operates and the way we learn about the world, and suggests that data must be in some way worked on or transformed in order for it to fit in with the way we process knowledge. The second question takes the physical as its touchstone - digital data will only become meaningful if it can 'fold' into the physical world. To be effective, therefore, digital data must be relayed to the participant via the same paths that they

use to gather and process their non-cognitive understanding of the physical world - embodied, sensory systems.

Accordingly, the research project sought to use mobile technologies to integrate the participant's body with the space and objects around them "at an essential level" (Mandal, 96) by using bio-data gathered in real-time to trigger changes in the participant's environment. Mandal notes that "[p]articipant's bodies become the game controllers, while, at the same time, reminding them of their own physicality" (97). As such, the form of body created in this encounter was an interweaving of the sensory systems of the participant with elements of the space around them, giving rise to an 'assemblage' that again sits in opposition to the concept of the body as separate and distinct from the world. This model of subjectivity posits a new understanding of our own essential interconnectivity with the world - organic and inorganic - around us, which, in turn, reframes social, political, environmental and cultural questions as questions in which we are both intimately affected, and have power over.

For the project, the developers focused on the interoceptive and proprioceptive sensory systems of the body. The participant wore a chest harness (a belt worn around the chest with embedded sensors and wifi transmitter) which measured the wearer's heart-rate, breathing, and the position of their body in space. This quantitive digital data was then wirelessly relayed to a smartphone, which processed the data and used it to trigger real-time actuations in the participant's environment. In the *Jekyll 2.0* prototype, participants entered a dark room with a four-poster bed. By lying on the bed (position of the body - proprioception) and holding their breath (interoception) they triggered the projection of an eerie and non-narrative film sequence on the canopy of the bed that features a "nocturnal city fly-over with a voice-over reading a passage from the original text, crosscut with uncanny images and the looming presence of "Hyde's" silhouette" (Mandal, 97). The film, clips of which feature in the video trailer for the project on the REACT website, is clearly not intended to present the participant with a cognitive narrative, but instead to appeal affectively to the aural and visual sensory systems ("Jekyll 2.0 - Project Video). As such, this initial sequence both ties the participant's bodily experience into the space by allowing them to physically change their bed into a cinema screen, and, at the same time, changes their bodily experience of the space by inserting aural and visual stimuli that generate new embodied responses. Other interactions between the

participant's body and the physical environment proposed by the research project included: holding breath to unlock doors, blowing out hard to clear a room of smoke, or having the lights in a room flicker in response to the participant's heartbeat. All of these interactions focused on a single participant, their own understanding of their body, and their sense of interconnectivity with their environment. As such, one of the founders of Slingshot, Simon Evans suggests in the project trailer that he wishes participants to "have a closer connection to their bodies, and to be kind of curious about their bodies and what it can do" ("Jekyll 2.0 - Project Video" - 02:15).

This focus on the body of the single participant, and constructing an intimate and reciprocal relationship between their body and their environment, shifted in the re-development of the research prototype into the commercial gaming concept *Hyde*. The Gothic aesthetic changed to one of a "futuristic, posthuman "horror maze" (Mandal, 97), where participants were asked to partake in drug trials by the Jekyll Corporation, and then challenged to make their way safely through the clinically white rooms of the corporate building while being chased by the blood-drenched Mr. Hyde ("Hyde Is Coming"). The experience was re-designed for groups rather than a single participant, and the attention of the developers shifted from trying to 'embody' a literary story to exploiting the ludic (game-playing) aspects of the technology. This may have been in part because Slingshot's previous games had been large-scale group games such as 2.8 days, which used the zombie genre as their aesthetic. However, it may also have been because the commercial imperative to turn the concept into a profit-making venture required it to expand the number of participants per 'game' from single participant to a group of participants, and to change the focus of the experience from a self-reflective, solitary experience to one centred on social interaction.

The resulting change in the subjective bodily experience afforded by the project was evidenced in *The Black Maze* iteration of the project, which I participated in, and which took place in total darkness in the underground Victorian jail cells of Bristol prison[28]. I was one of four participants in the group; one of our members wore the bio-sensing harness, which could sense when he was holding his breath, running on the spot, or bending over. These actions each triggered a different light placed in a different cell of the jail. The light stayed lit for 10 seconds and then

28 For an illustrated description of the project see creator Simon Johnson's website (Johnson).

switched off, but the 10 seconds could be extended by tapping directly on the light. Our goal was to discover which bodily actions triggered each light, and then to keep all three lights lit simultaneously. As I was not wearing the bio-harness I, and the other two participants not wearing the harness, suggested movements to our team-mate wearing the harness. As a result, we did not experience any direct link between our own bodies and our environment. Equally, the goal-based game-play whereby we were working against the clock - and therefore trying everything in rapid-fire succession, rather than curiously exploring - did not allow for an affective awareness of the interconnection between the physical and the digital.

However, although *The Black Maze* iteration of the project did not create the same body-object linkage suggested by the original prototype, it did link the bodies of the participants up in an interesting way, in the sense we became very aware of, and focused on, one person's breath and proprioception. It also demonstrated how this mode of game-play could encourage participants to traverse social norms by placing them in a situation where they are forced to instruct a stranger on how to move their body. Nevertheless, although a unique and fun experience, *The Black Maze* project did not prompt me or any of my fellow participants to question either our relationship with our own bodies, or the impact current developments in digital technologies are having on our bodies.

As such, the development of the project, from a prototype that focuses on socio-cultural concerns and tensions, to a gamified experience designed to operate on a commercial basis, highlights how these projects themselves can be co-opted, and the emancipatory potential of the work can be negated. In their trailer for *Hyde* the Slingshot producers suggest that, once you have realised your body controls the environment "you learn to master this world, but a creeping sense of dread comes over you: rather than you controlling the maze, is it not actually controlling you?" ("Hyde Is Coming"). This paradox is also made manifest in the development of the project itself. The *Hyde* game concept drew on "present day anxieties stimulated by the politics of mass culture and the Quantified Self movement" (Mandal, 97) - however, the imperative to appeal to mass consumers can be said to have ultimately controlled the way in which *Hyde* chose to approach and use bio-data. By moving away from the core research questions - and aesthetic answers - posited by the *Jekyll 2.0* research prototype, the game concept lost the affective means to interrogate the ways

in which our bodies and our world are being captured and re-presented to us in the form of quantitive digital data.

In contrast, *Jekyll 2.0* co-opts and critiques contemporary cultural-technological practices by evoking an experience of the 'hybrid body' in the participant. In the next section I show how mobile technology can create the 'hybrid body', and identify the characteristics of hybrid bodies. To do this, I draw on the ways in which 'hybridity', as a concept, has been interrogated in mobile technology studies, particularly in regards to space. My intention is to show how art works that generate hybrid bodies open the participant up to multiple and mutable experiences of enmeshment with other bodies, objects and spaces. These works are vital to the continuing interrogation of how we shape and are shaped by technology, and suggest alternative, affective understandings of the body and the self.

The Hybrid Body

The hybrid body is an 'assemblage' of physical and digital sensory elements, which are brought into relationship with one another through affective practices of mobile technology. It is constructed through the user's sensory perception of their lived experience and is therefore temporary and mutable. To unpack this definition I turn to concepts of hybrid space developed in the field of mobile media and technology studies. The question of how mobile technology has reshaped our lived experience of space has dominated the field of mobile media studies over the past decade. Writing in 2012 Jason Farman recounts:

> "As I began to explore the emerging uses of my mobile phone I also began to realize a major shift that was taking place culturally: the spatially of the internet was moving away from the desktop computer and moving out on to the streets… With mobile phones that connect to the internet or GPS receivers that are utilized for a wide array of purposes, locating oneself simultaneously in digital space and in material space has become an everyday action for many people" (17).

To express the way in which the interweaving of digital and physical (material) space is perceived and experienced by users, scholars such as Adriana de Souza e Silva have utilized the concept of a 'hybrid space'. Unlike terms such as 'augmented reality', which were first coined to describe specific technological features, the concept of 'hybridity' focuses on the lived experience of the user, and

the practices they engage in as they move through digital and physical spaces. As such, hybrid spaces "constitute new means, lenses, or paths to explore the context of everyday life itself" (Benford and Giannachi, 47).

De Souza e Silva identifies three conditions for the creation of hybrid spaces: portability, connectivity, and communicative practices. The first two conditions are related directly to the technology; as Farman's anecdote illustrates, the cell, wireless, and GPS connectivity of mobile digital devices allows the user to access a wider digital space outwith the device itself, and to connect remotely with other users who are not in the same physical space. Equally, the portability of mobile digital devices allows users to carry digital space with them through physical space, and to access it at any time, in any place. The third condition of hybrid space relates to the way users employ the technology to connect with one another; de Souza e Silva argues that users experience hybrid space when they use mobile digital devices to socialize and communicate with one another in digital space while moving through physical space. As an example of this she cites the app Foursquare, which allows you to digitally 'see' if any of your friends are physically nearby. Thus, by employing the portability and connectivity features of their device to create a social connection, the user brings digital and physical space into relationship with one another. When the Foursquare app shows the user that someone they know is in physical proximity to them, the digital space reveals something new about the physical space, such that the user experiences their physical space differently.

Because it is manifested through social and communicative practices, de Souza e Silva suggests that hybrid space is a networked space. This again contrasts with other terms such 'augmented space', defined by Lev Manovich as "physical space overlaid with dynamically changing information" (219). Whereas the concept of 'augmented space' implies that the user's experience of space is changed by something being added, the concept of 'hybrid space' implies that the user's experience of space is changed by things becoming connected across digital and physical space. Therefore, in 'hybrid space' each user is like a node in a network, connected to other nodes (users). However, the fact that the user is mobile impacts on the network in two ways. Firstly, as the nodes are continuously changing their position relative to one another, the 'paths of connection' between nodes are also constantly changing. This means that the network is not a fixed entity, it is temporary and mutable. Secondly, the fact that the user is mobile draws the digital

space into the physical space. Whereas networks created through desktop computing are composed of users who were 'virtualised' in digital space, networks created using mobile computing are composed of users who are present in, and moving around, physical space.

Turning to the concept of the hybrid body, we can apply the three conditions of hybrid space, identified by de Souza e Silva, to the way in which mobile technology has brought about an interweaving of the digital and physical body. As the case studies indicate, the portability of the technology brings it into direct relationship with the body and senses of the user, while the connectivity capabilities of the technology bring the senses into relationship with other human and non-human senses and stimulii. With *Mobile Feelings* the device was constructed as an egg-shaped device that could fit comfortably in a person's hand, and connected to the second device via a Bluetooth network. The wearable technology in *World Ripple* was constructed to allow the user to move around an outdoor space, moving their body in order to create and 'see' the aural-tactile sculptures, and it connected via a wireless signal to a digital database that recorded and transmitted data about the sculptures. Similarly, the body belt worn by users in *Jekyll 2.0* also allowed the user to move around, making the body's physicial movements and sensations the focus of the experience. The belt linked wirelessly to the digital space, bringing the digital into conversation with the physical.

Like hybrid space, the hybrid body is made up of 'nodes' which are brought into connection with one another in the physical and digital space. However, whereas with 'hybrid space' the unit of analysis is the user (i.e. the entire person), mobile technology interacts with the body at the level of the senses. As such, the unit of analysis for the 'hybrid body' is the individual sense (human receptor), the individual sensor (digital receptor), and the individual sensory stimulus (human and non-human). In experiencing a hybrid body, therefore, the user experiences digital and physical senses and sensory stimuli which are brought into connection with one another in a shifting, mutable network. Thus the user can experience a 'hybrid body' that is interconnected with another person's body (*Mobile Feelings*), that physically 'feel's empty space (*World Ripple*), or that extends into the inanimate objects in their environment (*Jekyll 2.0*).

In theorizing the 'hybrid body' as a network of diverse 'nodes' it is helpful to draw on the affective, philosophical understanding of the body as an 'assemblage' of

disparate elements that are interconnected through processes that engage the embodied, non-cognitive mode of understanding. Lisa Blackman suggests that understanding bodies as 'assemblages' of digital and physical elements both blurs and redefines the boundaries of the body. As such "bodies are seen to always extend and connect to other bodies, human and non-human, to practices, techniques, technologies and objects which produce different kinds of bodies and different ways, arguably, of enacting what it means to be human" (Blackman, x). Like de Souza e Silva's networked model of 'hybrid space', the model of the body as 'assemblage' emphasises the the fact that it is the 'paths of connection' between elements - how they become connected - that brings the 'assemblage' into being. These 'paths of connection' are made up of "those processes, practices, sensations and affects that move through bodies in ways that are difficult to see, understand and investigate" (Blackman, iv). The 'hybrid body', therefore, is generated through affective practices that translate the digital into the embodied, non-cognitive language of the physical.

Characteristics of Hybrid Bodies: Enfolding, Disjunction and Emergence

The ways in which hybridity transforms our experience of and relationship to space also apply to the body, and demonstrate the ways in which the hybrid body resists the data body. Steve Benford and Gabriella Giannachi identify the intrinsic characteristics of hybrid spaces as their "tendency to act as folds, their disjunctive properties, and their emergence as the product of collaboration between dispersed communities" (42-3). Drawing on this analysis, I return to my case-studies, *Mobile Feelings, World Ripple* and *Jekyll 2.0*, to show that hybrid bodies too display enfolding, disjunctive, and emergent characteristics, and that these characteristics stand in opposition to the quantitive, 'knowing', data body.

Enfolding

When users experience hybrid space, they experience multiple digital and physical spaces in shifting relationship to one another. This relationship is brought about by the portability of mobile technologies, which de-couples the digital from a specific location (e.g. a desktop computer), and by the fact that they facilitate connection between remote spaces. Adriana de Souza e Silva notes that, together, these conditions cause a blurring of the boundaries between the digital and the physical

because the user does not need to leave the physical space in order to access a digital space. We find it natural, for example, to think that we could look something up on Google while sitting in a café with friends. The actions of chatting, drinking coffee, and people-watching, which take place in the physical world, are intertwined with the digital world actions of checking What's App messages, Googling, or uploading photos from the café to Facebook. This relationship, therefore, is deeper than the mere over-laying of digital data on the physical world; the user interacts with the digital *as though it were* the physical, thereby bringing digital '"pockets of context"' into the physical context (Hayles, quoted in de Souza e Silva, 18). Although the user does not differentiate between the physical and digital space, the two spaces nevertheless remain distinct at a material level. Thus, the digital does not become absorbed into the physical; rather, it sits within it, materially separate yet experientially entwined. Benford and Giannachi therefore claim that hybrid space is "composed of different, adjacent, "enfolding" spaces" (45) which are experienced simultaneously by the user.

Elaborating on the characteristic of 'enfolding', they draw on Giles Deleuze's concept of the 'fold', which can be understood as "an in-betweenness of spaces, able to represent dialectical opposites such as organic and inorganic, inside and outside" (44). This concept can be likened to the practice of origami, whereby folding the paper in on itself ultimately re-creates the paper as a new form. The original exterior becomes the interior, which then unfolds as a new exterior. 'Enfolding', therefore, captures a dynamic transformative interaction. Accordingly, the tendency of hybrid spaces to act as folds allows them to account for the way in which the digital and the physical shape one another, the one pushing into and extending the experience of the other. In Deleuze's concept, the 'fold' is a way of understanding the production of subjectivity, or one's relation to oneself. Simon O'Sullivan notes that "[t]his gives the fold an explicitly ethical dimension, but also a political one, for, as Deleuze remarks, the emergence of new kinds of struggle inevitably also involves the production of new kinds of subjectivity, new kinds of fold" (O'Sullivan). Thus as mobile digital technologies enable the 'enfolding' of the digital and the physical, they also offer paths of struggle and resistance against the new modes of homogeneity and control established through the digital lens.

Turning to the first of our case studies, *Mobile Feelings*, we can see that hybrid bodies are also inherently 'enfolding', bringing together different, adjacent bodies by

introducing the physical into the digital, and then incorporating the digital back into the physical. The bodies in question are the physical body of the user, their own digital body, as it is captured by the device, and the remote digital body of the other user, as it is relayed to them through the device. The physical body of the user is, in Deleuzian terms, the exterior. In putting their finger onto the pulse sensor the user folds the physical - their pulse - into the digital, transforming it into quantified data, and creating a digital body. This digital body is not a typically human body in that it consists of only one sensory system - the heartbeat: as such, the physical has been transformed from a complex organism into a single quantified sense. This new body is then unfolded back from the digital into the physical by means of a blinking light, which affectively signals their own heartbeat to the user. This, in turn, transforms the user's experience of their physical body, placing them in a relationship of observation to their own heartbeat.

Simultaneously, the user experiences the remote body of the other user as distinct from, and yet 'enfolded' into, their own body. The remote body of the other user has again undergone a folding and unfolding process, from complex human organism to a digital body that quantitively represents two sensory systems - heartbeat and breath. Crucially, however, the affective, qualitative means by which this digital body is communicated to the user - as vibration and air - makes them, in Anthony Mandal's term, 'effective' in the physical world. As such, the user experiences a body which is at once physicalized, and yet lacks almost all the elements of a 'normal' human body. Thus, hybrid bodies act as folds, and this process alters the participant's lived experience of their own body, reframing their relation to themselves in ways present the participant with the potential to connect at a fundamental level with other forms of bodies, stretching and expanding their own subjectivity by allowing external elements to permeate the 'fixed' boundaries of the self. This stretching and expanding, and the new subjectivities it produces, stands in opposition to the ways in which the data body reduces the lived experience of the body to uniform, quantitive measurement. While the data body suggests that our bodies and selves can be captured and pinned down as calculable entities, the hybrid body exposes the ways in which our embodied selves reach out into both the physical and digital worlds, and are continuously permeated and transformed by our interconnections in those worlds. *Mobile Feelings* reveals the ways in which 'enfolding' brings about a new sense of intimacy between bodies, coupled with

sensations of comfort and care. It also suggests that, by bringing physical and digital bodies into conversation with one another, the participant can experience a 'shock' or sense of unease that prompts them to question their own sense of their body and self. This experience of unease, the processes that bring it about, and the ways in which it allows the hybrid body resists the data body can be understood in the context of 'disjunction'.

Disjunction

'Disjunction' is the second characteristic of hybrid spaces identified by Benford and Giannachi. They suggest that, in hybrid space, the concept of space as a fixed, a priori entity is brought into juxtaposition with the concept of space as a lived experience. As a result, performances that generate hybrid spaces foster a sense of uncertainty in the participant, bringing them into new relationships with their space "as something that is both familiar *and* estranging" (46, original emphasis). Drawing on the work of Henri Lefebvre and Manuel Castells, Benford and Giannachi suggest that the concept of space as fixed and the concept of space as lived can be applied to both physical and digital space. Physical space exists as a material 'built' space, but it is also, in Lefebvre's famous analysis, constructed through socio-political practices, and is therefore always "subject to processes of negotiation" (Benford and Giannachi, 44). Digital space is often conceived as a network of fixed points, which is "a-historical, location-free and continuous" (ibid., 45), but, because it is rooted in local networks which can be affected by electric failure, weather conditions and other factors, our experience of digital space is often one of discontinuity. With Skype, for example, we can in theory speak face-to-face with anyone at anytime, however, in reality, the experience of using Skype is frequently one of dropped signals, fragmented images, and asynchronous conversations. With mobile digital technology the experience of digital space is even farther removed from the conception of digital space as an uniform 'space of flows', as connectivity is dependent on the signal strength of cell towers, wireless networks and GPS satellites. As such, both physical and digital spaces are 'fixed' in that the digital code is written a priori, and the physical environment through which the user moves is already in situ. On the other hand, physical and digital spaces are 'lived', as by entering into and interacting with these spaces the user produces their own experience of these spaces.

In hybrid space, both physical and digital fixed and lived spaces are brought together and experienced simultaneously in various combinations by the user. Benford and Giannachi term these combinations 'disjunctive' because, rather than forcing a conjunction between the 'fixed' and 'lived' concepts of space, hybrid space accounts and allows for both concepts to co-exist in an unsynthesized, changing relationship. Using the example of the mixed-reality game *Uncle Roy All Around You*, by Blast Theory, they show how participants experience the cityscape they are moving through as 'fixed', in the sense that it is a familiar, built environment that exists before the game. However, by playing the game the participant also experiences the cityscape as a 'game world', where certain sites and people take on a specific significance. Equally, the digital space the participant is playing in has been pre-constructed; the online map, communication technologies, and time-frame have all been 'fixed'. However, once the participant begins to play, and to communicate with other players, their interactions give them a 'lived' experience of the digital space. Thus hybrid space constitutes both "an event to be witnessed … [and] … a performance that may be watched, practiced or even generated" (45). In *Uncle Roy All Around You* the game designers do not attempt to give the participant one uniform experience of space; they may experience the physical space as a game world one minute, and as a normal cityscape the next. As such, they may go up to talk to someone on a park bench who they assume to be a character in the game, only to realise that that person is just an unknowing bystander. They may rely on the online digital map on their mobile technology device, only to be left disorientated and lost in physical space when the cell connection disappears. Therefore, through the performance, the participant moves through hybrid space, and so experiences disjunction between fixed and lived physical and digital spaces.

Crucially, by allowing for disjunction, hybrid space also allows for the effect disjunction has on the user. Thus Benford and Giannachi note that, in these performances, "[t]his disjunction, and the uncertainty it raises, constitutes one of the mechanisms by which hybrid space can be experienced as uncanny" (46). Their invocation of the 'uncanny' - a term loaded with a century's worth of psycho-analytical encumbrances - points up the ability of hybrid space (and hybridity, more generally) to blend the familiar into the unfamiliar, and visa versa. The uncertainty that produces a sense of the uncanny is a deep, subjective uncertainty "regarding the reality of who one is and what is being experienced. Suddenly one's sense of oneself

… becomes strangely questionable" (Royle, 1). When mobile digital technologies produce 'disjunction', therefore, they place their participant in a state of questioning, open to re-examining and re-discovering their fixed and lived selves. Allowing participants to experience and live with this uncertainty and questioning provides a path of resistance to the socio-economic impetus to frame certainty and control as a consumer 'need'.

Looking at *Jekyll 2.0* it is obvious that hybrid bodies also combine fixed and lived physical and digital bodies through disjunction. By placing the participant in an 'uncanny' relationship with their body, and by asking them to live with the subjective questioning this brings about, hybrid bodies reframe uncertainty as both necessary and, often, pleasurable. In *Jekyll 2.0* the participant experiences their 'fixed' physical body - the body that they perceive in the mirror, which conforms to normative ideas of what a body should consist of and look like. They also experience their 'lived' physical body through a heightened awareness of their breathing, their posture, and the various sensations evoked by the sinister video, the dark room, and the four-poster bed. They are aware that the performance has been pre-constructed; thus their digital body is 'fixed' in so much as it will only ever be comprised of quantitive data from their heart-beat, breath and posture. Nevertheless, their 'lived' experience of their digital body is one of extension out into the room in such a way that they can change and control their environment. In the trailer for *Hyde* the creators express this 'lived' experience of the digital body by suggesting that it feels like you have been given "super-powers" that allow you to change the fixed physical environment around you. *Jekyll 2.0* and its subsequent iterations deliberately play with the juxtaposition of these different bodies, making them both familiar and unfamiliar and thus engendering in the participant an experience of uncertainty that prompts them to question the limits of their own body, and the effect of digital technologies on their body. The project frames this uncertainty not as a negative experience, but as one that prompts curiosity, a sense of exploration, and a sense of possibility. As such, it invites participants to 'live with', and appreciate uncertainty as another way of relating to the self and the world.

Against the rich, complex experience that uncertainty brings about, the experience of certainty offered by the data body seems bland and sterile. Equally, the freedom offered by the questioning, curious mind-set created through uncertainty stands in opposition to the control of the self that is enacted when people adopt

strategies to achieve certainty through digital quantification. Nicholas Royle suggests that, as modern science and technology breaks our bodies and our world down into smaller and smaller units of analysis, the familiar increasingly becomes unfamiliar, and the experiences of the uncanny multiply: "The world is uncanny … We are taking ourselves, and our world, to pieces; and this is happening in ways, and at speeds, that are beyond our control" (Royle, 3). Whereas the data body seeks to suppress the recognition of this uncanniness by offering a new, quantified version of the familiar, the hybrid body suggests ways in which we can acknowledge, use and even enjoy the subjective uncertainties that face us in the 'bio-virtual' era.

Emergence

A third characteristic of hybrid space identified by Benford and Giannachi is that it is 'emergent', by which they mean that it is produced through the connection of dispersed participants. As each participant negotiates a particular combination of the digital and the physical the hybrid space that is constituted when participants connect is one of multiplicity. Benford and Giannachi suggest that a single participant cannot fully inhabit all the spaces that exist within hybrid space, noting that, as such, these spaces "can often be explored only through the help and with the cooperation of others" (46-7). An example of this is the experience of driving in an unfamiliar city, while your partner looks at the GPS navigation system on their phone and directs you where to go. You cannot look directly at the GPS, yet through your communication with your partner the digital space of the GPS is brought into conversation with your experience of the physical space. In that moment a hybrid space is created - yet, if you stop listening or your partner stops talking the hybrid space dissolves, and the digital space and physical space go back to being distinct, unrelated spaces.

Hybrid space, therefore, presents the participant with opportunities to reach out beyond their own selves and to introduce new spaces into their experience by connecting with others. However, because the participant is moving through both physical and digital spaces the points of connection are constantly changing. As such Benford and Giannachi suggest that hybrid spaces offer the possibility but not the inevitability of collaboration and connection. The fact that this moment-to-moment connection is not determined in advance requires the participant to "continuously renegotiate their equilibrium" (47) within the spaces of hybrid space,

meaning that they experience hybrid space as inherently unstable. For example, a location-based game played out in a public space might offer opportunities to connect with bystanders who are present in the physical world, watching the antics of the players, and it might offer the opportunity to connect to online players who are monitoring the game in the digital world. The participant is therefore faced with a multiplicity of viewpoints, and the hybrid space they will experience in the next moment depends on which viewpoint they choose to connect to (or, indeed, whether they choose to connect to any other viewpoint).

With *World Ripple* we can see how emergence is also a characteristic of the hybrid body, whereby the connection between participants produces a distributed, constantly evolving experience of the body. This connection is forged asynchronously - a participant interacts with one of the computer-generated sculptures, causing a subtle change, and the subsequent participant senses the changed sculpture. Stenslie suggests that "[i]n the zones of collisions between different structures and users new patterns of interference will arise, forming new, interpersonal and social ripples" (Stenslie). Thus the hybrid body the participant experiences when they touch and hear the invisible sculptures is being continuously shaped by other participants, and their experience of the sculptures. These 'ripples' require the participant to re-discover the sculptures anew every time they return to the space, generating multiple possible hybrid bodies.

This experience of multiplicity, and the need to continuously negotiate their equilibrium suggest ways that the hybrid body can resist the data body's promise of control. The participant's experience of the hybrid body is out of their control, and depends on another participant who interacts with the sculptures a different time, and perhaps even in a different space. Their own movements in space do not affect themselves but instead 'ripple out' to affect another participant's experience of the sculptures. As such, the hybrid body also argues against the attempt by marketing and other organizations to delineate and predict each individual using data; the interconnection between bodies which the hybrid body proposes means that each body can be reshaped and reformed through its inter-connection with others, making it contingent and unpredictable.

The Hybrid Body as a 'Posthuman' Body

The contingency, disjunction and emergence generated through the hybrid body offer new experiences of inter-subjectivity and inter-connection that stand in opposition to the quantified form of subjectivity proposed by the data body. Thus the concept of the hybrid body offers a model by which to understand how digital technology can intervene in the body in a qualitative way, and what new perspectives and sensibilities this might yield. In this way, the concept of the hybrid body chimes with the 'posthuman perspective' on the place of the body in digital media culture, as identified by Rosemary Klich and Edward Scheer. Following on from N. Katherine Hayles' arguments in her seminal work *How We Became Posthuman*, Klich and Scheer identify a trajectory of scholarship that contests the demarkation of information (data) from materiality (the body). For scholars such as Hayles, Anna Munster and Mark Hansen "the material body is the site of meaning-making, it is where information becomes significant" (Klich & Scheer,192). In other words, data only becomes meaningful if it can be translated into, and understood by the body. Similarly, digital data interacts with the body at a sensory level; it is transformative insofar as it "re-sensitizes human perception by amplifying and re-ordering sensory perception in the world" (Klich & Scheer,192).

The hybrid body is also a part of this 'posthuman perspective' in that it is formed through processes that forge temporary and mutable connections between digital and physical elements: as such it does not argue for the 'augmentation' of the physical with the digital in a 'cyborg' fusion of man and machine. Anna Munster notes that the concept of the 'cyborg' does not account for the constitutive difference between the digital and the physical, the one fundamentally quantitive and binary, the other qualitative and multiple. She argues that, the combination of the digital and the physical "involves a 'kind of graft', the mark of connection and difference. It is the graft itself, the mark of the embodied connection where the digital and corporeal fold into each other, which is elided in the cyborg fusion fantasy" (qtd. in Klich & Scheer, 100). As I have discussed above, the hybrid body does not present the user/participant with an unproblematic extension of their own physicality into the digital, or visa versa. Instead it complicates the user/participant's embodied experience of the interaction of the digital and the physical, revealing and utilising the multiple 'grafts' between the digital and physical to challenge normative forms of the body and subjectivity.

This perspective highlights the fact that, in order to fold back into the physical, the digital must undergo a process of affective 'translation'. In other words, the digital is always constituted by quantitative data/information, which, if relayed directly back in a quantitative form to the user, engages them cognitively. A heartbeat, relayed back to the user as a quantitive 'beats-per-minute' calculation produces a cognitive experience that is markedly different from the embodied experience of a heartbeat relayed back to the user through haptic sensation. Accordingly, like de Souza e Silva, I emphasize that it is *the processes by which digital and physical elements become connected* which defines hybridity. These processes are affective, in that they translate digital data into the language of sensory embodiment, rather than the language of cognition. The need for affective process to render the digital effective in the physical world brings us to the question of the design approaches and methodologies used in the creation of mobile experiences. Accordingly, in the next chapter I begin to develop a practical, affective design methodology for mobile experiences, focusing first on the individual, internal elements of mobile experiences and the ways that they can be designed in ways that allow them to speak to, and integrate with, the sensory, affective understanding of the body.

CHAPTER 2
Sense-able Bodies

In this chapter I set out to articulate an affective approach to the design of the individual, internal elements of mobile experiences. In order to effectively reveal the difference between cognitive and affective approaches to the design of internal elements I turn first to a case-study of a workshop on mobile experience design that I conducted with fellow graduate students of my Digital Arts and Humanities programme. This workshop focused on designing a location-based sound experience that evoked the experience of one incident in the 1916 Rising (a key moment in Irish history) in the location in which it occurred (Mount Street, Dublin). I discuss the two very different sound experiences produced by the students to demonstrate the difference between cognitive and affective design approaches to internal elements, and to highlight the very different participant responses these can evoke. As such, I argue that all mobile technologies and media contain the potential to be either cognitive or affective, and that, therefore, the engagement they produce is a result of how they are used in the design of the experience.

To think through this further I turn to Brian Massumi's writing on affect, and, in particular, his concepts of ‘quality’ and ‘intensity’. These concepts offer a way to think through this 'bifurcation' (Massumi, 24) within the internal elements of mobile experiences, and the consequent implications this has for the design of affective mobile experiences that effectively evoke the hybrid body of the participant. My argument with relation to current mobile experience design methodologies is that they uncritically adopt cognitive methodologies that are suitable for other forms of experiences (for example video gaming on static computers) but unsuitable for mobile experiences that seek to evoke the hybrid body of the participant. To develop this argument I turn to the writings of theatre theorist Hans-Thies Lehmann and human-computer interaction designer Brenda Laurel, bringing Lehmann’s distinction between ‘dramatic’ and ‘postdramatic’ dramaturgy into conversation with Laurel’s model of human-computer interaction, which is founded on an Aristotelian dramaturgy. Lehmann’s argument demonstrates the distinct dramaturgy (design methodology) required for affective practices; as such, I employ the ‘postdramatic’

lens to interrogate two key concepts of experience (game) design – 'game/play' and 'immersion'.

I then go on to apply an affective lens (utilising Massumi's distinction between 'quality' and 'intensity' and Lehmann's distinction between 'dramatic' and 'postdramatic' dramaturgy) to my second case-study, *Viking Ghost Hunt* and *Carolan's Last Tune: Galway Ghost Hunt*. *Viking Ghost Hunt* and *Carolan's Last Tune* represent two iterations of a location-based mobile experience in which participants explore a location and hunt 'ghosts' via a smartphone app, created by the company *Haunted Planet*. The app utilises a wide number of internal elements to create the 'ghostly' experience; as such, it allows me to examine a range of elements of mobile experiences in detail through an affective lens. I discuss this analysis at the end of the chapter, in utilise the results to develop a (non-exhaustive) table showing the difference between cognitive and affective design approaches to the internal elements of mobile experiences.

Case-study: Digital Arts and Humanities workshop on mobile experience design

In January 2015 I gave a workshop in the design of mobile experiences to fellow PhD students, which took place in Trinity College Dublin's Arts and Theatre Research Lab (ATRL) on Pearse Street in Dublin[29]. Given that we were approaching the centenary of the 1916 Rising[30], a key moment of Irish history, and that the ATRL is located close to Mount Street, one of the crucial battle sites in Dublin city, I chose to focus on archive records that gave an insight into how the Rising might have been experienced by people who were in and around Mount Street.

29 This workshop was given as part of a skills-sharing initiative between graduate students on the Digital Arts and Humanities programme. The Digital Arts and Humanities programme is a graduate research programme that brings together four Irish universities: National University of Ireland, Galway, National University of Ireland, Maynooth, University College Cork and Trinity College Dublin.

30 The 1916 Rising is the name given to the armed revolution against British rule in Ireland that began on Easter Monday, 1916. The Rising lasted for seven days, with particularly fierce fighting in Dublin. Although the revolutionary combatants were eventually defeated by the British Army, the Rising had a profound impact on the struggle for Irish independence, and is seen by many as "the founding act of a democratic Irish State" (see "1916 Rising - the Irish Times Easter Rising Commemoration").

I utilised the platform 7Scenes, an online platform that allows non-coders to develop location-based mobile experiences ("7Scenes"). The platform allows the designer to upload audio, image and video files online, and to place them at GPS points on a map. This information is then made available, via the internet, to the 7scenes mobile app on the user's smartphone. When the user opens the app on their smartphone, they can select the specific 'scene' the designer has created. This then brings them to the map for that scene, and triggers the digital media when the user is at the GPS locations specified by the designer. The digital media plays on the smartphone at those specific locations, allowing the designer to ensure a connection between the media and the space the user is experiencing around them.

The students' task was to design an audio track that would trigger when the participant reached Mount Street, overlaying the digital media with the participant's experience of that street in the present day. I provided the students with a number of different forms of material - an historical account of the battle of Mount Street[31]; a witness statement by James Doyle, a combatant stationed at Mount Street[32]; photographs of Mount Street as it was in 1916, including one of Clanwilliam House, the building on the street that served as the rebels' base; and sound-effects files of soldiers marching, guns firing and bombs exploding (which they also supplemented through their own recordings, and searches of online sound-effects libraries).

We first explored the location in person, noting experiential elements of the location such as the buildings we could see, where a participant might safely stand still to listen to the track, what sounds they would hear in situ and on their way to that spot. In so doing, we discovered that there was a canal-side path that we could ask the participant to take, ensuring that they would be traveling a quieter route than if they took the footpath. This choice also changed the environment they would be experiencing from a busy city road to a calmer space of (citified) nature. On returning to the lab, both groups of students drew on their experience of the location, and on the materials given to them, to design and record an audio track.

The key elements of both audio tracks were spoken voice and sound effects; therefore, both tracks generated aural sensory stimuli. However, each group used

31 This was taken from the website of the Irish National Broadcaster, RTÉ (see "1916 - The Battle of Mount Street").

32 Doyle provided this official 'witness statement' in 1949 to the (Irish) Bureau of Military History 1913 - 21. The statement is a 12-page account of his experiences as a rebel fighter stationed at Clanwilliam House during the Easter Rising (see Doyle, "Statement of Witness").

these elements in a very different way, leading to two very different participant experiences. Group A's audio track, which was 1.22 minutes long, begins with a spoken (female) voice. The voice situates you in your present-day location, describing buildings you can see around you. She then tells you that "this was the scene of a key battle during the 1916 Rising", and goes on to give a short account of the events leading up to the battle. The historical narrative is supplemented by appropriate sound-effects; when she tells you that "the British forces marched up Northumberland Road" you hear the sound of soldiers marching, and when she tells you that the British bombed the school-house you hear the sounds of bombs in the distance. The historical narrative occasionally introduces the testimony of James Doyle, using phrases such as "in the words of James Doyle -" and "James Doyle remembers -". Doyle's lines are delivered by a male voice, and are in the past tense - "Reynolds shouted 'Open Fire'. With our first volley they scattered for cover…", as they were written in the testimony document the students were using. The track finishes on a line from Doyle's testimony.

Group B's audio track is 3.44 minutes long and begins with a pulsing electronic sound. After twenty seconds this is overlaid by a repetitive 'clomp, clomp' sound, that could be reminiscent of marching footsteps. The repetitive sound is distorted and occasionally a delay effect causes the sound effect to overlap itself, causing a rapid staccato ripple. The crash and boom of bombs dropping is introduced, but distorted in such a way that they are not immediately recognisable. Again, an echo effect carries their resonances forward through the next seconds of the track. The 'clomp, clomp' sound continues underneath the sporadic sound of bombs falling, creating a heightened and distorted soundscape. A voice (male) speaks the words "Clanwilliam House"[33]. This phrase is repeated four times, in time with the repetitive beat of the footsteps. The voice stops speaking and we hear the soundscape alone. Then the voice speaks again, saying "We marched -". The last words the voice speaks are distorted and mixed with a sound like dripping water, making them indistinguishable. This phrase too is repeated a number of times. As the track goes on it continues to mix the electronic drone, the repetitive 'marching' sound, the claps and crashes of distorted bomb sounds, and repeated words and

33 Clanwilliam House is the house on Clanwilliam Street in which the rebels made their headquarters during the Rising. However, Group B's track does not contextualize this phrase.

phrases drawn from James Doyle's testimony. As the track finishes the spoken phrases end, followed by the repetitive 'marching' sound. The electronic drone suddenly becomes clear again, and the bombs sound as if they are farther away, their echoes flowing over the pulse of the drone. The final sound on the track is the last echo of a bomb.

As is evident, despite having the same challenge and same materials, each student group created a markedly different type of audio track. Both tracks were equally valid uses of the materials, and both served to explore the key challenge of the workshop, which was to re-configure historical archive material into an effective location-based audio experience. The students' approaches to meeting this challenge was, to a large extent, dictated by their own methodological backgrounds; while Group A were students from humanities disciplines, such as history, the students from Group B were from practice-based arts disciplines, particularly music composition. As such, Group A created an audio track that gave the participant the experience of an audio tour or radio documentary. By describing the location and then providing a historical account the audio track prompted the participant to find cognitive links between the landmarks they could see and the events that were recounted to them. The narration itself was linear and intended to communicate cognitive meaning - to give the participant information about the Rising on Mount Street. This, and the use of the past-tense by both the guide and the voice of James Doyle, created a distance between the participant and the events being described, whereby the participant understood the experience cognitively without *feeling* the experience bodily. The use of the sound-effects created moments of bodily 'being there' - hearing the soldiers marching towards you, or the gun fire rattle around you. However, the experience of the sound-effects was lessened by the the accompanying narration - the sound of soldiers marching was overlaid by the voice telling you that "the British soldiers marched up Northumberland Road". This combination of narration with the sound-effects indicating to the participant that what they were hearing had happened in the past, and so lessened the overall immediacy of the sound-effects.

Group B's audio track generated the opposite experience to Group As. It provided no cognitive information on the Rising around Mount Street. However, it generated an experience that was "intense", as one of the students in Group A commented, highlighting the fact that, instead of creating a cognitive distance, the

track created an overwhelming and almost uncomfortable bodily sense of nearness through its use of immediate, strong and repeated sound. This appeal to a bodily understanding, rather than a cognitive understanding, underpinned the experience. The rhythmic pulse of the drone and the marching, and the proximity and loudness of the sounds, generated vibrations and resonances in the participant's own body that did not 'explain' anything to the participant, but that did create a subtle but noticeable feeling of discomfort and oppression. Similarly, the sound effects used in the track were not used to communicate a specific semiotic meaning. The sound effect of marching was not a 'realistic' sound effect as it was in Group A's audio track. It evoked the idea of marching footsteps, but also sounded like the repetitive thud of machinery, or blows of an axe on wood. Equally, the sound effect of bombs dropping was mastered in such a way that it evoked the sound of an explosion, but also could have been thunder claps or buildings crashing down. The spoken voice was not introduced, nor were his words ever put into context, making it difficult for the participant to read any further meaning into the phrases they heard, other than the literal meaning of the words, and the sound of the voice itself. Instead of a linear narrative that gave the participant information, the track built a soundscape that emphasised repetition and non-linear patterns. It also played with the participant's own experience of time; when the track combined all its aural elements it created a very loud soundscape which occasionally died away to just the sound of marching. At these points the participant was left with no indication of where in the track they were - whether they had just reached the climax, or whether new sounds would emerge. This uncertainty made the participant more aware of the time they were waiting for the sounds to begin again, and more aware of their own 'not knowing' whether the experience was over or not.

Group B's audio track was extremely ambiguous, and therefore the experience it generated was very subjective. For some of the students, the lack of any cognitive 'markers' meant that they could not engage fully with the experience. For me, the track evoked sensations of pressure, repetition, monotony, uncertainty, waiting, listening and confusion, which, in turn, gave me an immersive sense that I was *feeling* (through an artistic lens) the sensations experienced by combatants involved in the 1916 Rising. Whereas the Rising (and history in general) is often 'explained' through the objective recounting of events, Group B's track suggested to me that as a lived experience it was messy, dis-orientating, and immediate. In combination with

the location - a canal bank in January sunshine, bordered on the right by a busy city road - the repetitive nature of the track suggested to me that the Rising left traces on the landscape around it that were still resonating in that space and, therefore, in my own body as it stood in that space.

The difference in these two audio tracks, and my response to them, illustrates the distinct difference between mobile experiences as they are often currently designed - with an emphasis on information and cognitive engagement - and the potential of mobile experiences to generate a hybrid body, one that speaks to the senses affectively, and so both complicates and intensifies our embodied understanding. Crucially, it demonstrates that the same elements - in this case audio elements - can bring about either a cognitive or an affective engagement, depending on how they are designed. To better explore this, I turn to Brian Massumi's writing on affect, and his contention that elements can evoke a 'quality' (cognitive) mode of understanding, or an 'intensity' (affective) mode of understanding. My intention here is to challenge the assumption, often made in the design of mobile experiences, that merely by utilising a sensory element such as audio the experience is rendered immersive and embodied. Equally, I wish to problematize the idea of what Josephine Machon describes as 'sensual technologies' (36). The term 'sensual technologies' implies that certain technologies are sensual by their nature - Machon lists "haptic technologies, holography, surround-sound, and head-mounted displays" (*Immersive Theatres,* 36) as sensual (affective) technologies. In contrast, I argue that all mobile technologies and media contain the potential to be either cognitive or affective[34], and that, therefore, the engagement they produce is a result of how they are used in the design of the experience. Massumi's writing offers a way to think through this 'bifurcation' (Massumi, 24) within the internal elements of mobile experiences, and the consequent implications this has for the design of affective mobile experiences that effectively evoke the hybrid body of the participant.

Quality and Intensity: two modes of understanding

34 In actual fact, digital technologies are, by their fundamental nature, cognitive, as they are based on binary quantification and calculation. However, it is the means by which the digital interacts with the user that renders them effectively cognitive or affective.

In seeking to find a vocabulary for affect, Brian Massumi uses the example of a short film about a snowman who begins to melt and is then brought by his maker to the cool mountains where he stops melting. The film was shown to children three times, once with a 'factual' voice-over that gave a step-by-step account of the action as it happened, once with an 'emotional' voice-over that included words expressing the emotional tenor of the scene under way, and once without any voice-over. The children were tested on how well they recalled each version, and they were asked to rate the different versions on a scale of happy/sad and pleasant/unpleasant. The happy/sad scale mapped onto the children's cognitive understanding of the story of the film, the characters, etc., while the pleasant/unpleasant scale mapped onto the children's felt, non-cognitive response to the film. The expectation would be that the version that was rated as happiest would also be rated as most pleasant, and be remembered longest. However, the results, Massumi notes, confused the researchers: the children rated the 'factual' version the happiest, but also the most unpleasant, and it was the version the children recalled least. The 'emotional' version was the version the children recalled best, and the 'non-verbal' version was the one they considered the most pleasant. What Massumi's example reveals is that the same experience can produce very different responses, depending on how the internal elements of that experience are formulated and combined. Equally, formulating the elements to produce a cognitive reaction (happiness) does not automatically mean that they will produce a corresponding affective reaction (pleasantness). Using this example Massumi draws two conclusions from this example that underpin my theory of affective design for mobile experiences. The first conclusion derives from what Massumi identifies as "a gap between 'content' and 'effect'" (24), which he uses to formulate and define the concepts of 'quality' (cognitive understanding) and 'intensity' (non-cognitive, affective understanding). The second conclusion relates to the ways in which these two modes of understanding are inter-related, and points to how the affective mode of understanding operates in tandem with, but in different ways to, the cognitive mode of understanding.

'Quality' and 'Intensity' - the gap between 'content' and 'effect'

Firstly, Massumi argues that an element - he takes the example of the film image of the snowman - has both 'content' and 'effect'. He goes on to suggest that "the content of the image is its indexing to conventional meanings in an intersubjective context, its sociolinguistic qualification. This indexing the determinate *qualities* of the image; the strength or duration of the image's effect could be called it's *intensity*" (24). The content, therefore, appeals to the cognitive mode of understanding (what Massumi terms 'quality'), while the effect appeals to the affective mode of understanding (what Massumi terms 'intensity'). This is an important point in that it suggests that the effect of an element is not *apriori* cognitive or affective - it is the balance of content with effect in their design which determines how they engage the participant. Equally, Massumi's argument exposes all elements as contingent - while the normative way of designing an element might be to emphasize its content, it can also be reformulated to focus on its effect.

What Massumi wants to point up is the fact that, as the experiment with the snowman film suggests, there is "a gap between *content* and *effect*: it would appear that the strength or duration of an image's effect is not logically connected to the content in any straightforward way ... What comes out here is that there is no correspondence or conformity between qualities and intensity. If there is a relation, it is of another nature" (24). In other words, the affective mode of understanding doesn't work in the same way as the cognitive mode of understanding - if we design an element in a way that foregrounds its content, it might not (and probably won't) tap into the affective mode of understanding (and visa versa). In order to design elements in ways that tap into the affective mode of understanding we have to understand the rules of that mode of understanding, and how these rules differ from the cognitive mode of understanding.

The affective mode of understanding (what Massumi terms 'intensity') is "not semantically or semiotically ordered" (24), "as disconnected from meaningful sequencing, from narration, as it is from vital function" (25). It operates according to its own rules "[i]ntensity would seem to be associated with nonlinear processes: resonation and feedback that momentarily suspend the linear progress of the narrative present from past to future" (26). It is "temporal and narrative noise" (26). Quality is defined against this: it is semantically and semiotically ordered. It operates functionally, creating meaning by linking in with learnt, cognitive meanings

and structures. Massumi's conclusion help to explain why Group A and Group B's audio tracks elicited such a different response, even though they used the same elements of location, platform, spoken voice and sound-effects.

The difference between Group A and B's tracks, and the response they generated, rests in how these elements were designed and used to operate in the quality register or the intensity register. In Group A's track, spoken voice was used to communicate information to the participant; the female narrator delivered historical facts - dates, times, road names, etc. - in the past tense. The voice of James Doyle, although it described his personal experience, did so in the past-tense, and lacked the immediacy it might have had if he had addressed the participant in the present-tense, in a rushed or breathless voice. In this way, spoken word was used functionally - as a means of conveying a meaningful sequence - narration - to the participant. As such, the spoken word element tapped into the 'quality' register, and evoked a cognitive response in the participant, whereby they 'read' the experience within the framework of what they knew about the history of Ireland and of 1916. In contrast, in Group B's audio track the spoken voice did not communicate information, and the repetition of just a few words served to focus the participant on the sound of the voice, rather than the meaning of the words. Similarly, the sound-effects were distorted and ambiguous, and were not indexed to any cognitive explanation - the 'clomp, clomp' sound could have been understood by the participant as any number of different sounds. Even if it registered as marching, the track gave no indication of whether the marching was that of the Irish combatants or the British soldiers, and, as such, the participant could not attach a cognitive meaning to the sounds. In Group B's track, therefore, both the spoken word and the sound-effects tapped into the 'intensity' register, and followed the rules of this register - they were disconnected from a meaningful signifying order and instead generated resonance and feedback, producing that 'temporal and narrative noise' identified by Massumi.

The inter-relationship of quality and intensity

A second conclusion Massumi draws from the snowman film experiment is that the cognitive mode of understanding and affective mode of understanding operate at the same time. As a result, they can cancel each other out or enhance each other, depending on how they are combined. To demonstrate this he points to the two

ways in which language was used in the experiment. In the first version, language was used functionally to narrate the action step-by-step as it unfolded. This was the version rated the most unpleasant - in other words, the least affective. In the second version of the film language was used to articulate the emotional aspect of the film, and, in this way "breaks narrative continuity for a moment to register a state" (25). Massumi concludes that "[l]inguistic expression can resonate with and amplify intensity at the price of making itself functionally redundant. When on the other hand it doubles a sequence of movements in order to add something to it in the way of meaningful progression ... then it runs counter to and dampens the intensity" (26). This conclusion again emphasizes that elements can be designed to work cognitively or affectively, and, if designed affectively, will move away from working in a functional, linear way[35].

The ways in which the cognitive and affective can impact one another is evidenced in Group A's use of spoken narration to describe the action while sound-effect are, at the same time, indicating the action. As I note above, hearing a marching sound-effect while the narrator's voice told me that "the troops marched down Northumberland Street" had the overall effect of lessening the impact of the sound-effects - instead of feeling like the soldiers were somewhere marching close by, I interacted with the sound as one would with an old film or audio recording - as a record of what is past, rather than an immediate, affective experience. While the sound-effects had the potential to tap into the intensity register, therefore, the 'matter-of-factness' of the spoken narration ran counter to and dampened the intensity. The opposite effect is evident in Groups A's track - in it, the spoken word was made 'functionally redundant', in that it didn't convey any form of meaningful progression. However, by being 'functionally redundant' it actually resonated with and amplified the intensity generated through the sound-effects and electronic rhythms of the track.

The importance of applying Massumi's insights to the design of mobile experiences is that they create a vocabulary that allows us to understand that the affective mode of understanding is fundamentally different to the cognitive mode of

35 I return again to the question of language and spoken word in Chapter 3, utilising Josephine Machon's theory of (syn)aesthetic language as an affective formulation of language.

understanding. Armed with this distinction, and with Massumi's insights on how these two modes operate and interact, we can re-assess and re-evaluate the elements involved in mobile experiences, and the ways in which these elements are combined: is an element tapping into the cognitive or affective register? Where elements are combined, are they intensifying or dampening each others' effect? Massumi's insights, therefore, allow us to critically assess current design methodologies for mobile experiences, interrogating practices and concepts that are currently taken for granted.

An example of this is the element of GPS and mapping technologies as they are currently used in mobile experiences. The design platform 7Scenes, which I used in my workshop with Groups A and B, and on the project *Just In Time* (Chapter 4), allows non-coders to create mobile experiences by uploading media (audio, video, images, etc.) to the online platform and 'dropping' that media content onto a particular location on the online map, much like the concept of pins on GoogleMaps. The digital map the platform uses is, in fact, GoogleMaps and, as such, is familiar to both the artists/designers using the platform and the participant. In this, 7Scenes is similar to most mobile experiences (apps, games, etc.) which have a map element, as well as a number of other digital platforms which allow non-coders to create mobile experiences[36]. GoogleMaps is so ubiquitous that it is often taken as *apriori* - thus, the design of the map element is taken for granted and goes unquestioned by both the artist/designer and the participant. If we examine the map element from the perspective of the cognitive and affective modes of understanding, however, we quickly see that GoogleMaps corresponds to the cognitive mode of understanding - it seeks to give a functional representation of the world through the use of what it presents as 'objective' digital data. By 'reading' their location on the map the participant reads their body into a structure of digital quantification and calculation, moving away from an affective awareness of their own embodied experience of the world around them.

This is further problematized by the fact that the 'objective' digital representation of the world offered by GoogleMaps (and other mapping technologies such as Apple's Maps) is, in fact, a very particular interpretation of the world.

36 See, for example, the Argon platfrom - http://argon.gatech.edu/ - and the ARIS platform - https://fielddaylab.org/

Mapping, as Martin Rieser notes, is always a subjective activity and produces subjective results. For instance, Shop Street in Galway is represented on GoogleMaps as a long lane, three times narrower than the parallel streets of Middle Street and Market Street. In reality, Shop Street is the main street of the city , a daily hive of commercial and cultural activity; however, it is pedestrianized and therefore not given equal weight on GoogleMaps to the car-friendly Middle Street and Market Street. This points up a bias towards vehicular navigation on GoogleMaps which is not highlighted by Google themselves, or noticed by most users of GoogleMaps. When a participant utilises the map element of a mobile experience, therefore, they are ceding their own subjective understanding of the world around them for a digital subjectivity, masquerading as 'objectivity'. Thus mobile experiences that incorporate mapping and GPS elements uncritically into their design run the risk of generating the experience of a data body, rather than the experience of a hybrid body, within the participant.

Examining the GPS and mapping elements through the lens of Massumi's theory, therefore, reveals an important, and often overlooked, critique of mobile experiences, and the ways in which they allow participants to understand their bodies and the world around them. It also prompts us to explore what the alternative might be - is there a way to design or utilise the mapping and GPS elements in ways that tap into the affective mode of understanding, and that help to generate the experience of a hybrid body within the participant? Martin Rieser suggests that artists who create mobile experiences should aim to achieve "more than a superficial mapping of experience" (132) by paying attention to the 'inner map' created by the experience of location, and by rooting their work in the cultural and psychological structures of space. He argues that artists should focus on the participant's *perception* of space, which is constructed "through the 'hardwiring' of the body ... and through culturally determined 'soft wiring', be it politics, gender, religion or class" (131-2). An interesting option on the 7Scenes platform is the option to upload a specifically designed map, which the participant would interact with, rather than the GoogleMaps interface. This opens up the possibility of having the participant interact with a map element that does not provide any objective representation of location, but that in some way captures a particular perception of the world. *Carolan's Last Tune*, which I examine in the next section provides an example of this design - the participant is presented with a radar screen that shows where they

are in relation to the ghosts they are hunting. The underlying mapping technology is the same, yet the interface - the radar screen - presents the participant with an unfamiliar way of moving through space and of locating themselves relative to other (digital) entities. In *Inception The App*, the designers chose to present the participant with the GoogleMap interface, but in a way that gives them the affective sensation of being watched, emphasizing the surveillance capabilities of mapping and GPS technologies (I discuss this case-study in detail in Chapter 3). These examples again demonstrate how artists/designers can critically engage with the elements of mobile experiences and re-design them in ways that allow them to engage the participant's affective mode of understanding.

As the example of the map element demonstrates, conventional cognitive design methodologies can be difficult to pull away from because the alternative is not immediately obvious: when does an image engage the participant cognitively, and when does it engage the participant affectively? When does the participant engage with their body cognitively, 'reading' it within a web of semantic and semiotic meanings, and when do they engage with their body affectively, experiencing a body-as-assemblage that interweaves with the digital to create a hybrid body? In the field of theatre and performance the question of how the internal elements of theatre can be designed in a way that evokes affective engagement has been a focus of practitioner and scholarly engagement, particularly in the later half of the 20th century and the 21st century. In this context, I re-introduce the concept of dramaturgy as design methodology, which I addressed briefly in the Introduction to this thesis. In particular, I draw on the writings of theatre scholar Hans-Thies Lehmann, and the distinction he draws between two dramaturgical models (or design methodologies) - 'dramatic' dramaturgy and 'postdramatic' dramaturgy. Lehmann's dramaturgical insights help to critique current design approaches to the individual internal elements of mobile experiences, and to identify how these internal elements might be re-designed to tap into the participant's affective mode of understanding. I illustrate this argument through a discussion of *Viking Ghost Hunt* and *Carolan's Last Tune: Galway Ghost Hunt,* two iterations of a location-based mobile game which invites the participant to become a 'paranormal investigator', hunting down ghosts in the space around them. Applying Lehmann's distinction between the 'dramatic' and the 'postdramatic' I examine the conceptual elements that shaped the designer's approach to the game - concepts such

as 'play' and 'immersion' - and the material elements of the app - augmented reality images and audio, and haptic vibration.

'Postdramatic' Theatre and the Dramaturgy of Affect

One of the key theoretical approaches I employ in Chapters 2 and 3 of this thesis is Han-Thies Lehmann's theory of 'postdramatic theatre', a panoramic theory of theatre and performance which gives primacy to affect, and which therefore seeks to identify how the elements of theatre can be designed and combined in ways that will evoke an affective response in the participant. In his seminal book *Postdramatic Theatre*[37] Lehmann distinguishes between 'postdramatic theatre' and 'dramatic theatre', creating an artificial binary that seeks to delineate between two very different approaches to theatre aesthetics[38]. For the purposes of this thesis, I chose to utilise Lehmann's argument and theory for two reasons: firstly, because Lehmann places the generation of an affective response in the audience within the broader context of the increased digitization of society, giving it a primary role in resisting the permeation of the digital into the fabric of everyday life. Secondly, Lehmann's definition of 'drama', while open to contestation, maps onto the term 'drama' as it has been adopted into human-computer interaction and computer game design. This definition of 'drama' has influenced design methodologies in these fields, which have then been unproblematically transferred into the design of mobile experiences. Thus, Lehmann's delineation between 'dramatic' and 'postdramatic' theatre is useful in that it allows me to broadly investigate, and delineate between, 'cognitive' design methodologies that are underpinned by this concept of 'drama' and 'affective' design

37 First published in English in 2006, and originally published in German in 1999.

38 In utilising Lehmann I must immediately acknowledge that his 'postdramatic' theory is open to critique on a number of fronts. Firstly, it attempts a grand theory that, as Elinor Fuchs notes "re-creates three or more generations of theatrical outliers as a movement" (179), bringing together a plethora of contemporary artists and practices under the banner of 'postdramatic'. Similarly, Lehmann divides theatre into a simple dichotomy between 'postdramatic' theatre practice (which he suggests started in and around the 1970s) and almost the entire preceding theatre practice of the Western world, which he identifies as 'dramatic' theatre. His binary distinction between 'postdramatic' and 'dramatic', therefore, while it serves to delineate two very different approaches to theatre aesthetics, is open to objection as being "clean of context, without geographical placement, chronological development, or pattern of influence" (Fuchs, 179). In other words, Lehmann's theory is open to the challenge, as grand theories tend to be, that it dangerously oversimplifies the richness and diversity of what it attempts to explain - the forms and theoretical approaches of theatre and performance, and their relationship with one another and with wider socio-cultural developments.

methodologies that move beyond this concept of 'drama'. I develop these two aspects of Lehmann's theory in more detail below.

An affective response to the 'digital lens'

Lehmann argues that the ever-increasing permeation of digital technologies into peoples' lives in twentieth century societies has led to a corresponding reliance on calculable, digital data, and to the development of an over-arching ideology that only values those aspects of life that are quantifiable. Lehmann argues that we live in an "age of rationalization, of the ideal of calculation and of the generalized rationality of the market" (186), and that, in consequence, people are losing a sense of the value of experience, which is subjective and specific, and is therefore not easily captured by the processes of digital quantification (the 'digital lens')[39]. To meet this challenge theatre and performance practitioners need to create work that counter-balances the digital lens by emphasizing more sensory, emotive forms of engagement and response in audience members. Theatre and performance practitioners and critics must, therefore, "realize the growing importance of a certain cultivation of affects, the 'training' of an emotionality that is not under the tutelage of rational preconsiderations" (Lehmann, 186). In other words, theatre design methodologies must connect audience members to their immediate experience - an experience of instinctive feeling and emotion that is separate from rational, cognitive thought. Lehmann argues that the goal of the new 'postdramatic theatre' (which he defines in opposition to 'dramatic theatre', as I examine below) is the the cultivation of "immediate affective reaction" (186) over cognitive thought as the *primary response* of the audience. In other words, affect is not merely another element that is used to further the audience's engagement with the work - it is, instead the focus and purpose of the work. Equally, Lehmann sees the production of affective response as having an ethical purpose - through their experience of their own non-rational and yet very

39 The term 'rational' has a philosophical meaning whereby it describes a conclusion that can be arrived at through theory or logic, as opposed to through the observation of experience (i.e. rational vs. empirical). It also has a mathematical meaning: that something is expressible through numbers ("rational, adj. and adv." OED Online. Oxford University Press, December 2016. Web. 15 February 2017). Lehmann's use of the terms 'rationalisation' and 'rationality' brings together these two meanings, and highlights the connection between the rise of processes of quantification and the corresponding devaluation of experiential processes, or processes that seek to capture the 'inexpressible'.

meaningful response the audience member is confronted with an alternative way to understand their own selves and their inter-relationship with others and the world around them. Theatre, he claims "does not attain its political, ethical reality by way of information, theses and messages; in short: by way of content in the traditional sense. On the contrary: it is part of its constitution to ... produce shock and disorientation, which point the spectators to their own presence ..."[40] (187) The shock that theatre affectively produces can be "enthusiasm, insight, fascination, inclination, or curious (not paralysing) incomprehension" (21) which raises the audience's awareness of their embodied, lived experience in a way that opens them up to the enfolding, disjunctive and emergent potential of the hybrid body.

Whole worlds and hybrid worlds: the 'dramatic' and 'postdramatic' binary

Lehmann defines 'dramatic' theatre as having the three principle characteristics of "[w]holeness, illusion and world representation" (22). In other words, it uses the elements of theatre (the performer's body, set, the time-frame of the performance, sound, etc.) to create an alternative and separate world that the audience member enters, mentally and imaginatively. In this formulation, 'dramatic' theatre realizes "the traditional coherent and cohesive representation or presentation of a fictional world, plot and characters" (Kaynar, 391). Lehmann's definition of 'drama' in this context can be criticized for cherry-picking and conflating characteristics from a number of diverse forms of theatre, from Aristotelian theatre to "the form assumed by 19th century melodrama and realism" (Fuchs, 95). Nevertheless, Lehmann's definition is useful in that it captures a core concept at the heart of design methodologies for human-computer interaction generally, and, more specifically, for computer gaming, as I develop in more detail below.

40 I must note here that my edit of this quote from Lehmann broadens its meaning somewhat. The original quote reads "... theatre does not attain its political, ethical reality by way of information, theses and messages; in short: by way of content in the traditional sense. On the contrary: it is part of its constitution to hurt feelings, to produce shock and disorientation, which point the spectators to their own presence precisely through 'amoral', 'asocial' and seemingly 'cynical' events" (187). In this analysis, Lehmann's interpretation of affect is one which arises from the generation of negative feelings in the audience. However, as I note in the text, he earlier suggests 'shock' can be caused in theatre "through enthusiasm, insight, fascination, inclination, or curious (not paralysing) incomprehension" (21), which is a broader definition that speaks more directly to the affective potential of mobile experiences.

Lehmann argues that 'dramatic' theatre model[41] cannot offer a response to the increasing quantification and rationalization of everyday life because it is itself inherently rational, logical and coherent. To make sense to the audience the 'dramatic' model operates according to an internal logic that uses the material elements of theatre as 'signifiers'[42] which represent something else other than what they materially are. For example, the performer's body represents a character, the set represents a place, the duration of the play represents the length of time spanned in the play. Consequently, the audience has to engage in a process of mental 'reading' by which they translate the material elements of the drama into what they are intended to represent. This cognitive process underpins the audience's engagement with 'dramatic' theatre work. Lehmann goes on to argue that because the audience is required to focus their attention on a separate, representative world they remove their awareness from their immediate, embodied experience of their own world.

In contrast, he suggests, postdramatic theatre works to engage the audience in an affective response, such that"sensuality undermines sense" (162). As Massumi suggests, this focus on the affective mode of understanding involves abandoning 'functionality' and semantic and semiotic meaning in how the elements and structures of theatre are formulated. Instead of representing something else, the elements in postdramatic theatre are significant in and of themselves as elements that the audience experiences through their senses. For example, rather than representing a character, the performer's body signifies itself - a live and unique human body, moving and breathing in the same space as the audience member. If the performer falls down the audience hears the impact of their body on the floor and sees the real effect of the fall in the performer's body; in contrast, in 'dramatic' theatre it is understood that it is the character who has fallen, and that the performer has only represented this fall, with no real physical harm to their own body. In this way,

41 Again, I must emphasize that I am utilising Lehmann's definition of 'dramatic' theatre, notwithstanding its flaws, because it allows me to interrogate a certain definition of drama that has developed outside the field of theatre, and that has had, I contend, significant influence on the development of design methodologies for mobile experiences (via computer gaming and human-computer interaction).

42 This argument draws on the field of semiotics, the study of signs systems such as language (spoken and written). In particular it draws on the post-structuralist semiotics of scholars such as Jacques Derrida and Roland Barthes. In post-structuralist semiotics the term 'signifier' is used to indicate the material form of a sign (e.g. the word 'duck' spelt out in text), while the term 'signified' is used to indicate the concept or meaning of the sign (e.g. the meaning of a duck as a species of waterfowl) (See - Chandler).

postdramatic theatre does not separate out the world of the play from the world of the audience member; instead, it deliberately evokes and engages with the audience's immediate moment-by-moment experience of the world around them, which includes, but is not limited to, the elements of the theatre production. Lehmann's distinction between the 'dramatic' and the 'postdramatic' can be usefully applied to concepts that underpin design of human-computer interaction and computer gaming, in a way that problematizes how they have been shaped and, subsequently, carried forward into the design of mobile experiences.

'Drama' and the 'State of the Technology'

The emphasis on the use of elements to create an alternative, whole and representational world that the user enters into is at the heart of common design methodologies for human-computer interaction, computer gaming, and, in a logical but by no means inevitable continuation, mobile experiences. In her seminal book *Computers as Theatre*, first published in 1991, Brenda Laurel argues that the design of human-computer interaction - how users interact with the computer through the interface of the computer screen - should be based on an understanding that computers contain representational worlds within which the user can take action. For example, a user can click on the icon of a Word document and, by doing so, tell the computer to open that document. Both the icon (an image of paper pages) and the action of clicking represent and refer to real-world equivalents - the icon represents an actual paper document, while the clicking represents the action of opening that document. As such, the interface is designed according to an inner logic that mimics a 'cause-and-effect' logic that the user already recognizes and is familiar with. Laurel's theory, which captured a major development in the design of user interfaces[43], emphasizes that in order for the user to be able to take action in the alternative world of the computer, that alternative world must 'make sense' to them as a world - in other words, it must have a "deep, robust, and logically coherent notion of structural elements and dynamics" (Laurel, 36). Laurel's theory resonates with Lehmann's definition of the 'dramatic' in her use of Aristotelian theatre as a model

43 Previous to these developments, the user interface was a screen on which the user had to type various commands.

for how to design whole, separate and alternative worlds within the computer[44]. Similarly, Janet Murry's much-referenced term 'cyberdrama' seeks to emphasize "the enactment of the story in the particular fictional space of the computer" (Murray, 2004). Murray's conflation of 'story' with 'drama' emphasizes my contention that the term 'drama' is commonly defined, outside the field of theatre, in a way that focuses on traditional concepts such as narrative, character, and plot.

Interestingly, Laurel acknowledges that at the time of writing (early 1990s) theatre is experimenting with new, alternative forms that do not follow the Aristotelian model she adopts for human-computer interaction. However, she argues that the Aristotelian model "is more appropriate to the state of the technology to which we are trying to apply it" (4). The state of the technology at the time was large clunky personal computers which sat on desks and were not moved. The relationship of the user to the computer, therefore, was one where they sat down at the computer and interacted with it by mentally entering into the alternative world of the computer and, consequently, paying little attention to their own embodied experience of the world around them. Mobile computing, however, represents a radical change in the state of the technology, as I have discussed in my Introduction. It is in almost constant connection to the user's body, and therefore has ability to interact continuously with the user's body and world, weaving a hybrid world of the digital and the physical. This capability brings into question the usefulness of applying to it a model of human-computer interaction that is based on the design of a logical and coherent world that is separate from the user's actual world. Laurel's model of human-computer interaction has become a standard reference in human-computer interaction design, in particular in the field of computer gaming. However, her qualification that this model is appropriate only because it fits the particular ways in which users interacted with computers and computing in the 1990s and early 2000s opens up the question - is this model appropriate for the new era of mobile computing, and, if not, what other model might best respond to the changing relationship of humans and computing that this new era has created? These are the

44 In his work Poetics (c.335 BCE) the Greek philosopher Aristotle provides a definition of different forms of 'drama' (tragedy, epic poetry and comedy) as well as a discussion of the elements of tragedy and the compositional 'rules' for tragedy. Laurel maps Aristotle's six elements of drama (action, character, thought, language, melody and spectacle), and the ways these should be combined to produce 'catharsis' in the spectator, onto the design of human-computer interaction.

questions that Lehmann's dichotomy of 'dramatic' and 'postdramatic' allows us to engage with, and put into context, at the dawn of the 'bio-virtual' era.

To better examine these questions I utilise Lehmann's distinction between 'dramatic theatre' and 'postdramatic' theatre to interrogate a number of concepts that underpin the current design of mobile experiences. I then go on to examine how these concepts influenced the design of two iterations of a location-based mobile game, *Viking Ghost Hunt* and *Carolan's Last Tune: Galway Ghost Hunt*. Using a close reading of these games I reveal both 'cognitive' and 'affective' approaches to the design of the internal elements of the game. However, the affective response evoked by particular internal elements of the game did not lead to the *overall* affective response highlighted by Lehmann as key to the ethical function of affect. Bringing together my analysis of both the concepts and the material elements within these games I argue that the reason the games did not aim for, or achieve, an overall affective response was the designers' adoption of 'dramatic' concepts from the design methodologies of computer gaming.

Mobile Design Concepts: distinguishing between the 'cognitive' and 'affective'

Game / Play

Brenda Laurel's articulation of a form of human-computer interaction founded on the principles of Aristotelian 'drama' both captured and influenced a trend in the development of graphic adventure video games from the early 1980s onwards. Early examples of this form of computer gaming include *Monkey Island*[45] (1990) and the *Kings Quest Trilogy*[46] (1980), while more contemporary examples include *The Last of Us*[47] (2013) and *Life Is Strange*[48] (2015). Originally played on personal computers, graphic adventure video games are now more often developed and published for console gaming (e.g. on the PlayStation or Xbox). However the form of the adventure video game is also being adopted into the design of mobile experiences. The location-based mobile game *Ingress*, developed by Niantic (2014), combines a story-driven narrative of aliens arriving on earth with formal game-play that focuses on acquiring objects, completing tasks, and co-operating with other players. Other examples of mobile experiences that draw on the adventure video game form include *Zombies, Run!*, and *The Walk.* Equally, platforms that allow non-coders to design mobile experiences are often created with this form in mind: the 7Scenes platform I used to create both the audio tours in the case-study above (DAH Workshop) and the game *Just In Time* (which I discuss in Chapter 4) offers modes of player interaction that revolve around formal game-play, such as collecting objects or answering questions, and story-telling. The adventure video game form of computer game, therefore, focuses on the creation of a fictional game world within the computer that the player can explore and carry out action in. In location-based mobile games, this concept of a fictional world is merely extended to encompass the real world of the player: for instance, the Apple Store description of *Ingress* states "The World is the Game" and goes on to describe the game-play - "Move through the real world using your iOS device and the Ingress app ... Acquire objects to aid in

45 Monkey Island is the name given to a series of five adventure video games, developed between 1990 - 2010 by LucasArts.

46 Kings Quest is the name given to a series of adventure video games developed between 1980 - 2016 by Sierra Entertainment.

47 The Last of Us is described as an "action adventure survival horror" video game, developed by Naughty Dog and published by Sony Computer Entertainment in 2013.

48 Life Is Strange is described as an "episodic graphic adventure video game", developed by Dotnold Entertainment and published by Square Enix in 2015.

your quest, deploy tech to capture territory, and ally with other players" (Niantic, Inc). If we apply Lehmann's distinction between the 'dramatic' and the 'postdramatic', we can see that these mobile experiences, carrying on from their console predecessors, are 'dramatic' in that they formulate both their concepts and material elements to create a separate, coherent, fictional world.

One of the core concepts that underpins the adventure video game form is that of 'game'. 'Game' in this context is understood most often as a formal structure of rules, player actions, and goals. However, this is by no means the only way the concept of 'game' (which closely relates to the concept of 'play') can be understood. In their overview of theories of play and games Marcus Montola et al note that with the increased focus on the design and analysis of computer games, the study and practice of games and play has become orientated towards a specific understanding of games "as rules systems" (Montola et al, 10) with proscribed, defined outcomes. In contrast, they argue that there is a subtle, yet fundamental, difference between the idea of ludus (formal play) and paidia (free play) - while the former emphasizes the role of well-defined rules in games, the latter emphasizes the role of "an almost indivisible principle, common to diversion, turbulence, free improvisation and carefree gaiety" (Caillois, qtd. in Montola et al, 9). Therefore, whereas the idea of ludus conveys the sense of play as a codified activity that results in a quantifiable outcome, the idea of paida captures a form of play (or playfulness) that is spontaneous, emergent and not goal-driven. Anthropologist Robert Caillois's model of play highlights four categories of play, the last of which, ilinx, he describes as play activities "which consist of an attempt to momentarily destroy the stability of perception and inflict a kind of voluptous panic upon an otherwise lucid mind" (qtd. in Salen and Zimmerman, 307). Caillois focuses on the purposeful creation of vertigo, which disrupts the proprioceptive sense, citing as examples a child whirling until they fall down, or dervishes whirling until they achieve a form of ecstasy. This disturbance upsets cognitive thought, and allows the audience member's awareness of their senses, and sensory knowledge to come the fore, thus generating an affective response in and through the audience member's body. In both ilinx and (syn)aesthetics this disturbance of perception, the 'voluptuous panic' and overset of cognitive thought, and the resulting primacy of the affective, visceral response are placed at the core of the experience.

Salen and Zimmerman note that while many games contain elements of ilinx, as a category of play it goes "beyond the description of games" (308). This captures a commonly held view in computer game design that affective response should be used to generate engagement within the game, but it is not the end or purpose of the game (I consider this view in more detail in '*Immersion*' below). As a result, the concept of 'game', as it has been formulated in the design of adventure video games, and incorporated into the design methodologies for mobile experiences, rejects an alternative understanding of 'game' as paidia, that might aim to 'shock' the player, creating a 'voluptuous panic' that leads to a primarily affective response.

Immersion

The creation of affect through the sensory response of the player is used in adventure video game design to generate player engagement through their 'immersion' in the game. The concept of 'immersion' used in these design methodologies derives from Virtual Reality technologies and games, and focuses on "the qualities of media that create sensory impact by surrounding the user" (Carrigy, 92). Examples of this are detailed sound design, haptic vibrations in hand-held consoles, and visual and sound design that emphasizes environmental elements such as wind, water, etc.. The sensory involvement of the player is aimed at drawing the player more fully into the fictional world of the game. In this way, the form of immersion emphasized by the design methodologies of adventure video games can be understood as what Rosemary Klich and Edward Scheer term 'cognitive immersion'. Linking their argument with Lehmann's theory, Klich and Scheer argue that a distinction can be made between this form of 'cognitive immersion' and an alternative form of 'sensory immersion'. 'Cognitive immersion' seeks to establish a fictional world in the vein of 'dramatic theatre', while 'sensory immersion', like postdramatic theatre, deliberately seeks to locate the audience in their immediate bodily experience. Thus, they note that "[c]ognitive immersion in a fictional world may also involve sensorial engagement but is inherently based on a 'suspension of disbelief', while sensory immersion does not disengage cognitive functions but describes the enhancement of the participants' perception of their immediate 'here and now'" (132).

Klich and Scheer's concept of 'sensory immersion' echoes the form of 'immersion' Josephine Machon identifies with respect to 'immersive theatre'. As I examine in the Introduction, Machon argues that while immersive theatre practices

were influenced by adventure video games, the concept of immersion utilized in the design of these games was transformed by its incorporation into live performance. As a result, 'immersion' is now more typically understood as the production of affective response through the heightened awareness of the audience member of their own body and the space around them. Discussing the use of technology in live performance, Klich and Scheer note that 'cognitive immersion' "requires the dislocation of materiality and involves immersion in an imagined space founded on patterns of ... information" while 'sensory immersion' "forges the material and virtual to create an embodied experience of pattern and presence within real space" (132). The distinction they draw between 'cognitive' and 'sensory' immersion serves to identify the way in which the concept of 'immersion' can be redefined for the design of affective mobile experiences. An affective understanding of the concept of 'immersion' emphasizes the ways in which both the material and technological elements of the experience work to draw the participant's attention to their own immediate, bodily experience, and emphasizes the primacy of the understanding that emerges when 'sensuality undermines sense'.

As my discussion of the concepts of 'play' and 'immersion' demonstrates, Lehmann's distinction between 'dramatic' dramaturgy and 'postdramatic' dramaturgy helps to reveal the contingency of concepts that are often adopted unquestioningly into the design methodologies of mobile experiences. This analysis can be combined with Brian Massumi's distinction between 'quality' and 'intensity' to interrogate the ways in which the material internal elements of mobile experiences are designed and delivered to the participant. Accordingly, I now turn to my second case study, *Viking Ghost Hunt / Carolan's Last Tune*, in order to delineate and define an affective approach to the design of these elements.

Case-Study: 'Viking Ghost Hunt' and 'Carolan's Last Tune: Galway Ghost Hunt'

In 2014 I worked as an intern with the company Haunted Planet in Dublin (Ireland) to create a location-based mobile game called *Carolan's Last Tune: Galway Ghost*

Hunt, which was designed to be played primarily in Galway City, Ireland[49]. This mobile experience, commissioned by the Galway Early Music Festival, invited the participant to take on the role of a 'paranormal investigator' and hunt down ghosts that lurked around Galway's medieval streets. The player uses several visual and audio interfaces on their smartphone, as well as headphones, to locate and interact with the ghosts (see fig. 2.1). The aim of the game was to recover the lost tune of Turlough O'Carolan, a famous 17th century Irish harper, and to restore the tune to the ghost of O'Carolan himself. *Carolan's Last Tune* was developed on Haunted Planet's purpose-built platform (itself developed as part of a research project - see below) and followed the model of previous 'ghost-hunts' developed by the company, including *Bram Stoker's Vampires* and *Pirates of Emerson - Ghost Hunt*. All these ghost-hunts can be accessed via the *Haunted Planet* app which, although made available via commercial platforms (the Apple Store and Android Play store), is free to download (see "Haunted Planet Studios").

The free access to the *Haunted Planet* app reflects the fact that it grew from a research project carried out by an inter-disciplinary team[50] from Trinity College, Dublin and the National Digital Research Centre. The research project focused on the design of a location-based mobile game entitled *Viking Ghost Hunt*, which the researchers used to investigate the design of elements such as audio and narrative, and the ways in which these elements contributed to player agency, engagement and immersion in location-based mobile games. The platform the team created as part of the research project was subsequently developed under the aegis of a 'spin-off' company, Haunted Planet. In this phase, the team focused on simplifying and optimizing the design of the app and the internal platform used to create the ghost-hunts and on introducing options such as the 'Play Random' option, which allows a player to play the game regardless of where they are (i.e. the game is not linked to the particular location it was designed around). However, as much of the scholarly discussion relates to the results of the research project, rather than to player experiences of the final app, I focus my discussion principally on the earlier project,

49 As I discuss in further detail below the app offers both a 'on-site' mode, to be played in Galway, and a 'play anywhere' mode.

50 The team included a computer scientist and game designer, a computer coder, a narrative designer, and an audio designer.

Viking Ghost Hunt, and combine this with insights from my own experience of designing *Carolan's Last Tune*.

Fig. 2.1: Screenshots from Carolan's Last Tune which illustrate the different user-interfaces of the game - i) the introductory screen, ii) the map, iii) the ghost radar, iv) the camera view with augmented-reality images, v) the case-book.

Design

Carolan's Last Tune can be played via the *Haunted Planet* app, which was developed from the research project *Viking Ghost Hunt*. The *Haunted Planet* app presents the participant with four separate interfaces. The first is a map interface, where the participant can see their own location, and the location of the 'paranormal activity' (see fig. 2.1 - the blue dot indicates the participant, while the pink shape indicates the zone in which they can locate ghosts). The second interface is the radar interface, which indicates ghostly presence in a more abstract way, as blue balls of energy on a radar screen (see fig. 2.1). Both the map interface and the radar interface use the phone's GPS sensors to track the participant's location in real-time. The sound and image files that comprise the ghosts are linked to specific GPS co-ordinates; using the GPS data from the phone the app can trigger the 'ghost' (i.e. play the sound and image) when the participant draws near.

The third interface on the app is the camera screen, which the participant uses to view the ghost 'floating' in the space in front of them (see fig. 2.1), and to take a photo of the ghost. The camera interface uses the compass sensor in the participant's smartphone to sense what direction the participant is facing and to sense when they turn in space. In this way, the participant can 'follow' the ghost as it moves in the space around them (see below). The fourth interface on the app is the notebook interface, which the participant can click into to view information on the ghost and to view the photo they have taken of the ghost (see fig. 2.1).

In addition to the visual aspects of the app, the app utilizes sound (music, sound effects and voice), delivered through headphones (see below). It also uses the vibration motor in the smartphone (which is used, for example, to make the phone vibrate when in 'silent mode') to deliver haptic vibrations to the participant as they hold the phone in their hands.

Experience

In this section I describe the participant's experience of *Carolan's Last Tune*, rather than *Viking Ghost Hunt*. This is because I did not participate in the trial of *Viking Ghost Hunt*, whereas, as designer of *Carolan's Last Tune,* I became very familiar with the user experience of this particular 'ghost hunt'.

To play *Carolan's Last Tune* in Galway City the participant first downloads the *Haunted Planet* app to their smartphone[51] and enables their GPS. They also put on headphones (ideally over-the-ear headphones, which provide a more immersive sound experience). When they open the app they see a splashscreen that offers them the choice to 'Play in Galway City' or to 'Play Random' (see fig. 2.1). When they choose 'Play in Galway City' they are brought to the map interface, which shows them their position relative to the zone of paranormal activity. The phone begins to pulse in their hand - a slow, steady beat. They tap through to the radar interface and see the green radar light sweep around like the beam of a lighthouse, and hear a high, echoing note like a sonar ping, repeated at intervals. They begin to walk further into the zone of paranormal activity, down along one of Galway's medieval streets,

51 As I note in my Introduction, one of the difficulties such apps present is that they often become obsolete and non-functional as the operating systems of phones continue to develop and be updated. Although Carolan's Last Tune is currently functional on my Android smartphone, anecdotal evidence suggests that the Apple version may not be currently functioning.

towards the River Corrib. When they check their screen again a small blue shape has appeared at the edge of the radar screen - they are getting closer to a ghost. The participant continues to walk towards the river, negotiating the other people and the traffic on the street, accompanied by the steady pulse and the sonar ping of the radar.

As they approach the ghost they begin to hear sounds that intertwine and fuse with the sounds around them. The (real-life) sounds of the river, car engines, people chattering and bicycles passing meld with the (digital) sounds of running water, seagulls, a distant voice shouting the word 'Galvia', and distant sounds of a battle. As they draw nearer to the ghost the sounds begin to layer over each other and grow stronger. When they are standing in the ghost's location the button for the camera interface begins to pulse on the phone. The participant switches over from the radar interface to the camera interface and holds the phone up, as though they were taking a photo of what is in front of them. They slowly turn, seeing their real-life location through the camera. Suddenly they catch sight of a translucent shape floating off to one side. They turn towards the ghostly shape, which drifts around, flickering against the background of the grey bridge over the river, and the cars and people passing by. The ghost is a fierce woman warrior, with blazing white eyes and a blue silk dress that seems to ripple in the wind.

Fig. 2.2: The ghost of Galvia, Celtic warrior princess, appears on the Wolfe Tone Bridge, over the River Corrib in Galway City. Photo captured by the author, through the camera interface of the Haunted Planet app.

As the participant sees the ghost they hear a clashing, ominous drone and the ghost speaks to them in a strange, eerie voice. "My armies are battling under the sea. There will be no survivors" she tells them. She goes on, "The horn of Lugh will defeat our enemy. Find me that horn, and I will give O'Carolan his music. Capture my image and you will learn more". The participant takes a photo of the ghost by tapping the photo button on the screen. They switch over to the case-book interface and read about the ghost (see fig. 2.1). They discover that she is Galvia, a Celtic princess rumored to have drowned in the River Corrib. She has asked them to search for the Horn of Lugh, a ghostly battle-horn hidden somewhere nearby. The participant sets off again, on a 'quest' to find the next paranormal manifestation - the Horn of Lugh.

Analysis

In this section I discuss the internal, material elements of *Viking Ghost Hunt / Carolan's Last Tune*, and the methodology that shaped their design. This analysis feeds into the breakdown of internal elements which I provide at the end of this chapter (see table 2), and which follows on from the discussion on the senses and mobile technologies in the Introduction. My overall intention is to reveal an alternative, affective design approach that focuses on the affective response of the participant - thereby producing in the participant the experience of their body as a 'hybrid body'. In this analysis I move between the games *Viking Ghost Hunt* and *Carolan's Last Tune*. Both games had very similar user interfaces; however, they each allow me to access a different aspect of the design. There is more information available on the designer's intentions and methodology in relation to the design of *Viking Ghost Hunt (*which shaped the design framework underlying the subsequent 'ghost-hunts'). Conversely, since I experienced and designed *Carolan's Last Tune* directly, this game gives me more information on the direct user experience of the different elements of the game. Accordingly, addressing both games in this analysis allows me to provide a fuller, and more contextualized understanding of how specific design approaches shape the design of the internal elements of mobile experiences.

Viking Ghost Hunt is described by its designers as "a location-aware game, based on a Gothic ghost story set in Viking Dublin ... In this game the player assumes the role of a paranormal investigator ... the game is designed as a single-

player, immersive gameplay experience, in which the player is an active character in an unfolding drama" (Carrigy et al, 94). From this description it is clear that the design methodology of the overall project was heavily influenced by the design methodologies of computer gaming, as developed by Brenda Laurel, Janet Murray and others. The game is designed as a 'drama' that has a clear narrative (the story), characters (the player and the ghosts), and plot (the action the player takes, and the consequences of these actions). In this way, it attempts to achieve the same goal as 'dramatic theatre' - the creation of a whole, cohesive world with an internal logic of its own. This is further evidenced by the intention of the designers to present "all of the aspects of gameplay, including the aesthetics, challenges and modes of interaction, in the context of paranormal investigation" (Carrigy et al, 95). Carrigy states that one of the primary design goals of the research project was "to give meaning to play by maintaining the aesthetics of role-play[52]" (94), suggesting that the research team equated 'meaning' with the cognitive meaning the player receives by 'reading' their own self within a system of related 'signifiers'.

A second primary goal of the research project, however, was "the intention of facilitating embodied interaction with the game as is appropriate for situated and location-based gaming" (Carrigy et al, 95). This design goal led the team to explore how various elements of the mobile experience could be formulated in a way that produced an affective response in the participant - such that 'sensuality undermines sense'. These two design goals set up a balance of cognitive and affective elements within the game that influenced the overall player response to the game, in the same way that the design of image and spoken word in Massumi's snowman film experiment influenced the children's response to each version. By examining the material elements of the game, therefore, we can begin to sketch out a distinction between how elements in mobile experiences can appeal to the cognitive register as ('dramatic') signifiers or to the affective register as ('postdramatic') elements that evoke an immediate sensory response. The elements I examine below are: body of the participant; the space/location of the game; audio; image/screen; and map/radar. As I note at the beginning of this chapter, this is not an exhaustive list of the internal elements of this particular mobile experience, or of mobile experiences more

52 The aesthetics of role-play derive from the understanding that games create a 'magic circle' or game world that is related to, but separate from, the real world. All elements of the game come from the real world but represent something else in the game world (see Montola et al).

generally. However, by examining these specific elements I hope to open up a discussion on the design of elements in mobile experiences, based on a recognition of the distinction between 'dramatic' and 'postdramatic' design methodologies, and the different participant responses they produce.

Body

As the project description above suggests, the participant's body is a key element in the experience, and is assigned a cognitive sign as a character in a role-play. Thus, *Viking Ghost Hunt*, the player plays the role of a paranormal investigator who is hunting the ghosts of fictional characters from Viking Dublin. While the design of some of the elements of the game take into account the participant's embodied experience, and therefore seek to speak directly to the participant's body through affective, sensory means, the participant themselves is not actively made aware of their body or asked to engage with their own sense of their body. Lehmann suggests that this use of the body as a 'signifier' (an approach he assigns to 'dramatic theatre') can be contrasted with the approach taken in 'postdramatic theatre', which utilises the body as "an *agent provocateur* of an experience without 'meaning', an experience aimed not at the realisation of a reality and meaning but at the experience of potentiality" (162-3). In other words, to formulate the participant's body in the affective register, it must be used as a source and location of sensory experience that the participant understands in and of itself, without reference to a 'role', 'character' or other cognitive sign of meaning.

An example of this approach is the mobile experience *Citizen X* (which I consider in detail in Chapter 5) where the attention of the participant is drawn to the feeling of their own body, and its relationship with the space around them. In *Citizen X* the participant is not assigned a role, and is instead asked to actively inhabit their own body, prompted by directions to 'Breath', 'Look', 'Listen' which deliberately evoke a sensory awareness in the participant. The body of the participant is therefore used as an 'agent provocateur' that generates an affective understanding, rather than as a 'signifier' that generates cognitive understanding by adopting a particular 'role'.

However, the use of role-play in mobile experiences does not necessarily mean the body will be read as a 'signifier' - the form of role-play utilized in the design is crucial. The model of role-play that the designers of *Viking Ghost Hunt*

adopt is one which applies a very definite signifier to the participant - they are a 'character' with a role that is distinct from their own selves. However, more recent models of role-play allow for less distinct, more porous overlap of role and participant in a way that enhances, rather than dampens, the participant's affective engagement with their own body. The mobile experience *Our Broken Voice*, by the UK/Dutch company Circumstance[53], asks the participant to re-enact the movements of a character known as Claire. However, it specifies that "we are not asking you to act ... We are going to tell you what Claire does, and we'd like you to do the same as her" (Circumstance). By asking the participant to embody Claire, while making it clear that they should not take on the character of Claire, *Our Broken Voice* utilizes the convention of role-play in a way that asks the participant to pay attention to their own bodily experience, thus formulating the participant's body in the affective register.

Space / Location

Distinguishing between 'dramatic theatre' and 'postdramatic theatre' approaches to space, Lehmann argues that in 'dramatic theatre' the space of the stage is "symbolically standing in for another fictive world", while in 'postdramatic theatre' the space of the stage is "instead highlighted as a part and *continuation* of the real theatre space" (151). To achieve this sense of continuation, Lehmann argues, a 'postdramatic' formulation of space "aims to communicate directly with the spectators' nervous system, not to inform them. The spectators do not observe but experience themselves inside of a time-space" (152). This approach is evident in the design team's use of location in *Viking Ghost Hunt.* The game was designed in response to a specific location, the grounds of St. Audeon's Church, a medieval church and parkland situated within Dublin's old Viking city. The designers note that a specific research goal was to investigate whether integrating the characteristics of locations into the game increased player engagement; as such they designed the game to move around the parkland and outside of the church, choosing sites that were particularly sensory such as "windy ramparts, high stone walls, dark archways

53 http://wearecircumstance.com/. Due to space constraints I do not consider this mobile experience in this thesis.

and damp and eerie laneways" (Carrigy et al, 95)[54]. Similarly, when designing *Carolan's Last Tune* I chose locations where the participant could pay attention to the physical features of the world around them, and which were particularly sensory - beside the rushing water of the River Corrib; down a dark medieval alleyway; beside an old graveyard. These spaces did not stand in for somewhere else, a fictional game world. Instead, they intersected with the game world, allowing the participant to experience an overlap between the two.

Viking Ghost Hunt additionally emphasized the participant's experience of the space by using narrative (spoken word) to "draw player's attention to physical features in the environment and integrate them as part of the real world" (Carrigy et al, 95). In doing so it blurred the lines between the digital and the real, giving the participant a sense of an overlap of the digital space of the experience into the real space of the experience. This sense of an overlap of space between the space of the game and that of the real world was also the focus of the audio sound-effects of the game. Paterson et all note that the goal in creating the audio element of the game was to "create an immersive experience in which the player remains engaged with their physical environment" and so the sound-effects used in the game were designed to maintain, "a balance between the ghostly atmosphere of the game and the location environment" (Paterson et al, 151). As I examine in more detail under 'Audio' below, this design approach led the designers to mix 'environmental' sound-effects that suggested sounds the participant might hear around them in the physical environment (church bells, wind, birds, people talking) with 'paranormal' and 'ambient' sound-effects that captured the game's atmosphere (footsteps, moaning, rattling chains, drones, tremolos). As Paterson et all note "[t]he mixing of environmental and game sound supports the blending of the virtual and the real world to such an extent that the player may believe some sounds to be part of the physical locations" (ibid). In this way, the design of *Viking Ghost Hunt* focused on the ways in which the participant actively experienced the space in their body, rather than on placing them in a position of observation of the space, 'reading' it within a structure of 'signifiers'.

54 Carrigy et al note that these features are "all classic motifs of the Gothic ghost story genre" (95), which suggests that, like Jekyll 2.0, the choice of a Gothic aesthetic (as noted in the project description) supported this sensory approach to the design of the element of space/location in the game.

However in the commercial development of the *Haunted Planet* app it is the player's sensory interaction with the location which is particularly lost, as the app is designed to offer a 'Play Random' option which allows the game to be overlaid over the current location of the participant. Rather than experiencing the game in a particular location, therefore, the participant can play the game anywhere. This decouples the design of the experience from the physical location, lessening the app's ability to tap into the sensory awareness of the participant. As with *Jekyll 2.0* (Chapter 1), this development underlines the ways in which commodification and commercialisation of mobile experience reduce their potential to adopt affective design practices, a challenge I address in the Conclusion.

Audio

While the body of the participant and the space of the game were material elements belonging to the physical, real world, the audio of the game belonged to the digital world. In *Viking Ghost Hunt* and *Carolan's Last Tune,* the participant experienced this audio by wearing headphones (preferably stereo headphones) which heightened the immediacy and intimacy of the audio "without completely disconnecting them [the player] from the ambient sounds of the location" (Carrigy et al, 97-8). In this way the audio emphasized the solitary, single-player aspect of the game and focused the participant's awareness on their own personal interaction with the location and its ghostly inhabitants.

The audio was designed to support both the primary goals of the research project: as such it both fed into the creation of a fictional, coherent game world, and contributed to breaking down this world, creating a porous space where the real and the digital overlapped. The game utilized three forms of audio: ghostly dialogue, background sound, and sound effects. The ghostly dialogue was used to further the 'drama' of the game - a ghost greets the player and tells them a little bit about their own story before assigning the player a task (see 'Experience' above). In this way the audio is used to inform the participant, and evokes their cognitive understanding. When the participant captures the ghost's image, as instructed, they are immediately brought to the case-book interface of the game, where they can read a more detailed version of the ghost's story (see fig 2.1). However, in *Viking Ghost Hunt* the designers note that they also used dialogue to highlight aspects of the physical location (as noted above), and to evocatively describe aspects of the location that

were changed since Viking times. In this way dialogue as 'descriptive narration' was used to evoke an experience of the physical location as it used to be, rather than giving the player information related to the 'drama' of the game. As such, coupled with appropriate sound-effects, it engaged the player affectively through their sensory experience of the location.

The background sound and sound effects in the both *Viking Ghost Hunt* and *Carolan's Last Tune* focused on "the creation of an atmospheric soundscape that represents the game space and the physical location of the given narrative" (Paterson et al, 151). This soundscape combined 'ambient sounds' such as drones, minor scales, irregular rhythms and tremolos with 'environmental' and 'paranormal' sound-effects, as described above. The ambient soundscape builds as the participant comes to a haunted location and draws nearer the ghost, creating an unsettling atmosphere that interweaves with the participant's experience of the real world. The sound, therefore, augments the participant's aural experience of reality because it speaks to their sensory, embodied experience. In this way, sound is used in a way that emphasizes sensuality over sense, producing an understanding in the participant that is not linked to cognitive signs but to affective, sensory experience.

Image / Screen

Similarly, the ghosts in *Viking Ghost Hunt* and in *Carolan's Last Tune* augment the participant's visual experience of reality because they are designed to operate in the affective rather than the cognitive register. The designers note that their aim was to create "the illusion that the ghost is actually present in the player's surroundings" (Carrigy et al, 96). The ghosts appear in the participant's screen, overlaid onto the camera-view of the phone. They are translucent and float in the air, moving to-and-fro across the camera screen[55]. However, they are not video, and, as such, there is a gap of connection between the ghostly words the participant hears (cognitive story-telling and instruction) and the ghostly figure they see, which appears to float silently in front of them, transmitting their voice directly into the participant's mind.

55 This is a function of both the design and the affordances of GPS technology: GPS technology can place an asset (an image, sound, etc.) at a particular co-ordinate, but it cannot detect altitude (ground level). Accordingly, it cannot 'attach' the asset to the ground, and so in apps that utilize location-based augmented reality the images often appear floating above the ground. In addition to utilising this floating aspect of GPS technology, the designers also created code that would move through a sequence of ghost images rapidly, much like an animation. As such, the ghost appears to flicker and move.

Fig 2.3: The ghost of O'Carolan at the Spanish Arch, Galway, in 'Carolan's Last Tune' on the Haunted Planet app. Photo by the author.

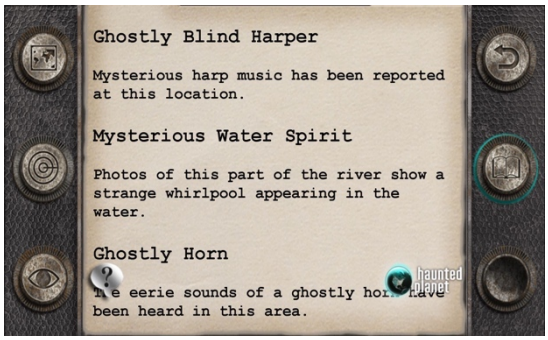

Fig. 2.4: The case-book interface in 'Carolan's Last Tune' on the Haunted Planet app. Screenshot by the author.

This gap opens up a space for the ghosts to operate affectively on the participant, which they do through their translucent yet bodily presence and through their pattern of movement. Thus the participant's visual sense interacts with the sensory aspects of the ghost - its placement in space, the texture of its clothes, its movement in space, and its translucency. As such the ghost becomes part of the environment that the participant is experiencing physically through their senses. In this way, the ghost images are a means of evoking an affective response in the player, rather than a means of conveying cognitive information about the game.

In contrast, the casebook interface (fig. 2.4) draws the participant away from their physical experience of their body and location, and focuses on conveying cognitive information to the participant. The casebook appears as an image within the screen of the phone which allows the player to read more about the background story of the ghost they have just captured. As with the other elements of the game, the design of the casebook is in keeping with the context of paranormal investigation; because it is presented within the screen of the smartphone it bears a strong resemblance to the interface of a (static) computer game. Similarly, the participant is asked to interact with this interface as they would with a computer game - by ignoring their physical, bodily experience and projecting their awareness into the screen. The difference between the type of engagement evoked by the ghost images and the engagement evoked by the casebook image is explained by Jason Withers: "[t]ypically a user looks *at* their mobile device, and the visual interface consumes their attention. By changing the device into a magic lens, we enable users to look *through* the device instead (if only figuratively). This gives what is viewed

on the device a much stronger location based connection, and enhances the immersiveness of the experience" (Withers et al, 45). The design of the casebook, therefore, is informed by cognitive computer game design methodologies that seek to create a whole, fictional world within the screen of the computer. In contrast, the design of the ghosts utilizes an affective design methodology that creates an overlap between the real and the digital game world by using the smartphone screen as a 'magic lens' that connects the digital with the participant's physical experience.

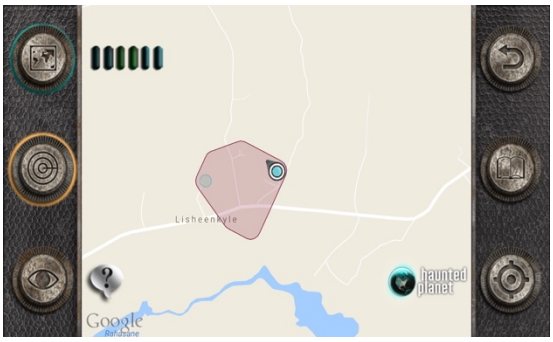

Fig. 2.5: The map interface of 'Carolan's Last Tune' on the Haunted Planet app. Screenshot by the author.

Fig. 2.6: The radar interface of 'Carolan's Last Tune' on the Haunted Planet app. Screenshot by the author.

Map / Radar

In addition to speaking to the participant's aural and visual senses, both *Viking Ghost Hunt* and *Carolan's Last Tune* speak to the participant's sense of proprioception, both cognitively and affectively. The map interface of the game (fig. 2.5) operates in a cognitive register, asking the participant to read their body into a digital structure of quantification and calculation (as I discuss above in relation to the map element of 7Scenes). However, the main navigational device of the game is the radar interface. The design of the radar interface uses a combination of visual imagery (the radar screen - see fig. 2.6), a repeating 'sonar ping' sound-effect, and haptic vibration that causes the smartphone to pulse in the player's hands in tandem with the sound-effect. While its visual design is in keeping with the role-play aspect of the game, the response the radar engenders in the participant is primarily affective. This is because it appeals to the player's sensory experience of their body moving through space, experiencing the ghosts as disturbances in the energy of the space. The visual interface of the radar screen gives the player very little cognitive information about the space they are moving through; on the contrary, by removing all cognitive

information about the space as a mapped, cartographic space the radar instead focuses the player on the experience of space as a physical element. The idea of navigating under-water, which the use of radar and sonar metaphorically evokes, reinforces the player's proprioceptive sense that they are moving through something tangible. Similarly, the ghosts are presented not as pins on a map but as nebulous swirls of energy that are disturbing this tangible element. The participant's sense that there are invisible presences in the space around them is supported by the affective soundscape of the game, which begins to play in advance of the ghost appearing visually in the camera-screen and before the ghostly dialogue begins.

In this way, the radar interface is what Mark Sample has termed 'chorographic' rather than 'cartographic'. Chorography maps the qualitative 'spirit of a place' while cartography maps the quantitative features of a place[56]. Thus, Sample suggests, mobile experiences contain the potential to reveal an "invisible landscape" (Sample, 73) to the participant, one that goes beyond what is commonly and cognitively thought of in the design of mobile experiences as 'location' (the digital indexing of specific features to specific co-ordinates). In the case of *Viking Ghost Hunt / Carolan's Last Tune*, the radar interface literally maps the spirit(s) of the place, allowing the participant to sensually experience an invisible, tangible landscape that interweaves with the physical world around them.

The distinction between the cognitive, cartographic interface of the map and the affective, chorographic interface of the radar is perhaps the most effective illustration of the fact that it is the *translation* of digital data into 'sensuality' that lies at the heart of the affective design of mobile experiences. The coding underneath the radar interface utilizes the same digital GPS sensor and mapping technology as the map interface - however, in the radar interface, this digital data is translated back to the participant in a way that taps into their sensory experience of their body and the world around them.

Conclusion

The completed table below clearly illustrates the difference between 'cognitive' design approaches that represent data back to the participant, and 'affective' design

56 Sample notes the distinction between the Greek word 'chora' which referred to 'spirit of a place' and the Greek word 'topos' which referred to the objective features or geographic location of the place (see Sample, 72).

approaches that translate this data into sensory experience (see table 2). In the case of some elements (such as the audio and radar) *Viking Ghost Hunt / Carolan's Last Tune* demonstrates very effectively the ways in which individual elements of a mobile experience can be formulated to evoke an affective response in the participant. However, the overall participant response to the game is cognitive rather than affective. This is because the design methodologies adopted by the team were strongly influenced by computer role-playing games. As such, the overall goal was to give the participant the cognitive experience of playing the role of a paranormal investigator in a story-driven 'drama'. Although the designers also had the goal of creating an experience of immersion and engagement, their understanding of these concepts (as formed through computer game design methodologies) meant that they viewed this goal as secondary to the first goal - the immersive affective response of the participant was therefore seen as a means of heightening participant engagement with the game, rather than as a primary overall response in-and-of itself.

This highlights a second challenge in the design of affective mobile experiences: it is often not enough to formulate individual elements in the affective register, they must be combined in ways that will bring about an *overall* affective response in the participant. This means looking at the design methodologies that inform how mobile experiences are structured, and revealing methods of structuring mobile experiences that bring an affective response to the fore. In Chapter 3, therefore, I turn to the affective structuring of elements in mobile experiences.

Table 1: Cognitive and affective design of the internal elements of mobile experiences

Element	**Cognitive**	**Affective**
Participant's body	Body as character or specific role - paranormal investigator; zombie survivor; history investigator	Body as player's body Overlapping / co-existing with other bodies (character / other players) Drawing player's attention to their body Deliberate generation of sensation in the player's body
Location / Space	Historical information Tourist information Socio-cultural information	Sensory aspects of location - smells, sounds, textures, etc. Experience of location
Audio media	Evokes specific 'codified' emotion / theme Appeals to aural sense as a source of signified information	Suggests mood / tone Tied in with location Tied with user's body - responds to movement, etc.
Visual media	Illustrative Appeals to vision as a source of signified information	Tied with location Tied with user's body - responds to movement, etc. Appeals to vision as a sense - movement, depth, shadow
Maps	Allows the player to navigate	No map (e.g. soundwalks)

CHAPTER 3
Interweaving Bodies

In this Chapter I continue to develop an affective dramaturgy of mobile experiences, focusing on the overall structuring of the experience, and the combination of internal elements within that structure. This is particularly important because often the structuring framework of the experience is the code or the system itself. My contention is that the structuring frameworks that are commonly used in the design of mobile experiences encourage participants to make meaning through the cognitive mode of understanding. To elicit a primarily affective response in participants mobile experiences must be structured in alternative ways that allow for the affective mode of understanding - a bodily awareness of interweaving sensations - to operate across and through the entire experience. To develop this argument I draw on the (syn)aesthetic theory of Josephine Machon, and delve further into Hans-Thies Lehmann's postdramatic theory. Using these theoretical insights I explore two case-studies, *I Seek the Nerves Under Your Skin* and *Inception - The App* to demonstrate new ways of conceiving of and designing affective mobile experiences.

My first case-study, *I Seek the Nerves Under Your Skin,* is a research project designed and run by researchers from the Mixed Reality Lab at the University of Nottingham. The experience, which uses "intense physical activity ... to alter the mental state of the participants" (Marshall, "I Seek", 477) asks the participant to run very quickly while listening on their headphones to a performance of the poem 'Babelogue' by the artist Patti Smith. The speed of the participant is linked, through the technology, with the delivery of the poem, such that the participant must continuously speed up in order to keep the poem playing. The resulting fusion of sensations, generated through the participant's physical activity and through the digital audio media, creates a single, combined experience that “plays directly on the synergy between the sweaty, exhausting experience of a brief but extreme sprint, and the feverish explosion of the poetry performance” (Marshall, "A Movement Poem", 2).

However, a challenge the research project itself faces is that it lacks an affective critical approach and vocabulary to articulate and explore just how the participant makes sense of (and through) this 'synergy' of sensations. The designers speculate that, in the design of such 'intense' experiences, they are "perhaps aiming

for" what lies "'beyond the cognitive/rational level of the standard GUI interface'" (Isbister & Höök, quoted in Marshall and Benford, 1257), but they make no attempt to articulate what this could be. Accordingly, their evaluation of the experience, and the recommendations they offer for the design of other such 'intense experiences', stops short of investigating what is ontologically different about an "intuitive, visceral, intense experience" (Marshall and Benford, 1257) like *I Seek the Nerves Under Your Skin*.

What lies beyond the 'cognitive/rational' in such mobile experiences is the affective: the complex ways in which we make meaning bodily through the interweaving of sense and sensations *across and through the whole experience*. To explore this affective mode of understanding, and how it operates in and through *I Seek the Nerves Under Your Skin,* I draw on a key critical approach to visceral experiences from the field of theatre and performance - Josephine Machon's theory of (syn)aesthetics. (Syn)aesthetics focuses on performances that are designed to elicit a "a visceral response in the audience" and looks at how these performances engage the audience in a "double-edged rendering of making-sense/*sense*-making" that roots meaning in the "fused sensory perceptual experience" of the work (Machon, *(Syn)aesthetics*, 14). Drawing on the key strategies of (syn)aesthetics - an essential hybridity, a focus on the sensory body, and a 'visceral-verbal' use of language - I show how *I Seek the Nerves Under Your Skin* disturbs and re-makes the perceptual awareness of the participant by forging unexpected connections and combinations of senses and sensations. In this way, it moves the participant beyond the 'cognitive/rational' mode of meaning-making to a space where their own body can become "the experiencing and interpreting agent of the performance" (Machon, *(Syn)aesthetics*, 22).

My analysis of *I Seek the Nerves Under Your Skin* opens out into a wider question of how mobile experiences can be structured to allow for this new 'perceptual awareness' that arises from a 'fused sensory experience'. Hans-Thies Lehmann's analysis of postdramatic theatre dramaturgy helps to push this farther by differentiating between the structuring models of 'dramatic theatre' and 'postdramatic theatre' - the former rooted in the concept of coherent 'dramatic action', the latter drawing on the concept of open, fragmentary 'states' with internal, non-linear dynamics. While the structuring model of 'dramatic theatre' can again be mapped onto the structures of many mobile experiences, the structuring framework of

'postdramatic' theatre offers an alternative way of assembling and combining elements in such a way that they bring about a 'fused sensory perception' in the participant, generating an overall affective response to the experience.

My second case-study, *Inception - The App*, demonstrates this alternative design methodology by presenting the participant with various 'dream worlds' which they experience through 'augmented reality' sound. The app, a spin-off of the Hollywood blockbuster movie *Inception,* draws on the 'dream worlds' that are experienced by characters in the movie. Each dream world consists of a soundscape that is created in real-time using re-active, generative audio software; in this way each dream world operates as an open, fragmentary state with its own internal dynamics. The meaning the participant makes in and from these 'dream worlds' is rooted in their bodily, felt experience of sensations building, combining and fusing together through rhythms of repetition, echoing, and resonance. However *Inception - The App* also points up the complex inter-connection between mobile experiences and capitalist structures - in this case the Hollywood blockbuster industry. It therefore points towards the ethical questions raised by mobile experiences and the behaviours and ideologies they may re-inscribe, a question I turn to in the following chapter.

Case Study: I Seek the Nerves Under Your Skin

Background

I Seek the Nerves Under Your Skin is a mobile experience that prompts the participant to experience performance poetry from a visceral perspective similar to that of the poet-performer. It does this by engaging the participant in energetic and exhausting movement (running at high speeds) through an outdoor location, as they attempt to listen to the performance poem 'Babelogue' by Patti Smith on their headphones (Marshall and Benford, 1256). *I Seek the Nerves Under Your Skin* was originally developed in 2008 by Joe Marshall as part of his research into interactive art and human-computer interaction at the Mixed Reality Laboratory, University of Nottingham. In 2008 the mobile experience was tested on 30 participants at the (re)Actor3 International Conference on Digital Live Art, in Liverpool, England, and in 2009 Marshall and his team ran a second iteration of the experience at an art festival held at Berkeley Art Museum, Berkley, CA, with 41 participants. As I did

not have the opportunity to experience *I Seek the Nerves Under Your Skin* directly, I draw on Marshall et al's insights into the participants' responses to the experience[57], which they collected using a combination of observational data from the (re)Actor conference event, and log data[58] and qualitative interviews with participants of the Berkley Art Museum event. Equally, I draw on the researchers' own design goals, and on their description of the experience itself[59]. I combine this with my own analysis of Smith's recording of 'Babelogue', which is available online[60].

Design

In *I Seek the Nerves Under Your Skin* the participant is given a fluorescent jacket and a pair of headphones. The headphones are attached to a smartphone in the pocket of the jacket which detects and tracks their movement via the accelerometer on the phone. The delivery of the poem is linked to the motion of the participant as tracked through the technology: "[a]s soon as he or she starts to walk, the poem begins playing through the headphones. If the listener continues slowly, after a moment the poem fades out, then restarts. If the listener goes faster, the poem runs for longer before fading. To hear the whole poem the listener must accelerate to a sprint by the end of the poem at 90 seconds" (Marshall et al, 401). The software that underpins the experience continuously compares the participant's measured motion to a threshold value, which rises throughout the poem. Thus the threshold value at the start of the poem is set at a slow walking pace, while the threshold value at the end of the poem is set at a fast sprint. To start the poem the participant only has to begin at a walking pace, but in order to continue listening to the poem they have to

57 In this case-study I draw on three conference papers - one authored by Marshall alone, a second authored by Marshall and Steve Benford (Professor of Collaborative Computing in the Mixed-Reality Laboratory, University of Nottingham), and a third authored by Marshall, Benford, and Alan Chamberlain (Senior Research Fellow at the Mixed-Reality Laboratory, University of Nottingham). As such, while Joe Marshall was the lead researcher and designer on the project, the number of people working on the project (or the significance of their roles) grew over the course of its development. For ease of reading, however, I refer to 'Marshall et al' throughout this case-study to capture both Marshall's lead role and his subsequent collaboration with one or more colleagues.

58 The log data is the quantitative data collected by the smartphone during the experience: the researchers logged both the speed of the participants throughout the experience, and data describing how far through the poem they were (Marshall and Benford, 1257).

59 As I discuss in the Introduction, I chose not to conduct interviews with the designer teams of projects at this point in the research; however, this would be a fruitful direction to take this research, supplemented by (if possible) a personal experience of the piece.

60 "Babelogue". Easter. Arista Records, 1978. Available at: https://open.spotify.com/track/7g7O1LdjH4Zx57m7uPmbCq

gradually increase their speed until they are finally sprinting quickly. As the trials in Liverpool and Berkeley indicate, *I Seek the Nerves Under Your Skin* is not designed for a particular location - instead, Marshall et al emphasize that it is designed, more generally, to be experienced as motion through an outdoor, public location in order that "the unique environment in which the poem is experienced, and which the listener moves through during the poem, becomes itself a part of the work" (Marshall, "A Movement Poem", 1).

Experience

When the participant puts on the jacket and headphones and begins to move they hear the voice of Patti Smith as she begins to perform her spoken-word poem 'Babelogue'. Marshall et al describe 'Babelogue' as "a piece of shouted performance poetry" (Marshall et al, 401) that Smith delivers in "a full on, spitting, swearing manner" (Marshall and Benford, 1256). The poem itself seeks to convey an experience (Smith's own experience of performance), as opposed to tell a story; as such, the language and syntax of the poem resist clear, cognitive interpretation and instead evoke a visceral response with images such as "piss and seed" and "the mole on the belly" (I delve into the viscerality of the language of the poem the next section). As the poem continues Smith becomes "increasingly agitated, shouts louder and louder in the headphones, an audience to the poem starts a rhythmic clapping in the background and cheering, and everything gets a lot more intense" (Marshall and Benford, 1256). Many participants reported that the need to focus on running, and the strong physical sensations the running evoked, quickly moved them away from engaging with the poem in a cognitive way. For instance, one participant remarked that "'I don't feel like I really heard a narrative, I heard a mood, there's an energy'", while another noted that "'[I] checked out of what it was really saying and focused more on my experience of the movement.'" (Marshall et al, 403). These comments suggest that, once they began running more rapidly, participants stopped trying to follow the semantic meaning of the poem. Instead, the visceral delivery of the words, the images the words evoked, and the background sounds of clapping and cheering[61] became more effective as elements of the experience.

61 Marshall et al recount how one participant felt that the clapping was speeding up on the track in response to them running faster (see Marshall and Benford, 1260)

The rapid increase in the pace and noise level of the audio track is coupled with the participant's increase in speed and exertion. As the participant's physical effort increases they become more aware of the operation of their own body, and they begin to actively sense their breath, their heart-beat, the feeling and sound of their steps, and the pumping of their muscles. Marshall et al note that "when doing hard exercise with your ears covered by headphones, you can hear your heart beating as blood is pumped faster around the body, which also becomes mixed in with the poetry to create an intense mix of replayed and live audio" (Marshall and Benford, 3). This fusion of the digital and the live sensory elements of the work is also evident in the synergy many participants felt between the vibrations generated in their body through running, and the aural vibrations of the digital track - Marshall et al note how, "with the large headphones insulating people from other outside noise, the sound of their feet hitting the ground comes through their body and can be heard, mixing it with the rhythmic clapping in the background of the poetry performance" (Marshall and Benford, 3). They conclude that the fusion between the experience of the poem and the running is "enhanced by the way in which the beat of the person's feet as they run mixes in with the poem, making a combined audio soundtrack" (Marshall and Benford). Thus, the experience fused the aural sensations evoked by the digital audio track with the aural, interoceptive and proprioceptive sensations evoked by the physical activity of intense running, creating a single, combined experience that “plays directly on the synergy between the sweaty, exhausting experience of a brief but extreme sprint, and the feverish explosion of the poetry performance” (Marshall, "A Movement Poem", 2).

The sensations evoked in the participant by both the digital audio track and the physical experience of their own body in motion were further combined with the sensations evoked through their interaction with the environment. Marshall et al point to the way in which the layout of the terrain elicited a particular proprioceptive sensory response in a participant in Berkeley, who commented that “There were a lot of areas that were roped off, and it’s like you’re running through a place . . . dodging chairs and people and stuff like that . . . that actually added to the overall sensation” (Marshall et al, 402). In addition, other environmental elements such as visibility, temperature and weather also become potential elements in the experience: Marshall et al describe how "[i]n Liverpool, listeners ran on the streets in a dilapidated ex-industrial area of the city, on a dark, rainy autumn night" (402). While they do not

elaborate on this point, it is clear that this particular version of the experience must also have evoked a number of sensations in the participants; the visual sensation of not being able to see clearly, the haptic sensation of the rain on their skin, the aural and haptic sensations of their feet splashing on wet pavements, and even the olfactory sensations generated by autumn city air that is heavy with moisture and trapped smells.

While participants' response was primarily shaped by their embodied, sensory experience, it was also influenced by their 'inscribed' experience of running in a public place, being observed by non-participants. At times, participants became cognitively conscious of the social norms they were traversing by running fast in a public space. Marshall et al note that "[s]ome listeners found this embarrassing at Berkeley, where there was a crowd and limited space" (Marshall et al, 403) causing the participant to have to run repeatedly back and forth in the same area to complete the experience. Similarly, some participants were cognitively aware that their fluorescent jackets and seemingly-purposeless running were being observed by other people, making them feel "a little bit weird" and "a bit silly" (Marshall abd Benford, 1259). Returning for a moment to Jason Farman's concept of the 'sensory-enscribed' body in mobile experiences (Introduction), Marshall and Benford's insight points up the value of combining both cognitive and affective analyses of mobile experiences, to account more fully for both the 'embodied' and the 'inscribed' aspects of the experience.

Overall, Marshall et al report that participants found the experience enjoyable, while also being "very intense" and "quite stressful" (Marshall and Benford, 1257), an unusual correlation of terms that brings to mind the affective 'pleasure/unhappy' correlation in Massumi's snowman experiment. Indeed, although Marshall et al do not identify it as such, I argue that *I Seek the Nerves Under Your Skin* operates as an affective mobile experience that evokes the participant's awareness of their own body as a hybrid body, interweaving their own bodily sense of themselves with their bodily sense of the poet-performer, and of the sensory environment through which they move.

Affective analysis: beyond the 'cognitive/rational' ...

The designers speculate that, in the design of such 'intense' experiences, they are "perhaps aiming for" what lies "'beyond the cognitive/rational level of the standard

GUI interface'" (Isbister & Höök, quoted in Marshall & Benford, 1257). However, they use a cognitive critical approach and vocabulary to explore the participant's experience of *I Seek the Nerves Under Your Skin.* As such, while the project analysis and recommendations offer very valuable insights into the design of 'intense' mobile experiences, they stop short of interrogating just how the experience moves beyond the 'cognitive/rational', and what, consequently, is ontologically different about an 'intuitive, visceral, intense experience' like *I Seek the Nerves Under Your Skin*. Following a cognitive critical approach, the designers note that at a certain point in the experience "the attention required in order to go faster is too much to allow consciously listening to the poem" (Marshall et al, 403) and suggest that the intensity of the experience arises in large part from this "tension between running and listening" (Marshall et al, 403). In this analysis the intensity emerges from a struggle between the two activities - "detailed listening" and "the experience of running" (Marshall and Benford, 1260), where 'detailed' or 'conscious' listening implies a cognitive, semantic engagement with the poem, while the 'experience of running' implies a visceral, sensory engagement with the body and environment. In this analysis, the primary importance of the poem lies in the cognitive meaning it generates for the participant. Accordingly, once the physical sensations of running 'take over', and the participant stops listening (or struggles to listen), the poem loses much of its importance - it becomes a 'background' to the experience, rather than an integral part of the experience. However, this cognitive critical approach leaves a number of gaps in the analysis of the experience, prompting a number of questions, such as: did the participants stop hearing the words of the poem, or just stop consciously trying to 'make meaning' from the poem? in what way(s) did they feel connected to, or distant from the voice and body of the poet-performer? and in what ways did the visceral nature of the words, images and delivery impact on their physical experience?

An alternative conclusion - and one which opens up the possibilities of the project still further - is that the experience of *I Seek the Nerves Under Your Skin* produces a disruption in the attention of the participant and also *shifts their mode of attention* from the cognitive to the affective. In this analysis the participant is not struggling to 'consciously listen' (i.e. make cognitive sense of the poem) - instead, they are *affectively hearing* the poem, and making *sense* of it through their body. Moving beyond the cognitive/rational to the affective in our analysis, therefore, can

illuminate the ways in which *I Seek the Nerves Under Your Skin* produces a different form of 'knowing' in the participant, in which their body becomes the "the experiencing and interpreting agent of the performance" (Machon, *(Syn)aesthetics*, 22). To explore this further I turn to Josephine Machon's theory of (syn)aesthetics, from the field of theatre and performance. My intention here is to show how *I Seek the Nerves Under Your Skin* activates the 'thinking body' of the participant through its design, by fusing together the real and imagined sensations that arise from the participant's physical activity, the 'virtual' presence of the performer, and the environment through which the participant runs. It therefore changes the 'quality of perception' of the participant, from an hierarchical and separate ordering of the senses, to an holistic, non-linear fusion of senses and sensory knowledge. Key to the working of this new 'quality of perception' is that the senses and sensations fuse, interact, and interweave across and within the experience itself, and beyond the experience in any subsequent processes of reflection and interpretation. Machon's theory, therefore, advances our understanding of how the affective mode of understanding functions across and through *the entirety* of a mobile experience to produce a fundamental affective response in the participant.

At this point, it is important to note that *I Seek the Nerves Under Your Skin* provoked a number of different responses in participants. Marshall et al deliberately did not tell participants what the piece was about or how it worked, and they note that "[t]his meant that people treated it very differently, with some seeing it as a game or challenge to be completed, others seeing it as a work of art to be explored, and a few seeing it more as a potential training tool" (Marshall and Benford, 1257). My interest, therefore, is in offering an understanding of how some participants may have experienced it, and perhaps revealing how a cognitive critical vocabulary limits the project's ability to reveal and investigate this form of experience. This is not to say that affective analysis is 'better' or should replace the cognitive analysis - rather, that it can add another dimension to understanding the potential of such intense, visceral experiences.

(Syn)aesthetics: fused perceptual experience

Machon's theory of (syn)aesthetics addresses "a performance style ... which exploits diverse artistic languages to establish an 'experiential' audience event via the recreation of visceral experience" (*(Syn)aesthetics*, 14). Characteristic of this

performance style is its focus on the visceral (affective) response of the audience as the fundamental, primary response to the experience; as such it "allows the explicit recreation of sensation through visual, physical, verbal, aural, tactile, haptic and olfactory means" - not just "the mere description of a sensual experience but *sensation itself* being transmitted to the audience (ibid., 14 - original emphasis). In this way (syn)aesthetics speaks both to the intention of affective mobile experiences to elicit a primarily affective response in the participant, and to their use of visceral sensation, generated within and through the body of the participant, to achieve this response.

The affective response that such 'visceral experiences' evoke in an audience member is of a different order to a cognitive response because it engages a 'quality of perception' that "prioritize[s] the body as the primary focus of interpretation and give[s] credence to the significance of *all* the senses in human perception" (ibid., 34 - original emphasis). To develop this argument, Machon draws on certain key ideas from scientific research on the condition of synaesthesia - a "neurological condition where a fusing of sensations occurs when one sense is stimulated which automatically and simultaneously causes a stimulation in another of the senses" (ibid., 13). For instance, syntaesthetes will often experience words as colors, or experience tastes as tangible shapes. In synaesthesia, therefore, a person is open to a multi-sensory, holistic, and non-hierarchical perception that goes beyond the ways in which we commonly interact with our senses. Referencing neurocognitive research, Machon suggests that "the majority of humans ... learn to separate sensual experience ... in order to simplify experience" (ibid., 15). However, this separation of the senses, which underpins the perceptive engagement of most adults, is reductive and artificial because it negates the inter-connection and inter-operation of sensation. To illustrate this, Machon points out that separating taste and smell is commonly understood as a 'reductive experience': nevertheless, she argues, "we rarely acknowledge or celebrate the potential of fused sensual experience in other areas of interpretation" (ibid., 15). (Syn)aesthetic performance directly engages and explores the potential of fused sensual experience. In this way, Machon argues that "the experience of (syn)aesthetic works results in ... artistically induced synaesthesia" and can "take individual members to a point where they (re)activate their synaesthetic potential" (ibid., 19).

The significance of synaesthetic, multi-sensory perception is that it is a powerful, alternative mode of 'knowing' that shifts the synaesthete from cognition to an 'altered' state of mind. In this state, a person experiences sensations involuntarily (i.e. they cannot suppress or ignore them), and in an 'additive' way, "where the combination of senses creates a more complex experience for the perceiver" (ibid., 17). The person therefore experiences an 'extended reference' that allows them to "perceive the details corporeally", giving equal weight to all the senses (ibid., 17). For instance, instead of just focusing on the semantic 'meaning' of a word, a person will also understand that word as a color, a sound, a shape. Crucially, any of these visceral interpretations will carry as much weight, and make as much *sense* to the person as the cognitive 'sense' of the word. The person's 'extended reference' also blurs the boundaries between what is real and what is imaginary - the color of a word can feel as real and as tangible as the meaning it 'signifies'. In this way, "within a synaesthetic reaction a somatic, imagistic response can dominate the semantic" (ibid., 18). This 'extended reference' of real and imagined sensation, experienced in an 'additive' and 'involuntary' way, is often recognized as an unusual state by the person themselves, with the result that "synaesthetic experiences can be both distracting and difficult to cope with and can also cause ecstasy and be viewed as an achievement" (ibid., 17). As such, both the experience itself, and the person's awareness of this experience, produces an 'ineffable response' - a form of knowing that, while it may be translated (reductively) into words, retains its primary meaning in, and through, the body.

(Syn)aesthetic performance works to (re)activate the synaesthetic potential of the individual audience member in order to produce this 'ineffable response' both in the moment and also in any subsequent recollection of the experience. "Put simply," Machon states, "we *feel* the performance in the moment and recall those feelings in any subsequent interpretation" (ibid., 55). This involvement of sense and sensation in the audience member's recollection, and reflective analysis, of the experience is also key to the ways in which the participant in an affective mobile experience palpably *feels* and viscerally engages with the ideas and themes of the experience, even after the experience is over. I therefore return to this aspect of (syn)aesthetic performance in Chapter 5, to consider how a participant's 'hybrid body' can become an 'haunted body', allowing them to feel, understand and communicate invisible lived realities and subjectivities different from their own. In this chapter, I focus on the

ways in which (syn)aesthetic performance (re)activates the synaesthetic potential of the audience member during the performance through three key strategies - an essential hybridity, a 'visceral-verbal' use of language, and a focus on the sensory body.

Intense experiences and altered mental states

Discussing his project's design goal, Marshall states that: "*I Seek the Nerves Under Your Skin* uses intense physical activity as an integral part of an artistic experience ... Exercise is used not to attain some social good, but to alter the mental state of the participants" ("I Seek the Nerves Under Your Skin", 477). He argues that *I Seek the Nerves Under Your Skin* is different from other games that utilise high levels of physical activity, in that the goal of these games has often been to prompt people to take up exercise, or to exercise more. This is the case with mobile experiences such as *Zombies, Run!*, billed as "the world's most popular smartphone fitness game", *The Walk*, "a techno-thriller story that helps people walk 10,000 steps every day", and *Superhero Workout*, "a radical motion-tracking workout game", all created by the company Six to Start[62]. The primary focus of these games, as indicated by their tag-lines, is to motivate participants to engage in exercise (particularly exercise they wouldn't normally do) by engaging them in a cognitive game/story[63]. In contrast, Marshall's goal to 'alter the mental state' of the participant speaks to his interest in changing the participant's perception and mode of understanding.

The alteration in the mental state of the participant that Marshall et al seek, I argue, is a shift from the cognitive mode of understanding to the affective mode of understanding. As such, Marshall et al state that their intention with *I Seek the Nerves Under Your Skin* is to "create an intuitive, visceral, intense experience" (Marshall and Benford, 1257). They define an 'intense' experience as "a notable or unusual experience which provokes a strong reaction in the participant" (Marshall and Benford, 1255), and suggest that these forms of experience move the participant beyond the 'cognitive/rational' interface of digital technologies (Marshall and Benford, 1257). Their use of the word 'intense' in this context aligns it with

62 http://www.sixtostart.com/

63 That physical health is the primary goal of these games, rather than artistic, affective engagement is indicated by the fact that 'The Walk' was funded by the United Kingdom Department of Health for the NHS (National Health Service). See http://www.thewalkgame.com/presskit/presskit.html

Massumi's concept of 'intensity' and the production of affective response by focusing the participant's awareness on sensation rather than cognitive thought processes. Similarly, their goal of creating an experience that is primarily 'visceral' and 'intuitive' chimes with the (syn)aesthetic goal of opening the participant up to the "'force of intuitive knowledge'" (Cytowic, quoted in Machon, *(Syn)aesthetics*, 17) through visceral experience. Thus, Marshall's goal of 'altering the mental state' of the participant clearly echoes the (syn)aesthetic goal of 'activating' an alternative 'quality of perception' that is rooted in the "'fused' experience of the human body" (Machon, *(Syn)aesthetics*, 14).

Hybrid practices

I Seek the Nerves Under Your Skin brings together technological practices of programming and interaction design, physical exercise practices of running, literature practices of using words to convey states of being or experience, and performance practices of voicing and embodying those words in live interaction with an audience. In this way, it can be understood as what Machon identifies as a '(syn)aesthetic hybrid' - a "special manipulation" of the Wagnerian concept of *gesamtkunstwerk*, or 'total art work' (2011, 4), in which diverse aesthetic elements are combined in ways that produce a "defamiliarized mix of the aural, visual, olfactory, oral, haptic and tactile within performance" (2011, 55). As such, a (syn)aesthetic hybrids brings together diverse aesthetic practices with the goal of generating "a visceral quality within the processes of production and appreciation" (2011, 55). In *I Seek the Nerves Under Your Skin* elements from each of the practices above are used in ways that speak to a wide range of the participant's senses, eliciting (among others) interoceptive sensations of breath, blood/heartbeat, proprioceptive sensations of balance, muscle-movement, movement through space, and exteroceptive sensations of sweat, sound, and bodily presence.

The sensations are mixed in a way that is 'defamiliarized' - in other words, the common order and separation of the senses is disrupted. As Marshall et al note, "running impinges on the audio" (Marshal and Benford, 1260) such that the participant hears the sound of their feet hitting the ground fused with the rhythmic clapping in the background of the poetry performance, which also fuses with the sound of their heart beating and blood rushing and with the voice of the performer herself, creating "an intense mix of replayed and live audio" (Marshall and Benford,

1260). The directly link between pace and audio generation creates an unfamiliar synaesthetic fusing of senses: Marshall et al note that this changed some participants' perception of their body's connection to the sounds of the audio track, enjoying the fact that they could control the emergence of the audio by slowing down or speeding up, and even feeling (wrongly) that they had the ability to speed up the beat of the clapping by running faster. As the code in *I Seek the Nerves Under Your Skin* only controls the overall audio track, rather than individual aural elements within the track (the voice, clapping, etc.), the participant's feeling that the clapping was responding to their increased pace was illusionary. Thus, *I Seek the Nerves Under Your Skin* evokes the imaginative capacities of the participant, fusing this with the experience of 'real' sensations.

This mix of sensations is 'additive', in that the sensations, fused together, create a 'multisensory' perception that moves the participant beyond their familiar mode of perception. This offers an alternative way of interpreting Marshall et al's recommended design 'tactics' of 'overloading attention', 'exploiting partial attention', and 'creating transitions in attention': rather than 'tension' emerging from shifts in the participant's concentration and ability to cognitively focus on one activity or the other, the tension emerges from the disruption and re-making of the participant's mode of perception *across both activities and their overall experience*. In this way, Marshall et al note that some participants felt that the shift away from 'consciously listening' to the poem "added to the experience, with the poem being heard as more of a 'mood' underlying the experience" (Marshall and Benford, 1262).

This synaesthetic experience is made more complex by the designer's decision to make the experience difficult to complete. Marshall et al note that, during the events in Liverpool and Berkley, the difficulty level meant that most participants attempted the experience a number of times (some without ever hearing the end of the poem). In this way most participants experienced the poem begin when they began walking and then fade out when they did not increase speed, then begin again once they started walking again, continue as they increased speed, and fade out again at a different point in the poem when they did not succeed in matching their speed with the threshold speed. Thus, the participant's experience in *I Seek the Nerves Under Your Skin* is one of multiple beginnings, slow fades out and in, and diverse bursts of effort and pace. This aspect of the piece speaks to the "ambiguous and multidimensional nature of a (syn)aesthetic hybrid" (Machon, *(Syn)aesthetics*, 61),

whereby the participant is "encouraged to experience the various layers of 'meaning' in the work by becoming part of the ludic play at the heart of the form itself" (ibid., 61). The play in *I Seek the Nerves Under Your Skin* is, more specifically, a form of 'ilinix' (as identified by Robert Callois - see Chapter 2) focused on 'destroying the stability of perception' and 'inflicting voluptuous panic on an otherwise lucid mind'. In this way, the hybrid composition of *I Seek the Nerves Under Your Skin* engages the participant in "the process of becoming aware of the fusion of the senses within interpretation" (Machon, *(Syn)aesthetics*, 20), engendering the "element of disturbance and (re)cognition ... which can be unsettling, alarming even and/or exhilarating and liberating" (ibid., 21).

Visceral words and virtual bodies

The particular use of language and spoken voice in the audio track 'Babelogue' elicits a fused experience of sensations that invokes a new 'quality of perception' in the participant. As I note above, this suggests that in measuring the participant's engagement with the poem in terms of 'conscious listening' (i.e. finding a semantic meaning in the poem) Marshall et al do not investigate the extent to which the language of the poem contributes to the 'altered' state of mind of the participant. While Marshall et al, therefore, suggest that the participant's experience emerges from a struggle *between* the 'experience of running' and 'conscious listening', a (syn)aesthetic analysis suggests that the participant's experience, instead, emerges from a *fusion* of the 'experience of running' *with an 'experience of listening*'. Machon argues that, although strongly linked to cognitive processes of meaning-making, language and text can be "an embodied event and a sensual act" that has "both the ability to stir innermost, inexpressible human emotion and to disturb those viscera which cause aural, visual, olfactory and haptic perception" (*(Syn)aesthetics*, 69). This 'visceral-verbal' form of language works through various mechanisms, such as painting strong sensory images, foregrounding the physical sound of words through rhythm and onomatopoeia, and disrupting language by ignoring grammatical conventions. In this way, "[w]ords themselves, via their sound and form and their disturbed 'meaning' have the potential to transmit emotive and sensate experience, etching themselves onto the perceptive faculties of the holistic body" (ibid., 75).

The purpose of writing in a visceral-verbal way is, Machon contends, to explore the possibilities for "saying the unsayable" (ibid., 69) by returning to the

'primordial' root of language in the somatic rather than the semantic - rooted in the felt experience of speech as sensation rather than as signification. In this way, "([s]yn)aesthetic writing crystallizes and concentrates the intensity of personal, lived experience and themes, revealing the intangible (political ideas, psychological states, taboo concepts) through tangible speech and imagery" (ibid., 70). Machon's concept of 'visceral-verbal' language opens up insights into how the participants of *I Seek the Nerves Under Your Skin* experience the poem "first with their bodies, with a primordial sentience, and embodied knowledge" (2011, 72). Smith's writing disrupts the process of semantic meaning-making, offering an experiential rather than a narrative account of her own personal experience of performance and being an artist. The 'intangible' in *I Seek the Nerves Under Your Skin* is Smith's own sense of transgressively using her body and words in performance to communicate the physical urgency of staking out and asserting one's own sense of self.

In the short, twenty-nine line poem Smith moves from her memories of "the amount of piss and seed I could exude / Over the columns that nestled the PA", to a state where "I am lying peacefully and my knees are open to the sun / I desire him and he is absolutely ready to seize me", to a declaration that "We worship the flaw, the belly, the belly / The mole on the belly of an exquisite whore", to the final defiant line "I have not sold my soul to God"[64]. The 'corporeal' quality of Smith's writing is evident in these lines: strong sensual images of exuding piss and seed, of lying knees open to the sun, and of a mole on a belly; imaginative leaps from one state of being to another; the repetition of words to accent their sound and 'feeling'; and the disruption of semantic meaning through the combination of disparate words such as 'exquisite' and 'whore'. As such, the language of the poem establishes its meaning less through verbal signification and more through a visceral communication with the body of the participant. In *I Seek the Nerves Under Your Skin* the words themselves - their sound, form, and disruption of 'meaning' - transmit an 'unsayable', visceral sense of struggling with, and pushing beyond, social binaries and taboos (from the exuding of bodily fluids, to the rejection of guilt and God) to assert a sense of self.

64 As I Seek The Nerves Under Your Skin utilizes the audio track of 'Babelogue' (rather than the poem published in print) I refer to the words spoken by Smith on the audio track.

This visceral form of communication is enhanced in *I Seek the Nerves Under Your Skin* by the aural quality of Smith's voice and her delivery of language. Drawing on Roland Barthes' concept of 'writing aloud', Machon suggests that in spoken language "the experience of the words is carried by the 'grain of the voice', the 'erotic mixture of timbre and language'" (Barthes qtd. in Machon, *(Syn)aesthetics*, 79). The experience of words carries within it not only the sensations the words themselves evoke in the body of the participant but also the sensations evoked by the movement between words - breaths, laughs, the stuttering start of a word - all visceral manifestations of the physicality of the performer herself. In this way, "body and word find a curious relationship, where the intertwined corporeality of the human body and visceral-verbal language 'speak the corporeal'" (ibid., 78).

In *I Seek the Nerves Under Your Skin* the participant experiences the words of the poem via the raw sound of Smith's voice, which is viscerally expressive of her physical state. Smith begins the poem half-shouting. Her breath and saliva are audible in her delivery of the words, and the performance is punctuated by moments where she stops to draw breath raspingly or breaths out in short laughs. As the poem continues, the volume and pace of her voice rise to match the increasingly loud and fast clapping and whistling. Her delivery of the poem becomes disturbed: she draws out the sound of a long, sibilent 's', repeats the word 'in' four times like a stuck record, rushes forward and back between images. Her breathlessness and the light pitch of her voice conjure a sense of moving too fast too stop, or falling head over heels. Towards the end of the poem her voice becomes more steady and she settles into a strong, forceful rhythm of speech where the individual words again become audible - the stridency of her delivery echoed in the semantic sense of the final, declamatory line, "I have not sold myself to God". In this way, the participant experiences the language of the poem through their body as visceral sensations, fusing with the physical, visceral sensations the participant themselves are experiencing as they run faster and faster, trying literally to produce Smith's words through their body.

This brings the participant's body into communication with the performer's body, both of which are (syn)aesthetically formed through the experience - i.e. they are accessing a synaesthetic perception that allows them to understand and communicate through an 'extended reference' of sensory knowing. Machon states that "the (syn)aesthetic body in performance 'tells' an individual's experience of his

or her own body which in turn allows the perceiving body of the audience member to (re)cognize, in an experiential manner ..., both the other individual body and his or her own individual body" (ibid., 65). In *I Seek the Nerves Under Your Skin* the physicality and viscerality of Smith's voice 'tells' her experience of her body, allowing the participant to both 'see' her as a body and, at the same time, to re-cognize themselves as a physical, visceral body.

The body-to-body communication in *I Seek the Nerves Under Your Skin* points up the way in which "the technologically (im)mediate body, rather than reducing sensual perception, can serve to extend embodied experience, render it unusual as it 'alter[s] and recreates our experience of the world'" (Machon, quoting Broadhurst, 2011, 66). The performer is virtual and is only experienced by the participant via a single sense - the aural sense. However, rather than reducing the participant's sense of the performer's bodily presence this technologically (im)mediate form of delivery serves to bring the performer's body closer and actually into the body of the participant, rendering their embodied experience 'unusual' and disturbing.

Designing states of mind/body

A (syn)aesthetic analysis of *I Seek the Nerves Under Your Skin* demonstrates how the participant's experience is formed though their "'thinking body' - a sensory intellect which exists within the body and follows its own rules of logic that are both separate from *and often intrinsic to* cerebral intellect" (Machon, *Immersive Theatres*, 106 - original emphasis). The 'rule of logic' that the 'thinking body' follows is affective; it makes meaning by disrupting and fusing sensations across and within the experience, generating an holistic, multisensory 'quality of perception' that allows the participant to viscerally understand 'intangible' and 'unsayable' ideas, themes, and states of being. The design of *I Seek the Nerves Under Your Skin* is unusual in mobile experiences, in that it follows and facilitates this affective 'rule of logic', creating an overall structure that evokes the disruption and fusing of sensations across and through the entire experience. It does this by designing for an open, fragmentary, 'never-quite-finished' experience that explores "the careful coordination of states of mind created by art and states of mind created by exercise" (Marshall, "I Seek the Nerves Under Your Skin", 477).

In this way, Marshall's focus on the 'co-ordination' of states of mind speaks to Hans-Thies Lehmann's claim that the design of postdramatic theatre focuses on the creation and co-ordination of 'states'. Accordingly, I turn to Lehmann's analysis of the different structuring models of 'dramatic theatre' and 'postdramatic theatre' - the former rooted in the concept of coherent 'dramatic action', the latter drawing on the concept of open, fragmentary 'states' with internal 'scenic dynamics'. My intention here is to offer an alternative structuring model for mobile experiences that focuses on their potential to bring about a 'fused sensory perception', evoking an overall affective response in the participant. I then go on to explore the potential of this alternative design methodology in my second case-study, *Inception - The App.*

Dramatic action / Dynamic 'states'

In their account of *I Seek the Nerves Under Your Skin* Marshall et al describe how they sought to "avoid the work being interpreted a game, with a conclusion, or a way of being able to win the experience" (Marshall, 478). Instead they designed the "never-quite-finished experience" of *I Seek the Nerves Under Your Skin,* which offers no coherent, conclusive meaning through either its content (the non-narrative, visceral-verbal poem) or its structure (the feedback loop of the code, and the inherent difficulty of the experience). The distinction Marshall et al draw between a coherent and logical game and the open, fragmented experience of *I Seek the Nerves Under Your Skin* maps onto Hans-Thies Lehmann's distinction between the structural models of 'dramatic theatre' and 'postdramatic theatre'[65]. 'Dramatic theatre', Lehmann suggests, is structured according to "dramatic action/plot" (68), which can be understood as "an artificially constructed and composed course of action"[66] (68). He argues that 'dramatic theatre' follows a 'cause-and-effect' linear sequencing logic, where one action leads on to the next. Thus, the audience member makes sense of the drama by observing the actions of the characters, and understanding how each

65 In this way, it also serves as a reminder that Lehmann's theory is particularly useful in the context of mobile experience design because it allows us to interrogate design methodologies based on HCI concepts of drama and theatre.

66 Lehmann makes the point that 'action', in this context, has a wider meaning than physical action, noting that '"every internal struggle of passions, every sequence of different thoughts where the one overrides the other, is an action"' (Charles Batteux, quoted in Lehmann, 69). Thus, the plot of dramatic theatre can be psychological rather than physical, in the sense that the main actions are the thoughts and intentions of the characters.

action relates to the other and to the drama as a coherent whole[67]. In *Computers as Theatre* Brenda Laurel echoes this perspective, noting that, in drama, "[c]ausality is the connective tissue of plot" (73) and that "[t]he causal relationship of an incident to the whole action is a requirement for inclusion" (73). Mapping the dramaturgy of dramatic theatre onto human-computer interaction (HCI) design, Laurel argues that 'gratuitous' elements that do not relate to the coherency of the 'whole action' (the overall story or game) should not be included. As such, she argues that human-computer inter-activities (games, programs, etc.) should be designed as "'wholes' with coherent structures" (77). She goes on to state that "[c]onstructing them as *dramatic* wholes allows us to take advantage of deeply ingrained conventions about understanding representations of action ... elimination of the extraneous and gratuitous, clear causal relations among things that happen, and the notions of beginnings, middles, and ends" (77)[68]. This design methodology plays out in numerous mobile experiences such as the Six to Start fitness games and the Haunted Planet ghost-hunts, where players 'trigger' events or collect items by achieving specific goals, all of which feed into the overarching, coherent action/plot of the experience.

In 'dramatic theatre', the individual elements are structured and combined in a way that will contribute to the coherency of the 'whole', following a hierarchical 'order of perception' that allows for a 'synthesis of meaning'. Lehmann argues that 'dramatic theatre' orders its elements according to a hierarchy "at the top of which we find language, diction and gesture and in which visual qualities such as the experience of an architectonic space - if they come into play at all - figure as subordinated aspects" (86). In other words, 'dramatic theatre' focuses the attention of the audience member on elements that make (cognitive) sense to the audience as 'signs', while other elements that engage the audience viscerally and sensually - such

67 This is not to say that the play necessarily unfolds sequentially before the audience, only that it observes an internal linear logic of sequencing. Flashbacks and other storytelling devices may present the action/plot to the audience member in different ways - however, by the end of the play, the audience should be able to observe the 'real' sequence of events, and to understand how each event led progressively to the next.

68 Laurel acknowledges that "many avant-garde playwrights of the twentieth century...attempted to eliminate linear causality from dramatic structure" (73), however she argues that "the notion of causality is pervasive and robust enough to justify our use of it as the basis of our theory" (73). Nevertheless, she suggests that "other theories might (and probably should) be formulated from the alternative views of other cultures and philosophies" (73), a goal I am now attempting to fulfill.

as the space they are in - are relegated to the background (or used as 'immersive' elements that strengthen the audience's engagement with the action - see Chapter 2). This 'order of perception', Lehmann suggests, is to "avoid confusion and to produce harmony and comprehensibility" (86). It therefore allows the audience to 'synthesize' a cognitive meaning to what they are experiencing, eliminating 'extraneous' information to focus their attention on the linear causal logic of the coherent 'whole'. In this way, the 'order of perception' of 'dramatic theatre' echoes what Josephine Machon identifies as the common form of perceptive engagement in most adults - a perceptive engagement based on the artificial separation, and hierarchical order, of the senses "in order to simplify experience" (*(Syn)aesthetics*, 15). Marshall et al note that this 'simplicity' of experience is often the goal in HCI design, and that "[o]verloading people's attention is typically seen as a problem in HCI" as it distracts the user away from their primary task/action (Marshall and Benford, 1262). However, they recommend that designers who wish to produce 'intense' (affective) experiences such as *I Seek the Nerves Under Your Skin* should seek to structure experiences in ways that overload, distract and complicate the participant's attention, which "creates the feeling of loss of ability to handle all the stimuli that are being thrown at [them]" (Marshall and Benford, 1262). Accordingly, an alternative structural model is required for the design of affective mobile experiences, one that provokes a disruption of the 'order of perception', and resists the 'coherency' of a 'whole' structure.

'Postdramatic theatre' utilises an alternative structural model which moves away from the concept of dramatic action/plot unfolding scene by scene, and instead focuses on theatre as a "theatre of states and dynamically scenic formations" (Lehmann, 68). This structural model "deliberately negates, or at least relegates to the background, the possibility of developing a narrative" (ibid., 68); as such, 'postdramatic' theatre consists of 'states' that do not develop from one another, have no *linear sequential* relationship to one another, and do not feed into an overall 'coherent' narrative or story. Within each 'state' individual elements are assembled in ways that disrupt the 'order of perception', creating a non-hierarchical "open and fragmenting perception" (ibid., 82). As such, the composition of a 'state' "resembles collage, montage and fragment rather than a logically structured course of events" (ibid., 84). This is the case in *I Seek the Nerves Under Your Skin*, where the production of speech and sound is linked in an unusual way with the pace of the

body, disrupting the 'order of perception'. As the experience progresses, it dismantles the hierarchical 'order of perception' still further, shifting the participant away from a focus on cognitive language and allowing the pulse of heartbeat, the vibration of footfall and the sensation of breathing equal weight with the real and imagined visceral sensations generated through the audio. The participant's overall experience of *I Seek the Nerves Under Your Skin* consists of however many times they attempt the experience - each time different to, and yet not carrying on from, the last (as they have to begin at the beginning of the poem again each time). In this way, the participant experiences *I Seek the Nerves Under Your Skin* as a series of 'states' which do not build to an overall, coherent, whole action/plot, but which do fuse together to produce an 'intense' experience. This chimes with Lehmann's contention that the structural model of 'postdramatic theatre' re-works how the elements of theatre create meaning: "it becomes more presence than representation, more shared than communicated experience, more process than product, more manifestation than signification, more energetic impulse than information" (85).

'States' have a dynamic - however it is not the linear, sequential, developing dynamic of 'dramatic action'. Instead, Lehmann argues, 'states' have a 'scenic dynamic' that shows "formation rather than story" (68). He draws on visual art practice to describe the nature of this dynamic, pointing out that "[t]he seemingly 'static' painting ... is in reality merely the now definitive 'state' of the congealed pictorial work, in which the eye of the viewer wanting to access the picture has to become aware of and reconstruct its dynamics and process" (68). As such, 'states' are composed in ways that encourage the audience member to become aware of the processes of formation by which they are created, observing or experiencing the internal elements as they are brought together in non-hierarchical combinations. This dynamic of 'formation' rather than story is evident in a number of ways in *I Seek the Nerves Under Your Skin.* The participant is literally involved in the formation of the experience by bringing the poem to being through their running. Through their visceral experience, which fuses with the visceral experience of the poet-performer, the participant re-embodies the performance moment-by-moment, feeling the formation of performance in their body. Finally, the participant becomes aware of "the fusion of senses within interpretation" (Machon, *(Syn)aesthetics*, 20), *feeling* (rather than observing) the process of formation that occurs as a myriad of sensations arise and 'additively' fuse in the body.

The process of formation can also be seen, Lehmann suggests, as a process of metamorphosis, where metamorphosis does not imply continual, linear development, but instead "transitions, ambiguities, and correspondences" (78). Similarly, the disruption of the order of perception means that the internal elements lose their 'significance' (i.e. their cognitive, semantic meaning) and become ambiguous and open to interpretation. In this way, Lehmann suggests, "the stage discourses often come to resemble the structure of dreams and seem to tell of the dream worlds of their creators ... The dream constitutes the model *par excellence* of a non-hierarchical theatre aesthetic" (84).

Moving from Lehmann's contention that the structure of dreams effectively captures the structuring model of affective, postdramatic theatre, I turn to my next case-study, *Inception - The App*. A spin-off of the blockbuster movie *Inception*, the app draws on the movie's central premise of 'dream-worlds', which the characters enter and take action in. Using re-active audio generation software the app creates a moment-by-moment soundscape that reacts to and re-presents, in combination, data gathered from the participant's body and environment, the 'live' sounds the participant hears around them, and digitally recorded sound and music. In this way, the designers suggest, the app is "a dream machine that transforms the world around you into a dreamworld ... through the headset of your iPhone". In this way, they claim, "[i]t will change your perception of reality" ("Inception - The App"). However, while *Inception - The App* demonstrates the potential of mobile experiences to evoke an affective response in the participant, it also demonstrates the ways this potential can be circumscribed and negated by the wider commercial structures within which the experience is created.

Case-study: Inception - The App

Background

The smartphone and tablet application *Inception - The App* was created for the iPhone and iPad as a spin-off of the 2010 Hollywood blockbuster film *Inception*[69],

69 Inception is a 2010 science-fiction heist thriller, written, co-produced and directed by Christopher Nolan. The film stars Leonardo DiCaprio as Dom Cobb, a professional thief who steals information through the art of 'extraction' - inserting himself into a subject's dreams to obtain hidden secrets without the subject knowing. The film utilizes the common filmic trope of 'one last heist' - in this case, Cobb is offered a chance to have his criminal history erased if he

and was a creative collaboration between the film's director, Christopher Nolan, the film's composer Hans Zimmer and Michael Breidenbrüker, director of the music application company RjDj. Inspired by the film's theme of 'lucid dreaming'[70] the app presents the user with thirteen 'dream states' - different aural soundscapes that are generated through the integration of real-time data and sound from the user's actions and environment, with sound and music from the film. In the 'About' section of the app the creators state that it is intended to be "a gift to all the fans of the movie Inception. It is a dream machine which lets you have the experience of Inception in your real life" ("Inception - The App"). *Inception - The App* therefore at once seeks to create a strong cognitive link to the film, and, at the same time, seeks to offer the participant an affective experience that focuses on transforming their sensory perception of their body and world. This creates a tension at the heart of the app between the participant's understanding of themselves as a sensory being operating through bodily awareness, and their understanding of themselves as consumers of a specific product, operating in a cognitive relationship to the film. I explore this tension, and its implications for the affective potential of the experience, at the end of this case study.

Re-working the film into the specific format of an app opens up the affective potential of the mobile experience. Pointing out the difference between the two media Caetlin Benson-Allot notes that "whereas Hollywood features create worlds to tell stories and sell tie-ins, the ethos of the app is to do one thing and do it well" (10). In this way, unlike other media formats such as DVDs or Blu-Ray, the app format does not capture Hollywood films' ability to create whole, cohesive *alternate* worlds. Arguing against the trend of re-working films as apps Benson-Allot claims that, whereas DVD extras bring the viewer further into the coherent world of the film through behind-the-scenes footage or special making-of documentaries, the medium of the app fragments that filmic world into disparate elements. As such, *Inception - The App* is, she argues, "only an audio experience" (10) that does not offer the multi-

---

successfully completes a seemingly-impossible task: inception. The goal of 'inception' is the reverse of 'extraction' - to plant an idea in the subconscious mind of the subject, making him believe that it is his own original thought. In order to do this, Cobb and his team orchestrate an elaborate architecture of dreams within dreams; however, once they and their subject are within this architecture it becomes increasingly difficult for them to find their way back to reality. Inception was produced by the Hollywood production companies Warner Bros and Legendary and was a box office success, earning over $800 million worldwide.

70 A lucid dream is a dream during which the dreamer is aware that they are dreaming.

functionality necessary to create an 'enhanced spectatorship' that involves the user more deeply in the world of the film. Benson-Allot's critique can, however, be read the opposite way: as 'only' an audio experience, *Inception - The App* does not replicate the film's 'dramatic' dramaturgy of an alternate world that is distinct, coherent and whole. Instead, it offers an alternative dramaturgical model, one which is comprised of 'states' that fragment and re-weave the sensory experience of the user. Benson-Allot's insight into the difference between the media of films and apps thus echoes Hans-Thies Lehmann's assertion that "it was technology and the separation and division of the senses in media that first called attention to the artistic potential of the decomposition of perception, to what Deleuze called the 'lines of flight' of the 'molecular' particles compared to the 'molar' structure as a whole" (Lehmann, 83). The artistic potential of the fragmentation of sensory experience does not lie just in pulling the senses apart, but, as Lehmann's reference to Deleuze indicates, lies in the processes of movement and metamorphosis that make up both the fragmentation and re-composition of the senses[71]. This fragmentation and re-composition (which corresponds to the Lehmann's disruption of the 'order of perception' and Machon's disturbance and fusing together of sensations) is achieved in *Inception - The App* through its design, which creates a structure of open, fragmentary dream 'states' that combine elements according to non-linear, metamorphosing dynamics. (To gain a sense of how the participant interacts with, and makes meaning from the app, see the description of my own experience of the 'Reverie Dream', below).

Design

71 The term 'lines of flight' is the English translation of 'lignes de fuite', a term used by Deleuze and Guattari in their book A Thousand Plateaus: Capitalism and Schizophrenia. Deleuze and Guattari use the term in the context of their wider theory that social thought and culture are rhizomatic rather than hierarchic. Rather than narrativize history and culture, the rhizome presents history and culture as a map or wide array of attractions and influences with no specific origin or genesis, for a "rhizome has no beginning or end; it is always in the middle, between things, interbeing, intermezzo" Deleuze and Guattari, 25). 'Lines of flight' describe the durational moments of change, where things are 'intermezzo' - as such, Brian Massumi (who has translated A Thousand Plateaus) notes that the French word fuite translates in English as "fleeing or eluding but also flowing, leaking and disappearing" (Massumi, in Deleuze and Guattari, xvii).

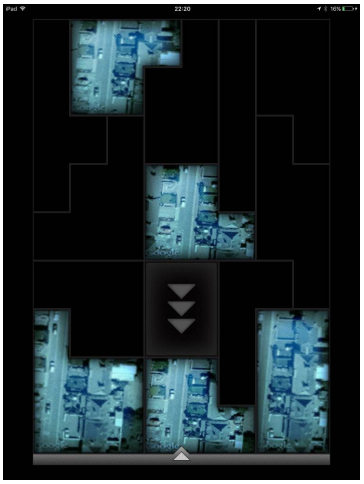

Fig 3.1: The opening screen of 'Inception-the-App', showing all 13 dream states, some unlocked.

Fig 3.2: Description of the 'Sunshine Dream'. Descriptions pop up when the participant taps a tile.

Fig 3.3: The screen of 'Inception - The App' while a dream is 'unfolding'.

When a participant clicks into *Inception - the App* they are presented with a black screen, divided by grey lines into thirteen different-shaped 'tiles' (fig. 3.1). The tiles lead to different dream-worlds, each of which must be 'unlocked' before they can be entered. To unlock a dream-world the participant has to be in the 'state' outlined in the dream's description: for example, to unlock the 'Full Moon Dream' the participant has to 'induce'[72] the dream "during a full moon night" (fig. 3.2) The app uses data gained from the smartphone's internal sensors and from online sources to determine whether the parameters for unlocking the dream have been met - in the case of the 'Full Moon Dream', it uses the smartphone's clock to determine the time of day/night, and accesses lunar data online to determine whether the moon is full. In the case of other dreams, the parameters for unlocking a dream include both environmental data and data from the body of the participant. For example, to unlock the 'Sunshine Dream' the participant must induce the dream "during a sunny day and be still". In this case, the app uses GPS data and weather data online to determine if the day is sunny in the participant's particular location, and combines this with data from the accelerometer of the smartphone to determine if the participant is moving or is 'still'. As both these examples indicate, although the app gathers digital data to unlock the dreams it translates this data back to the participant in a *physical* way. As such, it

72 The term 'induce' is borrowed from the movie. It refers to the method by which Cobb and his associates enter a specifically orchestrated dream-world.

draws the participant's attention to their sensual experience of both their environment and their own body - unlocking the 'Full Moon Dream' the participant is made aware of the "mysterious, shimmering"[73] atmosphere of a full-moon night, while the 'Sunshine Dream' draws their attention to sensations of stillness, light and warmth[74]. Rather than drawing the participant's attention to how their experience can be qualitatively measured and calculated (which is, in effect, what the sensors and system are doing), the dream descriptions draw the participant's attention to how this experience of their body and the environment around them *feels*[75].

In this way the dream descriptions serve as "acts of preparation" (Machon, *Immersive Theatres*, 84) aimed at heightening the participant's sensory engagement, "giving embodied attention to the ways in which perception comes to bear ... being aware of one's presence and participation in the moment" (ibid., 83). The descriptions both draw the participant's attention to specific bodily sensations - the physical feeling of walking, running, being still, being warm in the sun - and also encourage them to pay attention to, and experiment with, the ways in which these experiences change moment to moment. At the same time, however, these descriptions bring the user back to a cognitive connection to the film by promising 'rewards', special insights into the film through 'previously unreleased music', and drawing attention to particular tracks from the film which are used in the dream-worlds (for example, the 'Full Moon Dream' promises the participant "a previously unreleased version of Mal's theme from the Inception soundtrack" - see fig. 3.2).

Once the participant unlocks a dream they enter the dream-world. A red background appears onscreen with the name of the dream; apart from a soft pulsing, this background does not change as the dream 'unfolds'. In this way, the design immediately re-orders the participant's perception away from the visual (the sense most often engaged through screen-based digital media such as smartphones) and towards the aural. The designers note that "the interface of this app is not the screen

73 Description of the 'Full Moon Dream' - see fig. 3.2

74 It also disturbs this awareness by introducing 'imagined' sensations: when listening to the 'Sunshine Dream' the participant hears a thunderstorm.

75 Needless to say, it is possible for participants to unlock dreams without engaging fully with the 'states' the dreamworlds demand - e.g. a participant could unlock the 'Full Moon Dream' while sitting inside on a cloudy night, as the app cannot recognize exactly where the participant is or their 'state' of being. Nevertheless, the app sets up the conditions for a participant's engagement with their environment and body in ways that draw their attention to their visceral, sensory perception.

of your device but your life itself", and go on to remind the participant that "the dream-space is less about the visual, but more about the feeling" ('About', in "Inception - The App"). The interface design therefore, becomes less about drawing the participant into the fictional, coherent world within the screen (as with most video games) and more about creating an open, porous interweaving of the digital with the immediate, lived experience of the participant.

The dream-world itself is a soundscape that morphs and changes moment-by-moment and can continue 'unfolding' indefinitely. The dream-worlds are created through a re-active, generative software system that combines sounds from the participant's environment (which it accesses via the microphone on the participant's headphones) with electronic sounds (drones, cello notes) and musical motifs from the movie *Inception.* The sounds from the participant's environment are mixed through audio filters before being re-presented back to the participant as part of the soundscape: these filters distort the sounds in a number of ways by adding resonance, changing the pitch of a sound, changing its volume, speeding it up, and/or stretching it out. As such, the participant feels the relationship between the sound they can hear 'live' and the sound as it appears in the soundscape, while at the same time being surprised by the sound, and intrigued by its new, mysterious shape. In addition to changing as new sounds enter into the system, the soundscape also reacts to the participant's bodily movements. In the 'Action Dream', the faster the participant walks or runs the faster and more frenetic the soundscape becomes - in this case, the app reads data from the accelerometer of the smartphone and uses it to change the soundscape, layering sounds and interweaving them with the hectic drumming rhythms of the 'Mombassa' theme from the movie.

When the participant 'collapses'[76] the dream (after they first unlock it) they are brought back to the tiled, black screen (fig. 3.1). The tile of the dream they have just unlocked now contains a satellite image of their location (which the app accesses by using both the GPS data on the smartphone and GoogleMaps)[77]. Once a number of dreams are unlocked the app automatically 'collapses' one dream and 'induces' the next dream as it detects changes in the participant's body and/or environment. For

76 The term 'collapse' is also borrowed from the movie. It refers to the method by which Cobb and his associates deliberately end a specifically orchestrated dream-world.

77 This feature is not mentioned by the designers, and its meaning in the context of the movie is unclear. However, as my experience (see next section) indicates, it does serve as a subtle reminder of the surveillance and monitoring power of mobile technologies.

instance, if the participant starts to move quickly the 'Action Dream' is induced. If they become still and are in a quiet environment the 'Action Dream' collapses and the 'Quiet Dream' is induced. In this way, the app is designed to interweave with the participant's life in such a way that the interface between the real and the digital becomes lost in the dream.

Experience

I enter the 'Reverie Dream' sitting at my desk, writing on my laptop. I am wearing headphones (not earbuds), which are plugged into the iPad beside me. The room is quiet and outside the window I can see the tree at the end of the garden, swaying gently against a blue sky laced with white clouds. The app is open, and I can hear a piano motif playing - four single notes, played slowly so that each note lands as the echo of the previous note has just died away. As I press the 'induce' button on the 'Reverie Dream' an ominous note sounds and I am sucked into the dream-machine. Then I hear the release of a latch and the door of the dream-world opens. Immediately, I hear waves lapping and I am by the sea. I am by the sea, but outside I can see the tree at the end of the garden. It sways softly, as though swayed by the waves. Now I can hear sounds. I hear my husband clanking dishes as he washes pots and pans in the kitchen. The sounds enter my dream, changing pitch and echoing through the dream. I hear them as high, metallic notes, like electronic bird calls, and as low fluting notes. There is a curious relationship between the 'real' sounds and their digital echoes - a correspondence that I can feel, even when the sound itself is unrecognizable. The dream-world fills with the long, drawn-out notes of a cello in a morphing version of one of *Inception's* musical themes, and the low fluting notes mutate into reverberating breathy, metallic sounds, like wind blowing across piped railings. Slowly, the birdcalls and breathy wind sounds die away and silence falls, filled with the sound of the waves washing into the room. In the quiet, the tap of my laptop keys is transformed into electronic croaks that resonate, sounding like echoing frogs by the side of the water, all leaping into the pond together. I am curious now, and want to explore the ways I can build and change this dream. I draw breath in and out in a noisy sigh. The sigh is sucked into the dream and emerges much louder and longer, my breath seeming to distort and reverberate through space, out over the waves. I feel like the butterfly of chaos theory beating their fatal wing-beat. When I finally emerge from the dream I feel a

frisson of surprise as I see that the blank blackness of the 'Reverie Dream' tile has been replaced with a satellite image of my location. This suddenly puts a new, slightly sinister spin on my new-found ability to 'dream' - while I'm dreaming, someone else is watching.

Analysis

The structure of *Inception - The App* is that of 'states with dynamically scenic formations' (Lehmann, 68) that encourage the participant to become aware of their fused sensory perception, and experience the 'intangible' experience of 'lucid dreaming'. Each dream-world is an open, porous and fragmentary 'state' which combines a number of different elements in a non-hierarchical way. For instance, entering the 'Sunshine Dream' the participant experiences the dream haptically (feeling warmth and fresh air on their skin), proprioceptively (feeling themselves be still, and becoming aware of the tiny movements and rhythms within that stillness), and aurally (hearing both 'real' sounds and their dream-like echoes, along with the vibration of the electronic sounds and the musical motifs). At the same time, as the participant listens the soundscape becomes a thunderstorm, inducing 'imagined' sensations of being wet and windswept, even as they sit in the warmth, observing a summer's day.

The dream encourages the participant to become aware of the process of formation of their experience, using non-linear forms of movement such as resonance and echoing to draw attention to the 'addition' and fusion of sensations within the experience. The manipulation of sounds, and the juxtaposition of real and imagined sensation (e.g. feeling the sun on your skin while hearing rain fall around you) evokes in the participant an 'unsettling and/or exhilarating' sense of their perception being disturbed and re-made. This allows the participant to access the 'intangible' state of 'lucid dreaming', moving through dream-worlds that bear a resemblance to, and yet curiously refract, the everyday. Equally, the dream-worlds in *Inception - The App* are linked in a non-linear, rhizomatic way that does not develop a coherent narrative or story. Instead, the connection between dream-worlds is forged moment-by-moment in response to the participant's lived experience.

As such, *Inception - The App* demonstrates the potential of mobile experiences to embrace an alternative dramaturgy that focuses on the affective engagement of the participant. The app's high ranking in the iTunes store, and the

very favourable reviews from critics and users, suggest that such affective experiences are both sought after by participants, and, at the same time, rarely created by commercial apps/games. However, as a 'spin-off' app from a Hollywood blockbuster movie, *Inception - The App* also demonstrates the ways in which the affective potential of mobile experiences can be negated, or even subsumed, by consumerist capitalist structures. As I discuss above, the app creates strong cognitive links to the movie through both the dream descriptions and through the use of motifs from Hans Zimmer's score within the dreams. The participant is not just experiencing a 'lucid dream' - they are experience a lucid *Inception*-style dream. As such, the movie itself (and the marketing machine that surrounds it) is the *raison d'être* of the app, rather than any artistic or ethical intention (such as Marshall et al's goal to give participant's a sense of the 'frenzied energy' of the poet-performer). In this way, the app itself echoes Mark Fisher's reflection on the movie's central premise: "[i]n the era of neuromarketing, we're presided over by what J.G. Ballard called 'fictions of every kind', the embedded literature of branding consultancies, advertising agencies and games manufacturers ... Isn't 'inception' what so much late-capitalist cognitive labour is all about?" (45). It could be argued that what *Inception - The App* does most effectively - precisely because it is affective - is 'induce' a subtle and long-lasting 'brand affinity' in the participant. This brings us back to Hans-Thies Lehmann's assertion that the focus on affect in 'postdramatic' theatre is intended to engender an ethical response in the participant. Equally both Lehmann and Machon emphasize the fact that affective experiences should seek to critically engage the participant through their 'thinking body', prompting them to question normative logics and structures. As the example of *Inception - The App* suggests, the design of an app may unwittingly reinforce these normative logics and structures (such as the identification of the participant as a consumer of the film and the app), even while it attempts to move away from them. Accordingly, I now turn to examine ways in which critical and ethical perspectives can be incorporated into the design of affective mobile experiences.

CHAPTER 4
Critical Bodies

In this chapter I examine critical and ethical perspectives on the mechanics of mobile experiences. In her analysis of the critical and ethical potential of games, Mary Flanagan notes that this potential is realised not only through the content (the theme, narrative or story) of games, but, more fundamentally, through the mechanics of the game. She suggests that "[k]nowledge in games is typically generated through doing ... what one is doing in a game matters significantly not only to the meaning of the game but also to players' understanding of their own actions ... in this way, a game's mechanic is its message" (184-5). In the context of mobile experiences, Flanagan's insight highlights the importance of examining how the mechanics of the mobile experience work - what participants are being asked to do as part of the experience, and what understanding of the world they are taking from these actions.

Mobile experiences (specifically, location-based mobile experiences) have previously been interrogated with regard to their often uncritical adoption of technologies of mapping and surveillance[78]. While acknowledging the value of these critiques, my focus in this chapter moves beyond the ethical implications of the technologies themselves, to the ethical and critical implications of the design methodologies of mobile experiences, and, in particular, to the ways in which the mechanics of mobile experiences can - either deliberately or unconsciously - involve participants in practices that re-inscribe dominant, normative logics and structures. Thus this chapter moves away from a consideration of the internal elements of mobile experiences to a consideration of some of the external elements of mobile experiences - particularly, the socio-economic and political norms that shape the design of a mobile experience. With this shift in focus comes a new set of critical perspectives that open up questions around both the affective intent and the participatory promise of mobile experiences. I apply these critical perspectives to two case-studies, *Pokémon Go*, a commercial location-based mobile game, and *Just In Time*, a location-based mobile game I designed and ran for the Dublin Fringe Festival 2012.

78 See, for example, Tuters and Varnelis (2006), and Hemment et al (2011).

I first turn to the location-based mobile game, *Pokémon Go*, a collaboration between the Nintendo games company and Niantic, a spin-off company from Google. Launched in July 2016, the game is a global gaming sensation, with over 750 million downloads on Apple devices alone[79]. The game aspires to provide the player with 'enriching' forms of experience based on physical well-being, engagement with the environment, and social inter-connection. However, I suggest that the game incorporates 'mechanics of monetization'[80], which ultimately involve the participant in the physical re-inscription of norms and practices of commodification, consumption and profit. As such, *Pokémon Go* offers an example of how the mechanics of mobile experiences can often incorporate, and re-inscribe the normative logic of neoliberal capitalism (a term I define in more detail below).

To unpack this further, I turn first to Jen Harvie's contention that much participatory art and performance re-inscribes the norms of 'neoliberal capitalism'. I then turn to Adam Alston and Keren Zaiontz's critiques of (respectively) the commodification of 'experience' and the 'pursuit of content' in immersive theatre, and relate these arguments to Mary Flanagan's critique of the 'abstraction' of location that occurs in location-based mobile games. Taken together, these perspectives point to the need to critically engage with ways in which current design methodologies for mobile experiences incorporate mechanics that re-inscribe the practices and mindset of neoliberal capitalism. They also point to the need to explore how alternative methodologies might yield different mechanics, and thus involve the participant in practices that "decline neoliberalism's celebration of commodity, market and product and [instead] explore process and craft" (Harvie, 193).

In response to this I contend that mechanics that involve the participant in *affective* practices of engagement with their own body, the world, and with other people and objects in the world allow the participant to 'rehearse' an alternative form of engagement based on 'process and craft', and to explore and 'inscribe' "alternative ways of being which preserve principles of social collaboration and interdependence" (Harvie, 193). To explore this further, I examine how mechanics that are founded on an affective concept of movement can open the participant up to

79 Statistic taken from the Pokémon Go! page on the Apple Store - https://itunes.apple.com/ie/app/pok%C3%A9mon-go/id1094591345?mt=8

80 As I discuss in detail below, this term draws on commercial design methodologies for mobile apps and games, which focus on designing mechanics that encourage the user to spend (real) money within the game-world.

alternative practices that run counter to neoliberal practices of quantification, consumption and profit. Through this example I explore how designers might interrogate their own embedded norms, and challenge themselves to incorporate alternative concepts into their design.

This corresponds with what Mary Flanagan and Helen Nissenbaum term 'reflective practice'. Flanagan and Nissenbaum argue that, as games inevitably carry belief systems within their design, part of the design process should involve a deliberate reflection on the values and ethics that are embedded in the design. This includes interrogating the perspective and worldview of the designer themselves, the ethical and political properties of technology they are using, and the types of mechanics inscribed by the design methodology they adopt. All three contribute to the practices that are ultimately enacted by the participant through their playing of the game. Flanagan and Nissenbaum suggest that without such a 'reflective practice' there is a risk that "designers think that they are instilling one set of values but actually may be embedding another" (11-12).

This was the case with *Just In Time*, a location-based mobile game I designed for the Dublin Fringe Festival 2012. Accordingly, I apply the concept of 'reflective practice' retrospectively to the design of *Just In Time*. This critical and ethical perspective reveals that, although my intention was to instill one set of values that emphasized the interconnectedness of people, time, life and death, the game, in many ways, re-inscribed another set of values that disconnected the participant from a sense of the lived time and space around them. Finally, I reflect on how mechanics founded on an affective concept of movement might have involved the participant in alternative practices of being and inter-connectivity.

Case-Study: Pokémon Go

Background

Pokémon Go is a location-based, augmented reality mobile game created by the Nintendo games company, The Pokémon Company, and Niantic, a spin-off company from Google. It brings together the content and game design of Nintendo's Pokémon franchise[81], with the system and mechanics developed by Niantic for location-based

81 The Pokémon franchise began in 1996 as video games developed by Games Freak and published by Nintendo. The franchise quickly developed to include animated television shows,

mobile games. The original Pokémon video-game centers on fictional 'pocket monsters' called 'pokémon' which humans known as Pokémon Trainers catch and train to battle each other[82]. The mechanics of the video-game involve the player walking around the game-world, collecting (capturing) pokémon, training the pokémon at specific 'gyms', and battling the pokémon of other trainers in order to try and capture new pokémon. In *Pokémon Go* these mechanics are translated into the 'real' world and involve the participant physically visiting different geographical locations to collect pokémon, attend gyms and battle other trainers.

Pokémon Go was launched in July 2016, and quickly became a gaming sensation; just two days after its release in the US the digital analytics blog Similar Web recorded that the app had as many daily active users in the US as Twitter (Schwarz, "5 Charts"). As of August 2017, the game is installed an average of 46,536 times daily ("Pokémon Go", *Thinkgaming.com*), and retains an average of 65 million daily users. A key claim made for the game is that it has prompted people to take the time to go outside and explore their physical environment, leading to an increase in physical activity. In quantitative terms, Niantic estimates that players of *Pokémon Go* have collectively walked 8.7 billion kilometers since the launch of the game ("Blog", *Niantic,* 22 Dec. 2016). As such, Niantic's website suggests that *Pokémon Go* epitomizes the company's mission, which is "to use emerging technology to enrich our experiences as human beings in the physical world" by building "products that inspire movement, exploration, and face-to-face social interaction" (*Niantic*).

The rapid and sustained popularity of *Pokémon Go* has also led to substantial financial profits for the three founder companies. In the first month after the release of the game Nintendo's shares increase by $7billion, while Niantic earned over

---

trading card games, toys, and comic books. As of March 2017, the franchise has brought in revenues of 6.0 trillion yen worldwide (equivalent to 46.09 billion euro) - http://www.pokemon.co.jp/corporate/en/data/.

82 Independent of the mobile game itself, the original Pokémon concept raises a number of ethical concerns to do with animal cruelty and humans' relationship to the natural world. Participants are encouraged to capture 'wild' pokémon and keep them in small containers, before having them fight each other. This brings to mind both nineteenth century zoological projects to capture and document 'wild' animals, and practices of cock-fighting and dog-fighting. The mobile game Pokémon Go does not address these issues, and, indeed re-inscribes the mechanics of capture and forced combat - for instance, the promotional video for Pokémon Go features a disturbing final scene, reminiscent of gladiatorial spectacles, where a crowd of 'pokémon trainers' gather in Times Square to urge on their pókemon 'slaves' in a battle with an 'ultimate' pokémon (see https://www.youtube.com/watch?v=2sj2iQyBTQs).

$1billion in the first six months of the game (Russell). The game, which is free to download, generates revenue through in-app purchases, whereby players pay money to purchase (digital) items that can help them advance in the game (see below). As of August 2017, the daily revenue from the in-app purchases in *Pokémon Go* is $817,434 ("Pokémon Go", *Thinkgaming.com*). The high number of players also allowed Niantic to negotiate a number of sponsorship agreements with two major brands in the United States, the coffee-chain Starbucks and the mobile phone provider Sprint. These agreements saw Niantic use the real-world locations of Starbucks and Sprint outlets as locations in the game, thereby encouraging players to travel to, and spend money in, those locations ("Blog", *Niantic*, 14 Dec. 2016).

The strong emphasis on generating quantitive profit through *Pokémon Go,* therefore, sits uneasily with Niantic's mission to provide players with qualitative experiences that provide alternative forms of 'enrichment' based on physical well-being, engagement with the environment, and social inter-connection. This tension plays out in the mechanics of *Pokémon Go*, where the player's ability to engage in meaningful movement, exploration and social interaction in the real world is circumscribed by the commercial imperative to generate a stream of continuous consumption, leading to increased profit.

Design

Fig. 4.1: The game-world map in 'Pokémon Go' showing the Claddagh Basin, Galway, Ireland.

Fig. 4.2: 'Pokémon Go' - catching a pokémon at the Small Crane, Galway, Ireland.

The overall goal of *Pokémon Go* is to complete all the entries in the Pokédex, a comprehensive encyclopedia of pokémon. There are a number of ways the participant must do this: by capturing 'wild' pokémon, by using their pokémon to battle another pokémon and claiming the defeated pokémon, and by 'evolving' pokémon into new, rarer pokémon. Both battling and evolving pokémon require the participant to complete additional activities (such as training their pokémon) and collect additional items (such as candies, which help pokémon to evolve, and stardust, which adds to the strength of a pokémon). Some pokémon are rarer than others, or are released by Niantic only for certain periods of time, adding levels of difficulty to the game. Additionally, while the original Pokédex contained only the 151 pokémon from the original video game, this has now been extended with pokémon from later versions of the video game. As such, the overall goal of *Pokémon Go* is a moving target, and participants are kept engaged by the continuous release of new content and new challenges.

On opening the *Pokémon Go* app the participant is first asked to create a game account[83]. They then create and personalize an avatar of themselves, which is displayed on an on-screen game-world map which represents the participant's geographical location. As the participant moves around the real-world surroundings, their avatar moves around the game-world map. Although using GoogleMaps as its basis, the game-world map is specifically designed to correspond with the style of the pokémon franchise. It therefore translates the real-world location of the participant into a generic landscape of green-blue shapes (representing buildings, street blocks, bodies of water, parks) divided by dark green lines (representing roads and laneways), against a sky that changes from light blue with clouds (during the day) to dark blue with stars (at night) (fig 4.1).

The map shows the game features that exist in and around the participant's location - these include Pokéstops, where pokémon appear (indicated on the map by blue, cube icons), and Pokémon Gyms, where pokémon can be trained and 'strengthened' (indicated on the map by tower-like icons). These features are fixed, and are linked to specific locations in the real-world - as such the participant is required to physically walk to the GPS co-ordinates of locations in order to access these features. Unlike GoogleMaps, the map is not a top-down 2D satellite image but a 3D 'birds-eye' view of the participant's location, incorporating a horizon level that limits the participant's range of virtual 'sight'. This allows the participant to see what game features exist around their location, while also hinting at features that lie further afield (fig. 4.1).

The real-world locations to which PokéStops and Pokémon gyms are 'tagged' were identified by Niantic using crowdsourced data (such as photos of monuments, architectural features, etc.) and data from GoogleMaps. Thus, these locations are usually public spaces and places of interest, such as public art, a landmark, or a quirky local shop or architectural detail. However, as I discuss in further detail below, a number of these locations have been contested spaces (such as cemeteries and memorials), and were removed by Niantic following widespread complaints and negative media coverage. The use of un-verified and un-contextualised crowdsourced data has also led to a number of security issues, with some PokéStops

83 The game account is used to gather information on the participant's age (an attempt to ensure that children do not play the game without adult permission and supervision), and digital contact details.

and gyms being located in dangerous areas of cities, or being deliberately suggested by criminals in order to draw unsuspecting participants into locations where they can be robbed. Finally, as noted above, the real world locations of game features have also expanded beyond public spaces and places of interest to include commercial spaces such as Starbucks and Sprite outlets (in the United States).

The main mechanic of the game is the participant's physical walk around their real world location, which they must do in order to collect pokémon and to access PokéStops and gyms. The game utilises the GPS sensor on the participant's phone to track their location and change the map display accordingly - in this way, the position of the digital avatar on the game world map corresponds to the participant's physical position in the real world. The participant can consult the position of their avatar in the game world to see how close they are to features from the game world, and to move in the direction of those features. According to Niantic, and other commentators, the game's mechanic of physical walking has two major positive effects: encourages people to walk more (and as such, has had a positive impact on participants' fitness and heath), and it encourages people to explore and discover locations that they would otherwise not have gone to.

The second key mechanic of the game is the capture of pokémon. Once the participant draws near to the location of a pokémon the participant is given the option to 'catch pokémon'. When they chose this option the pokémon and a pokéball (used to capture and keep pokémon) appear on the screen of their smartphone (fig.4.2). To capture the pokémon the participant must place their finger on the on-screen pokéball and flick it towards the pokémon. The game utilises the smartphone screen's haptic pressure sensor to calculate the trajectory of the 'flick' and judge whether it maps onto the pokémon's position (if it does, the participant successfully captures the pokémon). When the pokémon first appears in the screen of the smartphone it can either appear against a virtual background, or in a visual 'augmented reality' mode that layers the pokémon over the real world using the camera-view on the smartphone screen (fig. 4.2). The 'augmented reality' mode encourages participants to interact with the real world location by allowing them to search for the pokémon in real space, and to take a screenshot photograph of the pokémon in that space. However, as I discuss further below, this interaction is mediated by the screen of the smartphone, while the participant's intention and focus remain on the game world objective of capturing the pokémon.

The game comprises three other mechanics which bring the participant to real world locations, and offer the opportunity to engage with other participants at those locations. At PokéStops the participant can capture pokémon and collect game items such as pokéballs and eggs (used to hatch new pokémon). The game items the participant can collect at a time is limited; however, if a participant waits long enough (usually five minutes) the PokéStop refreshes with new items. As such, the participant can return repeatedly to the same location and expect a continuous supply of new items at that location. PokéStops can also be equipped with 'lure' modules (which must usually be purchased in the game shop) that draw extra pokémon to the location. Once a 'lure' module is in place all participants can access the additional pokémon drawn to the PokéStop. Thus, participants congregate around PokéStops, interacting with both the real world location and with the other participants at that location.

At Pokémon gyms, the participant can use their pokémon to battle other pokémon. To do this, the participant walks to the gym location in the real world and then taps on the gym icon on the game map to 'enter' the gym. A virtual representation of the interior of the gym appears on their screen. The battle between the two pokémon plays out on the screen, with the participant tapping, pressing and swiping the screen to control their pokémon. Participants can also join together to battle other, stronger pokémon - in this case, multiple participants gather at the specific gym location at a specific time, all 'entering' the gym and battling the pokémon via their own individual smartphone screens.

In a similar mechanic, participants are encouraged to join together to battle and catch 'legendary' pokémon, which are made available at certain locations and at certain times. Again, participants must travel to that location, at that time, and battle the legendary pokémon in a 'raid' using the actions of tapping, pressing and swiping their screen. Like other pokémon, the legendary pokémon can be viewed and captured in augmented reality mode, allowing participants to incorporate the real world location into their experience of 'legendary' raids. By virtue of the rarity and strength of the 'legendary' pokémon, the limited timeframe available for their capture, and the need for multiple participants to join together in the battle, 'legendary' raids have attracted huge crowds of participants, generating intense experiences of crowd excitement.

Experience

The experience of playing *Pokémon Go* varies depending on your circumstances. As someone who is older than the 'Pokémon generation' of the early 1990s I experience no rush of nostalgia as I open the game and hear the soundtrack of the game begin to play. Instead, it grates on my ear as I am encouraged to 'personalize' my avatar, choosing from a myriad of options from hair colour, to shoe style. It is a digital smorgasbord of choice, and - for me - a tiresome waste of time. I quickly chose the generic avatar and proceed to the map screen. My location immediately springs to life in vivid technicolor - I recognise it as my location because the streets more-or-less follow the pattern of the streets around my house, and because I know that the game is using GoogleMaps and the GPS sensor. However, the dark green roads and flat, bright green space that represent where I live - an area in Galway called the 'Small Crane' - bear no relationship to my own sense of this location as a neighborhood, a space that is many different things to different people. The 'Small Crane' itself lies directly opposite my house, an tiny, stone-walled, cobbled square, within which stands the tall, black iron shape of an old weighing scales (the Crane), used in the last century on market days to weigh goods and determine bartering and selling. There are small flower beds built into the stone walls, which someone from the herbalist shop across the road has planted with herbs and fruit - one evening I pick raspberries there as we pass by on our way home. A host of different people pass through and spend time at this spot; there are the regular drinkers from the Crane Bar just next door, who can be found every fine evening, pint glasses in hand, sitting on the stone walls of the Small Crane. There is the proprietor of Colleran's Locksmith across the road, who stands against the bright blue wall of his shop, smoking and watching people pass by. During term time, children and their parents chatter past on their way to and from school, and teenagers from the nearby secondary school colonize the stone walls and sit there until long after they should have been back in class. And now, it is the location of a pokémon. I recall seeing eager *Pokémon Go* players, phones in hand, coming to the Small Crane at the height of pokémon fever, when the game first launched in 2016. They wandered in, held up their phones, pressed the screen, laughed, looked at each other's photos, and wandered away and on to the next pokémon. None of them seemed (to my observation) to take the time to wonder about the strange iron 'crane', or smell the

herbs and plants, or took a moment to sit on the stone walls, watching the world go by.

And now, as the little pokémon appears on my screen in augmented reality mode, I can understand why. There is something a little mesmeric about the way this flat, cartoony creature, with its little animated movements, seems to be standing right in front of me. And there is something quite addictive about the way in which the pokéball responds to the flicking motion of my finger. My first throw goes wide, and I have to flick the ball three more times before I finally catch the pokémon. It disappears in a shower of sparkling light that seems to fill the 'real' space. Only when I look up do I realise how much my tapping and flicking has focused my attention into the screen of my phone. A little later I go out playing *Pokémon Go* with my husband, and we walk out along the Claddagh Basin and along by the sea, away from the city centre. As we walk my husband holds the phone out in front of us, and our eyes continuously flicker to the map. Usually, my attention might be drawn to the sweeping cloud formations over Galway Bay, or to the new sail boats resting in the Claddagh Basin, or to the smell of the river and the sea. This evening, most of my attention rests on the blue cubes spinning and floating on-screen near my digital avatar, suggesting that we shall soon come across a PokéStop. We pass a group of young men who are gathered around in a circle all looking down at their phones and commenting and laughing with each other. As we draw closer, I realise that they are also playing *Pokémon Go* - they are, in fact, engaged in a battle with one of the 'legendary' pokémon, 'Moltes', just released this week. Finally, one-by-one they raise their heads, looking like people who have just woken up, and nod and chat companionably to each other. We carry on walking, looking at our screen again, in search of the next pokémon.

Analysis: the 'mechanics of monetization'

In his analysis of *Pokémon Go,* tech writer Matthew Lynley argues that the mechanics of the game work to realise the four key goals of commercial games: engagement, retention, virality and - ultimately - monetization. This 'game loop', which is applied particularly to 'free-to-play' games such as *Pokémon Go,* focuses on persuading the player to pay money in order to continue playing the game, or in order to enhance their experience of playing the game. Thus, game mechanics are designed in order to engage the player: Lynley notes that *Pokémon* Go "like other

well-designed popular mobile games, offers a quick ramp up that teases a lot of front-loaded rewards to get the player to come through the door and shut it behind them" (Lynley). Thus, the ability to collect pokémon, and a myriad of game items from the moment you start playing the game is not merely aimed at encouraging players to get out walking and exploring immediately - it also has a commercial goal of giving players instant 'rewards' that engage them and make them want to keep playing the game. Similarly, "there are also multiple layers of rewards that keep players wanting to stay in the game" (ibid.) because the longer the game retains the player within the game world, extending the length of time they play the game, the closer the player psychologically gets to wanting to spend money in the game.

As well as engaging and retaining players, commercial games companies also wish to convert as many people as possible into new players - i.e. they wish the game to 'go viral'. Lynley argues that, rather than relying solely on the online social networks of current players to create this virality, *Pokémon Go* uses the physical body of the player, and the fact that they can be observed by other non-players as they play the game - as a key element of the game's marketing strategy. Thus, "[a] smartphone owner sees someone playing the game, becomes curious, downloads the game and plays it - both interacting with other players and inspiring curiosity in other potential new players ... the whole viral loop is augmented in such a way that a non-connected social interaction in the real world can lead to a new player, a download and then monetization of that player" (ibid.). When they walk around staring at the map on their phone, or congregate at Pokéstops or gyms, therefore, it is the visibility of participants - a physical visibility of bodies - that advertises the app to non-participants and that contributes to their own and others' 'monetization'.

What Lynley's analysis of *Pokémon Go* demonstrates is that the game incorporates a particular commercial design methodology, originally developed for games played 'within' the world of the computer, into the design of a mobile experience. This extends the mechanics of monetization - and the consequences of these mechanics - out into the real world, affecting the participant's engagement with their body, with the world, and with others around them. The effects of this design methodology go far beyond merely persuading the participant to spend money - more fundamentally, they involve participants in the physical re-inscription of norms and practices of commodification, consumption and profit.

In this way *Pokémon Go* serves to illustrate Mary Flanagan's contention that "those corporate interests that introduce new technologies foster consumption, rather than production or critical analysis" (187). Exploring the link between games and critical social engagement, Flanagan warns that "[t]he tight link between new technology and consumer culture is a major cause of concern", as it can lead to "an inherent bias towards the status quo" (187). Thus games that utilise new technologies often uncritically replicate the norms and practices of 'consumer culture'. Flanagan points out that games are shaped by the worldview of their designers - therefore, "games carry beliefs within their representation systems and mechanics" (4). Equally, "game actions are machines of materiality, expression, desire, and politics" (185) that shape the participant's engagement with their body and the world by encouraging and allowing the participant to physically 'enact' and 'rehearse' specific practices through the medium of the game. As such, Flanagan argues that there is a need to challenge "the accepted norms embedded in the games industry" (1) by interrogating how games embody and re-inscribe socio-economic and cultural norms not only in their content (story, theme) but, most significantly, through their mechanics - what the game asks participants to do, and what form of experience and meaning this generates for the participant.

Flanagan's critique of how the mechanics of technology-driven games can uncritically serve to re-inscribe the norms of 'consumer culture', resonates with Jen Harvie's critique that forms of participatory art and performance (for example, immersive theatre) often "rehearse audiences for, and naturalize them to" the norms and practices of 'neoliberal capitalism' (Harvie, 50). Like Flanagan, Harvie argues that although participatory art and performance often claims (and intends) to foster more equitable forms of social relations and social interaction, it may also be "complicit with the agendas of neoliberal capitalist culture ... passed off as critical social interventions when they are actually nourishing neoliberalism's inequalities" (3). Thus, as Harvie suggests, it is necessary to interrogate how "these potentially socially democratic art practices and neoliberal capitalist ideologies produce, inform, challenge and/or undermine each other" (4).

Neoliberal capitalist ideology is rooted in the concept that human well-being is best achieved by allowing individuals the freedom to seek their own reward. A number of principles derive from this ideology: firstly, that the state should intervene as little as possible in the freedom of the individual to seek their own reward. Since,

in democratic countries, the state theoretically represents the collective social good, this principle effectively suggests that the rights of individual freedom trump the rights of collective society. Secondly, neoliberal capitalism holds that the best way for individuals to seek their own reward is by engaging in market exchange - exchanging what they own (labour, land, skills) for money, and using money to buy or consume other products. This principle institutes the practice of commodification and privatization across all aspects of human life and living - viewing everything as potential 'commodities' that can be privately owned, and that can be exchanged, via the market, between individuals. The emphasis placed by neoliberal capitalism on market exchange also validates a quantitative approach to the valuation of 'commodities', which focuses on aspects of the 'commodity' that can be measured by means of standardised measurement, and therefore compared, calculated and exchanged. In practice this means that the qualities of a 'commodity' that cannot easily be measured or compared are deemed unimportant and carry no value.

Thus, the mindset introduced by neoliberal capitalism promotes a sense of 'unreserved individual self-interest' over a sense of solidarity and 'fellow feeling' with others (Harvie, 2). This mindset is instituted through practices of individualism, commodification, consumption, privatization and quantification. What both Flanagan and Harvie's critiques draw attention to is the extent to which mobile experiences, which intersect with both location-based mobile games and participatory performance, may produce and foster the mindset of 'neoliberal capitalism' through their design and mechanics. To examine this in more detail I draw on critical approaches to specific mechanics within immersive theatre and within location-based mobile games. My intention here is to critically engage with the ways in which mobile experiences, by involving participants in active physical participation, run the risk of fostering (either deliberately or unintentionally) the norms and status quo of neoliberal capitalism. Utilising these critiques, therefore, I explore the ways in which mobile experiences - as epitomized by *Pokémon Go* - can contribute to re-inscribing neoliberal practices by commodifying the participant's own body as the productive source of experience, by involving participants in practices of competition and consumption, and by 'abstracting' and privatizing both public spaces and the bodies we encounter within them.

Neoliberal mechanics in mobile experiences

Experience machines

In *Beyond Immersive Theatre: Aesthetics, Politics and Productive Participation,* Adam Alston reworks philosopher Robert Noizak's concept of the 'experience machine' to describe how immersive theatre can encourage the commodification of the participant's own body and sensory operations. Alston suggests that immersive theatre works as an 'experience machine' in that it seeks to "place audience members in a thematically cohesive environment that resources their sensuous, imaginative and explorative capabilities as productive and involving aspects of a theatre aesthetic" (2). Alston argues that immersive theatre works often "encourage audiences to 'give into' and become 'swept up' by the experiential qualities of a performance", while also engaging in "a physically active and explorative pursuit of personal pleasure" (2-3). The audience member is thus drawn into the performance through intense 'surround-sensory' stimulation, which they then add to and increase through their own physical engagement with the performance. The audience member's body therefore becomes a site of reception, production, synthesis and consumption of a sensual experience.

As such, the mechanics of immersive theatre often mirror, and intersect with, the neoliberal capitalist co-option of experience itself as the ultimate commodity. Alston situates immersive theatre works in the context of Joseph Pine and James Gilmore's work on the 'experience economy'. Pine and Gilmore argue that experiences have become "a fourth economic offering [after commodities, goods and services] (sic)", whereby a person "pays to spend time enjoying a series of memorable events that a company stages ... to engage him in a personal way" (2). Additionally, Alston points to the ways in which many companies now seek to present consumers with immersive worlds in which they are encouraged to both actively produce their own personal experience, and to incorporate the company's product into the production of that personal experience. In the New York branch of Niketown, for example, customers are presented with treadmills so that they can test running shoes, thus marrying their own experience of physical exertion with the Nike brand. The experience economy thus harnesses a consumer's 'productive capacity', which includes "both a physiological engagement in and with a sensual and immersive environment, and the potential enhancement of personal identity" (Alston, 151-2). As such, the 'active participation' that immersive theatre encourages can also be understood as 'productive participation', whereby the product

the participant has paid for - a sensual experience - only comes into being through their own effort. As such, Alston's critique suggests that the mechanics of immersive theatre encourage participants to view and access their body as a resource which can be put to work to produce a particular product - a stimulating, sensuous experience - which they then consume.

Alston's concept of immersive theatre as 'productive participation' that encourages the audience member to 'give into' a surfeit of sensual experience clearly differs from the concept of immersive theatre as 'active participation' that involves the participant through the body, but which is deliberately designed to avoid sensuality for its own sake, a crucial distinction which I return to in the following section. Despite this difference, however, Alston's critique is valuable in the context of mobile experiences in that it highlights how mechanics that affectively engage the participant can involve them in re-inscribing practices of production through their own body. Alston's focus on the dangers of the participant being 'swept up in' sensuality, and being physically co-opted into a 'cohesive world' clearly speak to the concept of 'cognitive immersion' (Chapter 2), whereby the sensory involvement of the participant is aimed at drawing the participant more fully into a fictional world, separate from the real world. Thus the affective engagement of participants in mobile experiences can all too easily involve them in the practice of utilising their own body as a resource to complete and sustain their engagement with a digital world, rather than involving them in practices that allow them to access a more complex understanding of their own bodies, their location, and other people and objects in the physical world.

This is born out by *Pokémon Go*, which, despite Niantic's mission to prompt a more 'enriching' engagement with the physical world, focuses the participant's attention on their sensory engagement with a 'coherent' digital game world. The game world of *Pokémon Go* is visually coherent and separate from the physical world; the map, the avatar and the pokémon themselves are all designed using the specific style of the Pokémon franchise - flat, simplified shapes and bright, attractive colors - that are noticeably distinct from the physical world (fig. 4.1). This visual coherency is supported by the use of a soundtrack that reproduces the musical motifs of the Pokémon video games. Engaging the participant in a 'coherent' game world has a commercial purpose, as using familiar tropes such as the Pokémon theme tune and the original pokémons creates nostalgia and familiarity for those already familiar

with the brand, bringing players to the game. Therefore, focusing the participant's attention on the screen of the smartphone - and the 'coherent' and separate world within it - is an integral part of both the game-play and the commercial strategy of *Pokémon Go*[84].

The game world is sensually engaging, drawing the participant in, and retaining them, through continuous stimulation. As Matthew Lynley describes: "the game world is vibrant and beautiful, making it something easy and fun to see. It's filled with flair and flashes that are visually stimulating and signal new elements of the game. All this makes the player want to keep their eyes - or ears - glued to their phone, ready to engage with it the moment something new happens" (Lynley, 1). The app also doesn't work in 'sleep' mode, meaning that the participant must keep it open, and engage with it frequently, if they wish to continue playing the game. In this way, the design of *Pokémon Go* encourages participants to engage sensorily with the game world within their smartphone, where something 'new' is always just about to happen, rather than engaging with the world around them.

The game's primary mechanic is the participant's search for pokémon by physically walking around the real world. In this way, the game requires the participant to utilise their own body to produce the overall experience. The act of physically walking around in the real world evokes the proprioceptive and interoceptive senses of the participant, generating a visceral and physiological response that "triggers a positive feel for your body, adding an additional layer of delight to the gameplay experience" (Lynley, 1). As Lynley's comment suggests, the engagement of the senses through walking is harnessed as an experiential 'gameplay' element of the game world. This is emphasized by the fact that the focus of the game remains on the digital walking body of the avatar, and its position relative to other digital objects such as pokémon and gyms (fig. 4.1), rather than the participant's physical walking body, and its sensory and experiential engagement with the world around it. Rather than elicit an affective 'becoming aware' or critical engagement, therefore, the sensory experience participant gains through their 'productive participation' becomes "an incredibly sticky part of user-generated

84 This is in marked difference to mobile experiences such as I Seek the Nerves Under Your Skin. Similarly, Inception - The App, specifically encourages the participant not to look at the screen of the smartphone but to engage visually with 'life itself'.

content" (Lynley, 1) that is used to build 'retention' and keep the participant playing the game.

Pokémon Go can therefore be understood as an 'experience machine', that places the participant in a coherent, alternate world, and resources their 'sensuous, imaginative and explorative capabilities' as a means of producing an experiential, involving engagement with that world. Thus the primary mechanic of *Pokémon Go* involves the participant in the practice of actively producing their own personal experience by physically walking. Through this 'productive participation' the participant incorporates their own personal experience into the game world of *Pokémon Go*, fusing their sensory engagement with the brand identity of the game in a way that allows the game to engage, retain, and, eventually, 'monetize' them.

'Pursuit of content'

The mechanics of mobile experiences also run the risk of fostering the norms and status quo of neoliberal capitalism by engaging participants in practices of consumerism. To unpack this, I turn to Keren Zaitonz's critique of the ways in which immersive theatre productions can encourage an individualistic and consumer mindset in participants. As with Alston, Zaionz's critique is shaped by a particular understanding of immersive theatre; nevertheless, her insights usefully problematizes the mechanics of exploration and 'discovery of content' that underpin many immersive experiences. Zaiontz points to how, in many immersive theatre productions, participants are encouraged to 'take their own path' through the performance, and to strike out on their own, thus encouraging participants to view themselves as independent individuals, rather than as an inter-dependent collaborators. Participants in these immersive theatre productions are often aware that a limited amount of one-on-one performances exist within the overall performance. These one-on-one performances promise moments of 'unique' engagement - however, because of their limited number only some participants will be able to access them. This promise of a unique but limited experience, according to Zaitonz, re-inforces the participant's urge to 'get there first', and generates a competitive "pursuit of content" that models the participant as an "anti-flaneur, a high speed stroller of performance that is committed to artistic consumption" (Zaiontz, 409). Thus, the participant's exploration of the immersive world is not driven by qualities of curiousity and openness - instead it is driven by a form of

exploration more akin to appropriation, and the urgent drive to 'claim' a unique experience.

Zaiontz suggests that by engaging participants in rapid, goal-driven movement immersive performances also often involve participants in practices of ever-increasing consumption. The knowledge that there are more rooms to explore, one-on-one performances to discover, and 'unique' experiences to be gained generates a 'fear of missing out' that drives the participant to keep moving and consuming. Additionally, immersive productions often suggest that by exploring as much of the alternative world of the performance as possible within the limited time-frame of the performance, the participant will be 'rewarded' by a more satisfying and complete experience. Thus, "[t]he anti-flaneur's individual mobility within the performance is linked to her personal ability to access and piece together the event through relentless pursuit; she is driven by a competitive instinct "to find out what is going on", "to see everything", to "follow X"" (411-12). The participant's physical movement through the performance therefore enacts an individualistic, competitive pursuit of more and more content, based on the belief that those participants who discover, and accumulate, the most content have the richest experience. As such, immersive theatre often involves participants in practices of 'productivism', a neoliberal approach to production that states that "production has got to get faster and faster so we can produce more and more, because more equals better" (Alston, 224).

Zaiontz's critique offers a way to think through the ways in which the mechanics of mobile experiences run the risk of engaging the participant in practices of consumption and competitive individualism. The game's emphasis on the accumulation of 'more' is rooted in the overall goal of the game, which is to collect all the pokémon in the Pokédex. To do this, participants must not only collect pokémon, but also make their pokémon stronger (in order to battle and claim new pokémon), and evolve their pokémon into new, rarer pokémon. Accordingly, the game-world is full of items that participants collect - the pokémon themselves, and items such as 'lures' to capture new pokémon, 'stardust' to 'power up' their pokémon (making them stronger and increasing their ability to fight and defeat other pokémon), and 'candies' to evolve their pokémon into new, different pokémon. By collecting more and more of these items, the participant is able to 'unlock' new experiences (such as capturing a rare pokémon) and moves closer to completing the

overall goal of the game - therefore, the game enshrines the productivist mindset that accumulating more content leads to a more rewarding experience.

The items in the game are spread out over the game-world and displayed on the 3D 'birds-eye' map, which incorporates a horizon level that limits the participant's range of virtual 'sight'. On the map, the PokéStops and Pokémon gyms stretch away tantalizingly into the distance, suggesting that more lie just over the horizon (fig. 4.1) - however, the participant has to keep walking in order to discover more content. Thus the map suggests to the participant that there is an endless amount of content to be accumulated, and engages them in a physical 'pursuit of content' whereby they are always searching for 'more'. The mechanic of exploration in *Pokémon Go*, therefore, works less to engage participants in curiously exploring the unique qualities of the location where they stand, and more to engage participants in a continuous, goal-driven movement to 'discover' and 'claim' new items that lie just over the horizon.

This 'rehearsed' practice of consumption is carried through in *Pokémon Go* to the actual practice of consumption whereby participants spend money to buy game items. Because participants must physically explore in order to accumulate items and experiences, the amount they can accumulate is limited by how far they can walk, the battery life of their phone, and the amount of time they can spend playing. However, the game capitalizes on the participant's hunger for more content (a hunger the game itself has created) by offering them the opportunity to buy the items they want through in-app purchasing. In this way, the game both creates, and capitalizes on, a sense of impatience and 'wanting-to-see-what's-next' in the participant, enticing them to spend money with the promise of a "delightful experience" if they do. Accordingly, for a participant who willingly 'monetizes' themselves, "[t]hose eye-popping visuals continue, they keep throwing Pokéballs and they don't have to wait to see some of the most powerful Pokémon [in the] game" (Lynley 1).

'Abstraction' of location

Alston and Zaiontz's critiques of immersive theatre can be fruitfully combined with Mary Flanagan's critique of location-based mobile games in order to understand how 'productive participation' and the high-speed 'pursuit of content' in mobile experiences might affect the participant's engagement with the real-world location around them, and with the other people in that location. Discussing location-based

mobile games, Flanagan points to how, "with the acquiescence of participants, the city is transformed to playscape and city landmarks and streets become mere spaces on an existing game board, without meaning or history in their own right" (199). Accordingly, she suggests that location-based mobile games contribute to the 'abstraction' of location, whereby participants ignore the qualitative aspects of the location - its unique histories, features, and sets of human relations - and instead focus solely on the quantitative aspects of the location - its position on the digital game map, and what game items or points can be gathered there. Flanagan's critique draws on Henri LeFebvre's concept of 'abstract space' as space that is defined only by the features that can be applied to all spaces (primarily measurement) - in other words, space that is not defined by the particular set of relationships (social, economic, historial, political, environmental) that exist within that space. Following LeFebrve, Flanagan argues that abstract spaces are capitalist spaces, whose value is determined according to quantitive measurement rather than qualitative experience, and which operate as "systems of property relations, surveillance, and consumption" (199).

Flanagan argues that by transforming space into an 'abstracted' playspace, location-based mobile games also transform participants' relationship to that space, granting them a sense of 'ownership' over the space that is often in conflict with the lived reality of the space. Participants engrossed in the game 'colonize' public spaces and treat them as private spaces where they can do what they want, without taking into account other non-participants and the ways in which they interact with the space. Thus, location-based mobile games also involve participants in practices of 'privitization' of space that disempower other people in that location by ignoring their lived experience of the location. Accordingly, Flanagan suggests that location-based mobile games may be "another problematic appropriation of space and custom, a form of entertainment 'colonization'" (205).

The 'abstraction' of location is clearly evident in the design of the map interface of *Pokémon Go* - the map is created using digital mapping technology that represents space according to qualitative measurement, and the level of qualitative detail is further reduced by the flat, generic shapes and colours used to depict the participant's location. The generic design of the map does not show particular features of the real world (street names, architectural details). Instead, it shows the participant the location of various game features - the PokéStops and Pokémon gyms

(see Fig X). In this way, the app erases the particular features of the real-world location and suggests that the participant should focus on the digital, 'abstracted', features of the game-world.

This 'abstraction' feeds into the practices participants adopt towards the real-world locations. While Niantic argue that the game brings participants to new places, and encourages them to notice and explore these real-world points of interest, this claim is open to critique in that the game makes no attempt to whet the participant's curiosity about the location itself, nor to draw their attention to its value outside of the game, as I note in 'Experience' above. My own observation of participants' lack of interest in their surroundings is backed up by one participant's description of his first day playing *Pokémon Go*: "It turns out the fairly inconspicuous corner near my flat is something of a Pokémon hotspot thanks to a little landmark - a mural above eye level - that I hadn't even noticed before. Great, I thought - that'll be handy, having a Pokéstop so near my house" (Lee, *BBC News*). Clearly, what the (previously unnoticed) mural depicts, why it is there, or what it lends to the location does not excite the participant - his focus is on the fact that it provides a 'handy' advantage in the game. In this way, the little mural becomes equivalent to any other geographical point that hosts a PokéStop. Equally, Niantic's use of Starbucks and Sprite outlets, which perpetuate a form of 'abstraction' of location through their reproduction of a generic brand, speaks less to the company's interest in engaging participants in considering the uniqueness of locations, and more to their interest in encouraging participants to consume at sponsors' locations. As such, *Pokémon Go* involves participants in an engagement with space that focuses, not on its real-world, qualitative factors (its historical significance, the personal stories it might contain, or its architectural or natural beauty) but on its quantitative factors - how it relates to the participant's ability to succeed in the game by allowing them to collect more pokémon, more items, and more points.

This was demonstrated particularly strongly by the game's inclusion of Holocaust memorial sites as locations where players could search for and capture pókemon. Memorial sites in both the US and Poland protested at the inclusion of these locations, stating that the practices participants engaged in - walking around looking at their phones, taking photos of pokémon at the site, and most certainly not engaging with the socio-political histories of the site, the people who lived and died there - was disrespectful to the memory of the victims of the Holocaust (Akhtar, *USA*

Today). Similarly, many cemeteries requested the developer Niantic to remove them as *Pokémon Go* sites, as the practices of players engrossed in the game interfered and clashed with the practices of mourning, burial and remembrance for which the cemeteries are intended (Sciullo, *Pittsburg Post-Gazette*). This example clearly shows how the mechanics of *Pokémon Go* involve participants in the 'abstraction' of location, to the point that they ignore relationships and practices (social, economic, historical, political, environmental) specific to a particular location. As such, it demonstrates how, by presenting participants with an 'abstract' location that they can utilise for their own experiential purpose, location-based mobile games can often encourage the participant to engage with the location as a 'private' space, disempowering others in the space (such as mourners, or people paying respects) by ignoring the lived experience and practices of that location.

Alternative mechanics and the question of affect

The critiques raised by Alston, Zaiontz and Flanagan point to the need to critically engage with ways in which current design methodologies for mobile experiences incorporate mechanics that could re-inscribe the practices and mindset of neoliberal capitalism. They also point to the need to explore how alternative methodologies might yield different mechanics, and thus involve the participant in practices that "decline neoliberalism's celebration of commodity, market and product and [instead] explore process and craft" (Harvie, 193). In response to this I contend that mechanics that involve the participant in *affective* practices of engagement with their own body, the world, and with other people and objects in the world, allow the participant to 'rehearse' an alternative form of engagement based on "process and craft", and to explore and 'inscribe' "alternative ways of being which preserve principles of social collaboration and interdependence" (Harvie, 193).

This claim in defence of affect pushes against, and adds nuance to, the critical perspectives on participatory art and performance articulated by Harvie and others, and the more specific critiques of immersive theatre by Alston and Zaitontz. Alston argues that, because they focus on affect, immersive theatre performances create sensual experiences that are closed and enclosing, folding the participant into an alternate world where sensory pleasure overrides the participant's critical faculties. Even while they promise active participation, they also circumscribe what that active participation can achieve - not a critical awakening, but a hypnotic co-

option. In this understanding, being active is actually a form of passivity - a form of 'giving in to', of being 'seduced' by one's own sensory experience, rather than remaining alert and critical. However, Alston's argument here hinges on a particular understanding of sensuality and affect that links in with traditional mind/body dualisms, whereby the body is perceived as a source of 'pure sensuality' that stands in opposition to the mind's ability to engage critically. Thus he notes that "the most powerful affects in immersive theatre are usually achieved when the machinery of world representation is in full flow, and audience's critical capacities give way to the seductiveness of indulging in affective experience" (219). Alston's word choice - 'seductiveness' and 'indulging' - echoes these criticisms (or fears) of sensuality.

My argument differs from Alston's because, as this quote reveals, our understandings of affect are fundamentally different: whereas Alston equates affect with a surfeit of sensuality that absorbs the participant and removes him from the 'real' world, I have argued that affect should be understood as an experience of sensory inter-connection and movement that re-awakens and potentially transforms the participant's lived experience of the 'real' world. The experience that Alston describes and critiques is, therefore, in Brian Massumi's words, the 'capture' of affect, by which the sensory stimulations that might have elicited an open and emergent affective response instead collapse inward, into a closed, circumscribed 'sensual' response. As such, whereas Alston suggests that performance can only bring about a critical, active mindset in the participant by 'frustrating' the production of affect, I argue that affect itself can produce this critical mindset by fully engaging the 'thinking body' (Machon) of the participant, and by retaining a critical and ethical intention.

Jen Harvie's critique suggests another dualism, that of the individual versus the collective group. Addressing the active participation of the audience member in participatory art and performance she asks "what this trend, which appears often to empower *individuals*, might do for groups, group dynamics and social good" (29). However, this dualism fails to recognise that groups and social collectives themselves consist of individuals whose subjectivity is, in some way, defined by being a part of that group - who feel, in the words of the poet John Donne, 'involved in mankind' (Donne, 87). The question, therefore, is not whether or not individuals are empowered, but, rather, what form of individual they are empowered to be. Does a work of participatory art and performance empower the participant to explore their

subjectivity as open and porous, inter-connected with others and the world around them? Or, conversely, does it encourage the participant to slide into a subjectivity that is 'narcissistic' (Zaitontz) and inwardly focused? Where I do agree with Harvie, Alston et al is in their contention that designers of affective experiences - mobile experiences included - often adopt a design approach that draws on the senses and sensual awareness, but is not rooted in a rigorous critical and ethical structure, leading to an experience that engages the individual in a solipsistic sense of self. However, I argue that, conversely, affective artistic practices offer a means of resisting this 'self-interested' model of the individual, by allowing the participant to bodily feel and activity engage with alternative subjectivities and perspectives. In this way, affective artistic practices can, I contend, "model alternative ways of being which preserve principles of social collaboration and interdependence" (Harvie, 193). I explore this further in my final chapter, examining how affective mobile experiences offers ways of understanding states of being and inter-connectivity that are currently ignored in 'conventional' communication because they demand to be *felt (channelled through the body)* to be fully understood.

Here, however, I wish to examine how the concept of affect itself might allow us to interrogate some of the 'neoliberal' mechanics analyzed above, and typified by *Pokémon Go,* and instead lead us towards proposing alternative mechanics of engagement and interaction in mobile experiences. In particular, I wish to examine how mechanics that reinforce neoliberal norms and practices are underpinned by a particular understanding of movement as divisible, progressive and singular, and how an alternative, affective understanding of movement, as indivisible, non-linear and multiple, might allow for the design of mechanics that open up participants to alternative ways of being and understanding. My intention here is not to suggest that mobile experiences can resist or defeat neoliberalism by simply re-framing a single concept. Instead, I wish to use the concept of movement as an example of how designers might interrogate their own embedded norms, and challenge themselves to incorporate alternative concepts into their design. This corresponds with Flanagan and Nissenbaum's 'reflective practice', which addresses "the challenges of problem setting (asking the right question) over problem solving" (11). They go on to note that "[i]f problems are not well defined initially, then poor results will emerge. This thinking is relevant to game design processes, especially when designers think that they are instilling one set of values but actually may be

embedding another" (11-12). This thinking is also very relevant to mobile experiences, which, through their use of new technologies and their focus on the individual participant, are, by default, inclined to re-inscribe the 'status quo' of neoliberal norms and practices.

The mechanics of movement in mobile experiences

Quantitative movement and the mechanics of product and progress

The concept of movement that underpins neoliberal capitalism is quantitative rather than qualitative, in that it focuses on applying a standarized measurement to entities. For instance, space is measured in centimeters, time in seconds and minutes, and the body, increasingly, in units such as steps, calories, and heart-beats. Each unit of measurement is identical, and movement itself is measured and conceived as the change from one unit to the next - from one second to the next, or one footstep to the next. Assessing movement according to standardized measurement, therefore, generates a certain mindset, or 'habit of mind' as Barbara Adam nicely terms it (11), which emphasizes product over process, focusing on the divisible, singular unit, rather than on the dynamic unity it is a part of. Thus "[e]mphasis is placed on visible materiality rather than on that which is latent, immanent and hidden from view" (Adam, 11). This emphasis on product over process is also an emphasis on what Brian Massumi terms 'positionality' over process. Using the mapping of space as an example, Massumi suggests that what the standardised measurement of space focuses on is mapped positions - the divisible points on the map - rather than on the continuous process of movement that underpins the shift from one position to the next. Thus, although "positionality is an emergent quality of movement" (Massumi, 8), the application of standarised measurement generates a 'habit of mind' that reverses this understanding, and give primacy to static, fixed positionality. In this 'habit of mind' "[t]he very notion of movement as qualitative transformation is lacking. There is "displacement", but no transformation" (Massumi, 3). It is the difference between traveling by plane, whereby you leave one location and land in the next without reference to the space between them, and traveling by road or rail, where the inter-connectedness of the two locations is physically visible (although still not as tangible as it would be if the space were traversed on foot). Thus, the neoliberal capitalist concept of movement negates "[t]he space of the crossing, the gaps between positions on the grid" (Massumi, 4).

This standardized measurement de-contextualizes movement from lived experience by ignoring any qualitative difference and viewing each unit of measurement as identical. Discussing the implications of this concept of movement on our relationship to time, and our perception of temporal movement and change Barbara Adam suggests that "[c]lock time is based on the principle of repetition without change. Distanced from the variable rhythms and contextual differences of living systems it recasts time in atemporal form. As such, it can be applied anywhere and any time" (14). Similarly, Brian Massumi argues that the standardized measurement of space changes our relationship with the world around us, and our perception of movement in the world. He notes that "[b]efore measurement, there was air and ground, but not space as we know it. Ground is not a static support any more than air is an empty container. The ground is full of movement, as full as the air is with weather, just at a different rhythm from most perceptible movements occurring with it" (10). In this way it is clear that the concept of movement that is enshrined in the mechanics of *Pokémon Go* focuses on the product of movement - the capture of a pokémon, or other game achievement - rather than on the process of that movement.

Similarly, the sensations generated through the participant's physical movement are not important in-and-of themselves and the user is not encouraged to enter into a relationship of awareness and engagement with their body through the process of this movement. Instead they are asked to contribute the product of this movement to the overall 'cognitive' immersive experience of the game. The game encourages the participant to move from point to point in on the game world map, leaping between points and ignoring 'the space of the crossing', while the emphasis on accumulating more and more game items speaks to the game's focus on 'visible materiality' and 'quantitative heterogeneity'. In a billboard campaign celebrating the one-year anniversary of *Pokémon Go* Niantic summed up the activity in one of London's main parks: "Lunchtime. Seven games of footie, 219 picnics, 344,919 pokémon. GO London" ("Blog", *Niantic,* 8 June 2017). The advertisements' emphasis on the quantitative number of activities erases any qualitative difference between the activities, and suggests that *Pokémon Go* is 'the best' activity simply because there was more of it, and that it yielded much more product. In the same campaign, Niantic published another billboard advertisement in New York that read: "A city that caught 16,618,884 pokémon yesterday is one swell city" (ibid.),

reducing the qualitative, real-world journeys that participants had made to capture these pokémon into a linear, progressive accumulation of uniform units.

This image of a 'counter' that clocks up one pokémon after another also speaks to Jason Farman's claim that the concept of movement currently underpinning many mobile technologies is linked to ideas of speed, progress and obsolescence. Farman suggests that the concept of movement enshrined in mobile technologies is 'movement forward' or 'progress', which "leaves a trail of wreckage in its wake (obsolescence)" (136). The 'habit of mind' this concept of movement creates has a material and physical manifestation in users' migration from one technology to the next, newer technology, leaving a trail of obsolete smartphones, fitbits, apple watches and other technologies in their wake. In contrast to this, an affective concept of movement produces practices of movement that encourage the participant to resist and critique this linear, forward progression.

Affective movement and the mechanics of 'dwelling'

An affective concept of movement focuses on non-linear movement - rhizomatic connections, rhythms and resonances. It views entities as a 'dynamic unity', and movement, consequently, as a process of qualitative, continuous transformation of that entity, occurring at different scales of perception. This concept of movement is shaped by the operation of affect itself. Affective understanding is generated by the inter-operation of the physical feeling (sensation) and the "feeling of having a feeling" (Massumi, 13). Thus, affect can be thought of as "a resonation, or interference pattern" (14). Resonance in the physical world occurs through the cyclical transfers of energy, resulting in vibration. Thus the movement that generates affect, and that affect operates in accordance to, is not a linear, progressive movement but rather a complex, cyclical patterning. Affect, Massumi suggests, can also be understood as an echo, whereby the reflection of sound from walls or hard surfaces sets up a complex pattern of reverberation that reflects the sound back into itself and the listener. An echo requires hard surfaces at a distance from one another, but it emerges in the the emptiness between these surfaces. It thus brings the surfaces, the space between them, and the listener together in a continuous whole - "it is not composed of parts ... It is a complex dynamic unity" (Massumi, 14).

In this way, an affective concept of movement reworks the idea of product and position as emergent qualities of movement. In this understanding, 'ground', to

borrow from Massumi's example above, is understood as a dynamic entity, in a constant state of movement. At a certain scale of perception, this movement is not visible, leading to the assumption that the ground is still and fixed. However, in reality, this position of stillness is composed of, and forms a part of, complex patterns of invisible - or unnoticed - movement. An affective concept of movement, therefore, places attention on the dynamic 'invisible' process of movement, and treats the 'visible' products and positions that emerge as interwoven parts of this process, rather than as separate, divisible end-goals.

By resisting the separation and division of movement, and instead focusing on the patterns that make up its 'dynamic unity', an affective concept of movement also negates the possibility of reducing movement to a standardised measurement of uniform units. Instead, it allows for the lived experience of movement, which is qualitative and related to its context. Applying this concept of movement to our perception of time, for example, allows us to move away from 'clock time', which, as Adam notes above, emphasizes "repetition without change" and instead to understand how a sense of time emerges from "the variable rhythms and contextual differences of living systems" (Adam, 6). This, in turn, allows us to understand the patterns of resonance and echoing within our perception of time, which is constructed, Adam argues, by "a double temporality: rhythmically structured from within [our bodies] and embedded in the rhythmic organisation of the cosmos" (13). Therefore, rather than present an understanding of time that based on a decontextualised, quantitive measurement of cumulative seconds, minutes and hours, an affective concept of movement presents an understanding of time as lived experience that is contextualised in each individual body through the body's reception to a multitude of variable rhythms - internal rhythms, such as the fast-firing of neutrons, heart-beat, the digestive and sleep cycles and external rhythms determined by wider cosmological patterns such as changes from dark to light, the waxing and waning of the moon, and cycles of weather and atmospheric pressure.

As I will explore later in this chapter, and in Chapter 5, this affective concept of movement also challenges the idea that time can be linearly divided into past, present and future. Thus, Mike Crang suggests, rather than reflecting back on the past and seeing it as "discrete events and epochs", instead "we might see within any 'present' a virtual multiplicity of possible futures, and pasts, existing" (203). An affective concept of movement, therefore, requires "thinking beyond time flowing

like simple 'lines' and trajectories to look at loops and recursivity, and fractures and folds in the space-time fabric of the city" (Crang, 205).

By drawing on an affective concept of movement instead of a quantitative concept of movement, therefore, the mechanics of mobile experiences can involve participants in practices that focus their attention on the 'invisible movement' within the dynamic unity of an entity. Rather than adopt a model of linear movement towards a specific product or position, these mechanics can introduce participants to a lived experience of movement in body, time and space, based on variable rhythms, different scales of perception, and patterns of looping, reverberation, and resonance. An example of this are mechanics that bring about what Jason Farman has termed 'dwelling' - the "practice of a particular kind of movement" (140) that draws attention to 'stillness-as-movement'. Farman cites the project *jnd* by Chris Salter which uses vibration and audio to introduce a 'just noticeable difference' (jnd) in the participant's perception of their body and environment. The mechanics of the project require the participant to lie still in a darkened room and to focus their attention on the muscles in their body. As the participant lies 'still', they become increasingly aware of their muscles' responses to the vibration and sound, and begin to realise the movement of their muscles, in turn, informs the system, changing the pattern of vibration and sound. As such, the participant begins to practice a different understanding of 'stillness', recalibrating their scale of perception to pay attention to the infinitesimal movements that are produced in their body in response to vibration and sound. The movement is not additive or linear, but a patterning of rhythms and responses, opening up the participant's experience of their body as a dynamic unity. Thus, by focusing the participant's attention on 'stillness-as-movement' the mechanics of 'dwelling' resist and reveal the participant's conditioned desire for "speed and progress" (Farman, 141), and engage them in a critical distancing from, and relationship to, neoliberal practices of movement which underpin our relationship with time, space and the body.

Thus, mechanics that draw on an affective concept of movement have the potential to engage participants in practices that involve "active engagement with your surroundings and the people and objects within those surroundings" (Farman, 140). As such, these mechanics offer the possibility of involving participants in practices that, in Jen Harvie's words, elude, critique or ridicule neoliberalism, and

that allow participants to rehearse "alternative ways of being which preserve principles of social collaboration and interdependence" (Harvie, 193).

'Reflective practice' and alternative mechanics

In order to explore both the current mechanics enshrined in many mobile experiences, and the potential of alternative mechanics that draw on an affective concept of movement, I turn to my second case-study, *Just In Time*. *Just In Time* is a science-fiction location-based mobile game I designed for the Dublin Fringe Festival 2012. The game asked the participant to move around the Temple Bar area of Dublin City, observing future events and interacting with digital characters in a race-against-time to 'save' the future. In the design of the game I gave close attention to both the narrative and the media content in an effort to engage the participant in critically thinking about how they relate to the future and to death. However, I did not interrogate the mechanics of the game, and what these mechanics were asking participants to do. Thus, although my intention was to instill one set of values that emphasized the interconnectedness of people, time, life and death, the game, in many ways, re-inscribed another set of values that disconnected the participant from a sense of the lived time and space around them.

Accordingly, this case-study operates as a retrospective act of 'reflective practice'. Bearing in mind Flanagan and Nissenbaum's contention that the 'conscientious designer' begins by "learning about who is likely to play (and their worldviews), and exploring the likely context of play" (11), I first situate the game as a performance in the Dublin Fringe Festival, and explore the socio-economic and political context of the location it played out in. I then go on to show how the narrative and design elements sought to involve the participant in an affective and critical engagement with time, space and the body, an intention which did not play out in participants' experience of the game. Finally, I discuss they ways in which the design of the game unintentionally 'abstracted' the game from its lived context, and suggest how alternative mechanics, based on an affective concept of movement, might have involved participants in an 'active' and more meaningful engagement with their surroundings, and the people and objects within those surroundings.

Case Study: Just In Time

Background

In 2012 I designed and ran the location-based mobile game *Just In Time* for the Dublin Fringe Festival, which takes place annually in September, in and around Dublin city centre (Ireland). The audience research conducted by Dublin Fringe Festival suggests that the demographic of the festival is primarily between 18 - 44 years old (77%), and in the 'ABC1' socio-economic category (81%) ("Media Kit"), a category which describes consumers with "relatively high household income and education" ("Irish Consumer" *Data Ireland*). As such, the Fringe's audience tend to be more open to new forms of theatre experience such as interactive, immersive experiences, and also among that section of the population more likely to adopt new technologies. *Just In Time* was featured in a strand of the Festival termed the 'Playground' strand, alongside a number of immersive and game-based performances from Ireland and abroad that invited audiences to 'get involved' and become 'active participants' ("Fringe Programme", 10). The concept of the city as a 'playground' reflected the theme of that year's Festival, which celebrated the 18th year of the Festival by seeking to evoke a spirit of young adult experimentation and intensity of experience. As the programme welcome page asserted: "[f]ar from taking on the responsibilities of adulthood with sobriety and meek submission, our 18th birthday sees us dreaming big, living large and losing the keys to this glorious city of Dublin" (ibid., 6).

The primary location (or playground) of *Just In Time* was Temple Bar, an area of Dublin City on the south-side of the River Liffey. Originally a derelict quarter of the city, ear-marked for demolishment, the area was the site of cultural regeneration in the early 1990s. Since then the area has developed as a centre of culture in the city, home to key public institutions in a wide variety of art forms including photography, visual art, theatre, film and contemporary music. However, it has also been, and continues to be, a site of social, political and economic tension and controversy. Commercial pressures undermined initial conservation plans for the area, leading to the development of a number of controversial new buildings. The regeneration policy also favoured the opening of multiple new bars in the area, earning Temple Bar the reputation as a party area, with consequent problems of drunken disorder. While this trend has been reversed in more recent years, Temple Bar continues to be a focal point of persistent social problems, including

homelessness, drug-abuse and anti-social behaviour. As with other areas in Dublin's inner city, the people who suffer these problems - people who are homeless, who are addicted to heroin and other drugs - are highly visible, even while the area continues to house independent businesses and arts organizations, and attract high volumes of tourists, shoppers and arts audiences (Hilliard).

Inspiration and Story

Fig. 4.3: An artist-rendering of 'Just In Time': the video media incorporated photographs of the location the participant was standing in, with 'future' elements added to the location - the intention was to convey a sense of looking 'through' their phone and 'seeing' the future.

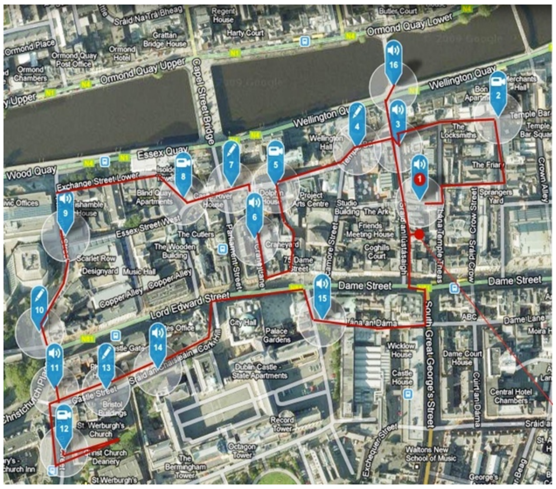

Fig 4.4: The online 7Scenes map of 'Just In Time', with media linked to specific GPS co-ordinates. The map is overlaid with a red line indicating the route taken by participants.

Fig. 4.5: A still from the video media the participant views in the graveyard of St. Werburgh's Church: Carmen shows the participant the graves around them.

Fig 4.6: The video of the manifesto of La Muerte, delivered by an unidentified person and posted online in 2012.

My primary focus in designing *Just In Time* was to investigate the potential of mobile experiences to actively engage participants in imagining and influencing the

future. This focus stemmed from my interest in environmental politics, and, in particular, the difficulty of implementing sustainable environmental, economic and social policies that depend on peoples' ability to envision and invest in long-term, multi-generational scenarios. As Henrike Rau and Ricca Edmundsun suggest, "the establishment of a sustainable society is expected to require the adoption of distinct time perspectives and temporal practices, including ... a strong orientation towards the future". They go on to note, however, that "many of these [practices] are in direct opposition to the preoccupation with novelty, short-termism, instant gratification and the present that characterises many modern capitalist societies and their focus on growth as a driver of development" (176). Accordingly, my intention in developing *Just in Time* was to investigate whether mobile experiences, by giving the participant a felt, bodily experience of the future, could inspire the participant to resist the short-term temporal practices of neoliberal capitalism and instead adopt alternative temporal practices that focused on the present's inter-connection with the future.

I designed *Just In Time* as a time-travel adventure in which the participant travels to different times in the future before returning to the present. In the present they are then offered the choice to make an active, pivotal decision that will change the future they have just experienced. The game-play was inspired by the 1980s video-game series *Where In The World Is Carmen Santiago?,* which involved the player hopping from location to location (and from era to era) in pursuit of the master-criminal 'Carmen Sandiego'[85]. Narratively, the game owes much to time-

85 Where In The World Is Carmen Sandiego? is a series of educational video games developed by American gaming company Broderbund. The series centers around the fictional titular villain and international master thief of the same name, who is the ringleader of the criminal organisation, V.I.L.E.; the protagonists (including the computer player) are agents of the ACME Detective Agency who try to thwart the crooks' plans to steal treasures from around the world, while the ultimate goal is to capture Carmen Sandiego herself. The series primarily focuses on teaching children geography, but has also branched out into history, mathematics, language arts, and other subjects.

travel films such as the *Back to the Future* trilogy[86] and *12 Monkeys*[87], both of which involve the protagonist moving between past, present and future and altering events through their actions. Aside from raising questions about time and the future, the narrative of the game also sought to engage participants in actively considering their own ethical position on the commodification of 'youth' in Western societies by a growing 'anti-aging' industry based on the sale of 'age defying'[88] beauty products. By exploring a future scenario in which the so-called 'age defying' properties of beauty products have evolved into a medical vaccine that extends human life indefinitely, I sought to engage participants in questioning their own view of old age and death, as aspects of human life to be either fought and avoided, or embraced as part of an overall rhythm of change.

The premise of the game revolves around the creation, in the near future, of this 'anti-aging' vaccine by the company 'Singularia'. The vaccine allows those who can afford it to live over two hundred years and ushers in a new era of 'eternal youth'. At the beginning of the game the participant is contacted from the future (the year 2212) by a woman called the Chairwoman, who tells them that she needs their help in the fight against La Muerte, a terrorist organisation who threaten anyone who has taken the anti-aging vaccine. She tells them that the origin of La Muerte lies somewhere in her past (the participant's present), when an unknown activist posted a video manifesto online. She shows the participant this video manifesto, known as the 'Manifesto de la Muerte' (fig. 4.6), which exhorts ordinary people to resist and fight the 'eternal youth' agenda. The Chairwoman asks the participant to track down the person responsible, so that they can be prevented from ever recording the manifesto (thereby ensuring that La Muerte never come to exist). She warns them

86 The Back to the Future trilogy is an American science-fiction comedy film series written and directed by Robert Zemeckis. The trilogy follows the adventures of a high school student, Marty McFly (Michael J. Fox), and an eccentric scientist, Dr. Emmett L. Brown (Christopher Lloyd), as they use a DeLorean time machine to time travel to different periods in the history of Hill Valley, California.

87 12 Monkeys is a 1995 film, directed by Terry Gilliam. It features Bruce Willis in the role of Cole, a convict who reluctantly volunteers to be sent back in time from 2035 to 1996 to gather information about the origin of a lethal virus (which, he's told, was spread by a mysterious "Army of the Twelve Monkeys") so that scientists can prevent a future epidemic. The film was inspired by the short film La Jetée - see below.

88 The term 'age-defying' is used by the Olay range of beauty products - see https://www.olay.com/en-us/skin-care-products/age-defying-2-in-1-anti-wrinkle-day-cream-serum

that Carmen, the dangerous leader of La Muerte, will come after them with the opposite goal - to ensure the manifesto is recorded and posted online.

However, half-way through the game the participant encounters Carmen, the leader of La Muerte (fig. 4.5). They learn from her that La Muerte oppose the anti-aging treatment because they believe that the 'eternal-life' agenda perpetuates inequality between rich and poor, allowing the rich and powerful to live much longer than anyone else. Towards the end of the experience the participant discovers that they were the unknown activist who posted the manifesto video. They therefore have a chance to determine the future, and are presented with a choice - record the manifesto as it appears in the future (in which case the violence and terror they have witnessed will come to pass), do not record the manifesto at all (in which case the 'eternal youth' agenda will probably be unopposed), or record a different manifesto (leading to a future not yet imaginable).

The realization that they could actively take part in the story by recording the manifesto was a key moment in the experience for many participants, with one reviewer noting that "[t]he scifi storyline seems tired at first, but brings you to making an active, pivotal decision" (Kumagai). The active choice aspect of this moment, however, is not reflected in the videos recorded by the participants which were nearly all recordings of the original manifesto. Participants did not, therefore, reflect on the future they had experienced and attempt to change it by either deciding not to record any manifesto, or by writing and delivering an alternative manifesto. This particular result was contrary to what I had intended, and opens out into a wider question of how the design of *Just In Time* involved the participant in (or, conversely, disassociated them from) practices of critical and ethical engagement with their sense of their body, time and the world around them.

Fig 4.7: A series of still images from the video the participant watches on Dame Street, and the participant's view of Dame Street in the present day (bottom right image). In this future scenario, members of La Muerte march in protest past the offices of the Singularia company. Anti-riot police and helicopters are deployed and the march descends into chaos - the participant is instructed to follow a member of La Muerte, who turns right, down a narrow alley (bottom middle image). When the participant looks up from their screen they see the same location in front of them (bottom right image).

Design

The overall design of *Just In Time* combined digital interactions, facilitated by a smartphone app, with a number of physical interactions in the real world (which I discuss in further detail in the following section). The participant primarily experienced *Just In Time* via their smartphone and headphones. I utilised the 7Scenes online platform (also discussed in Chapter 2) to create a 'scene' that the participant could then access on their smartphone via the 7Scenes app. The 7Scenes platform allowed me to link various different forms of media (audio tracks, video, and multiple-choice tasks) to GPS co-ordinates on GoogleMaps; the participant then followed a specific route through Temple Bar and its environs, and the app utilised the data from the smartphone's GPS sensor to trigger media whenever the participant arrived at a specified location (see fig. 4.2).

I utilized video (which incorporated both image and sound) as the primary form of media in *Just In Time*. Each time the participant traveled forward in time they 'saw' moments from that future time 'through' the screen of their smartphone, and 'heard' sounds from those moments in their headphones. The participant viewed four videos via their smartphone during the experience - one at Temple Bar Square

(the year 2162); one on Dame Street (the year 2112); one on Exchange Street (the year 2062); and one in the graveyard of St. Werburgh's Church (near future). The visual element of the video was not a 'moving image' per se, but a sequence of grainy black and white still images that appear one after the other, much like a slideshow (fig 4.7)[89] . This aesthetic played with the participant's concept of what constitutes movement, and their perception of time and stillness. It also stood in opposition to 'realistic' depictions of the future in films, whereby the viewer is presented with a cohesive, alternate future world. In contrast, the obvious gaps between these stills in the video, and the lack of vital information such as colors, suggested the impossibility of capturing the full, lived experience of time.

The design of the video also sought to evoke the participant's present-day experience of their location and fuse it with the future the participant was 'experiencing' through their smartphone. Accordingly, the visual images used in the video incorporated present-day views of the location in which the participant was standing, creating a visual 'echoing' between what the participant saw on screen and what they saw when they raised their eyes from the screen (fig. 4.7). This sense of resonance between present and future was also established through the audio of the video, which incorporated a voice-over, sound-effects, music and direct speech. The voice-over loosely narrated the events happening in the future, and also drew the participant's attention to elements of the location that they could notice around them - everyday moments such as pigeons landing and cyclists passing, and architectural features such as buildings or street signs. Sound effects referenced the sounds the participant might hear in the present day - the sound of pigeon wings flapping, the ding of a bicycle bell - blended with sounds that reference the future scenario - crowds shouting, a helicopter descending, footsteps running. As with *Carolan's Last Tune* (Chapter 2), the sound-effects were deliberately designed to heighten the participant's perceptual awareness of their location, whilst augmenting that location

89 The inspiration for this aesthetic choice was the 1962 short film La Jetée, directed by Chris Marker. Itself a meditation on time, memory, movement and stillness, La Jetée is a black-and-white film created primarily through the sequencing of still frames, one of which is occasionally revealed to be a moving image. It is a science-fiction time-travel story that tells the story of a prisoner from the future who is sent back to present-day Paris (in 1962). There he tries to escape his jailers from the future but he is shot down in Orly airport, an event that is witnessed by a young boy. As he dies, the prisoner realises that the young boy is his past (younger) self, and that a vague but obsessive memory he has had from his childhood is, in fact, a memory of his own future self's death.

with digital sounds that fused with the participant's sensations, and generated new, (syn)aesthetic sensations - of, for example, the vibration as a helicopter descended, or of the proximity of running bodies.

The music on the videos began as the image sequence ended and dissolved to black, and it accompanied the participant as they moved from one location to the next[90]. In this way, the design of the video sought to circumvent the limitations of platforms such as 7Scenes, which create a link between media and fixed digital co-ordinates and so do not allow for media that addresses the participant's movement between or through locations. The music was taken from the sound-track of the 2012 science-fiction film *Total Recall*, and combined strong, rapid drumming with electronic notes and effects in a 'blood-pumping', action-adventure style track. Kicking in as the participant was given urgent instructions to 'run' to the next location, the music track created a strong cognitive association with the Hollywood blockbuster genre of science-fiction action-adventure, encouraging the participant to 'read' themselves in the role of 'hero' as they raced from location to location.

As the map in figure 4.2 shows, the participant also experienced two other forms of media - audio tracks and multiple-choice pop-up forms - along the route of the game. The audio tracks contained short moments of direct speech (by Carmen or other characters from La Muerte) and 'soundtrack' music that, as with the music on the videos, accompanied the participant as they moved quickly on to the next location. The final audio track, which played as the participant stood on the Millennium Bridge looking out over the River Liffey, used the final music track from the *Total Recall* soundtrack, a sweeping and evocative piece that suggests the hero triumphant, new beginnings and a brighter future. The multiple-choice pop-up forms, a feature of the 7Scenes platform, were used to add a sense of direct interactivity with the game - the participant was asked to listen to the testimony of a 'witness' to the future (an audio track) and then, at the next location, to answer a multiple-choice question on the information they were given. This mode of interaction referenced the 1980s video game *Where in the World is Carmen Sandiego?*. The multiple-choice questions were also used to suggest that there was

90 In effect, this meant creating a very long video, most of which was a black screen with a music soundtrack. It also meant that the length of the music was pre-determined (based on the estimated time it would take the participant to travel between locations), rather than directly responsive to the participant's movement in real time.

the potential of failure and non-progression in the game, adding to the participant's sense of urgency and also - possibly - their sense of competition.

Experience

The participant began the game at Filmbase in Temple Bar. There they encountered the game's facilitators, and watched an introductory video in which they 'met' the Chairwoman, who was contacting them from the year 2212. She told them about the terrorist group La Muerte and Carmen (Lady Death), and showed them the video of the original 'Manifesto de la Muerte'. She then gave them their 'quest' to discover who created the manifesto. They were given their smartphone and headphones and set off, either singly or in a pair, around Temple Bar. At Temple Bar Square the first video triggered automatically, pitching them forward one hundred and fifty years into the future, to the year 2162. There they witnessed an act of terrorism by La Muerte - the gassing, and subsequent death, of a cafe full of people who had taken the anti-aging vaccine. As the image of the future faded from their smartphone they were told to move on quickly to Temple Lane South where they would 'meet' an informant from the future (via audio). They did so, and then used the information they gathered from the informant to answer their first multiple-choice challenge.

The participant's journey continued through Temple Bar to Crampton Court, a narrow lane that feeds onto Dame Street, one of the main streets of Dublin city centre. Standing at the opening of the lane, out of the stream of pedestrians and traffic, they were brought forward one hundred years into the future, to the activist beginnings of La Muerte (fig. 4.7). Via their smartphone, the participant witnessed a protest by La Muerte members outside the offices of Singularia, the pharmacutical company that created the anti-aging vaccine. The protest descended into chaos, and they were told to follow a woman they saw on their screen, who turned down Crane Lane, back into the heart of Temple Bar. The video finished and they followed the woman's route, 'meeting' the woman (via an audio file) on Crane Lane.

After speaking with her, and completing another multiple-choice challenge, they proceeded to Exchange Street where they moved fifty years into the future (the year 2062). There, the participant was standing outside the offices of Singularia, which were smaller and more discrete than their future offices on Dame Street. As the participant watched they witnessed a young woman being dragged down the steps by security guards, and bundled into a black car that then sped away. As the

image faded, the participant was contacted by the Chairwoman and urged to hurry, as they had information that Carmen was somewhere close by. To the accompaniment of the pulsing soundtrack the participant raced on down Exchange Street, and turned up left onto Fishamble Street.

The participant's route took them outside Temple Bar, and into the graveyard of St. Werburg's Church, a relatively unknown graveyard that is closed to the public much of the time. There a fourth video triggered, moving them forward a few minutes into the future. In this video Carmen caught up with them, and told them her story - that she was inspired by the original manifesto video to sneak into the Singularia offices and steal information on the vaccine; that she was caught; and that she was the young woman the participant witnessed on Exchange Street being bundled into a security car. She told them that Singularia illegally tested the vaccine on her, and that, because of that, she had lived over one hundred and fifty years. She asked them to look around at the graves and to consider death, and its place in the cycle of human life - and she asked them to consider if some people should have the power to live longer than others.

In the video, Carmen was wearing a mask, trenchcoat and dark hat. The participant heard the voice of Carmen and they 'saw' her through the screen of their smartphone. However, the visual sequence of stills in the video meant that the sound did not synch with a 'moving image' of Carmen speaking. This created a disjunction between what the participant saw and what they heard, opening up a space where they were again aware of the limitations of the media to convey a complete perceptual experience. It also allowed the sound to act separately to the images; whereas in the images Carmen was standing at some distance from the participant, her voice was much more immediate and intimate, speaking softly directly into the participant's ear. When the participant looked up from the video, they saw Carmen herself (a performer) standing by the gate of the graveyard. She didn't interact with participants, instead disappearing quickly behind the gate, but her presence evoked the "giddy shiver of seeing a character in the flesh" (Cawley). In this way, the disjunction between the two different ways in which the participant sensed Carmen's presence allowed the experience to play with the participant's fused experience of the real and the digital.

As the participant emerged from St. Werburgh's graveyard they were contacted by the Chairwoman again, who told them that they were running out of

time, and urged them to hurry. The participant again raced off, accompanied by the action-movie soundtrack. They moved quickly along Castle Street and Dame Lane, and turned down again into Temple Bar on Eustace Street. They were instructed by the Chairwoman to meet an informant at 16 Eustace Street; however, when they arrived, the informant (another performer) told them that they were actually working for Carmen. The informant took them down to the basement of 16 Eustace Street and left them on their own. Carmen contacted the participant (via an audio track) and explained to the participant that they were, in fact, the unidentified activist who recorded the 'Manifesto de la Muerte'. She then offered the participant a chance to influence the future by making a choice: to record the original manifesto, to not record a manifesto at all, or to write and record an alternative manifesto. Recording the manifesto was a physical act that involved the participant putting on a woolen balaclava, setting up the digital video camera to record, and speaking their manifesto to the camera. Because the participant was on their own in the basement room, this moment of performance was one in which they were highly aware of their own visceral experience - sensations generated by the enclosed space, by the uncomfortable eye holes and mouth gap in the woolen balaclava, and by feelings of embarrassment, excitement or urgency. In this moment they were also highly aware that their body, 'inscribed' by the wearing of the balaclava as the body of a 'terrorist', was being translated into a digital body that might live 'forever' online.

When the participant exited 16 Eustace Street they made their way down to Wellington Quay, and onto the Millennium Bridge which spans the River Liffey. At this, the final location of the game, Carmen contacted them again (via audio track). She told the participant that their choice had changed the future, and that "this isn't the last time you will have to think about death, and what it means for life. This isn't the last time you will stand here and remember me. And when you do, look down the river to the Ha'penny Bridge - you may see a familiar face in the crowd..." (Ní Chróinín, *Just In Time*). The audio track then continued to play an evocative piece of music (as noted above), allowing the participant to stand for a further minute on the bridge, immersed in the 'climax' of the experience. In this way, the audio sought to create an experience that remained open-ended, and that could be re-invoked by the participant's physical act of walking over the Millennium Bridge at any time in the future. For some participants this became a 'real' moment where they actively

looked for Carmen in the crowd, again experiencing a fusion of the digital and the real, and endowing the digital voice with a (syn)aesthetic sense of physical presence.

'Reflective practice' and the design of 'Just In Time'

Just In Time represents one of the first mobile experiences developed and run in Ireland. As a project it had many material limitations, including the fact that I created and ran the entire project as one person, that there were limited funds available, and that I was not living in Dublin and therefore drew primarily on photographs and information from Google Street View to design the route. Nevertheless, the project marked a significant step in the development of my own practice, in that it allowed me to experiment with the ways in which digital mobile media could be designed and delivered in affective ways. It also allowed me to test ideas on how mobile experiences could offer participants involving and enjoyable experiences that in some way changed their perspective on their own selves and their world. The success of some of the strategies in *Just In Time*, and the failure of others, shaped many of the practical and theoretical questions I have explored throughout this thesis. A key question that emerged from the project was why most participants did not critically reflect on the future they had witnessed, and the questions around life and death it provoked, and take the opportunity to write and deliver an alternative manifesto for an alternative future. As my research has developed, this question has become situated within the wider question of how *Just In Time* engaged participants critically and ethically through its design.

Applying Flanagan and Nissenbaum's model of 'reflective practice' to the design of *Just In Time* it is at once clear that I did not take into account who was likely to play, or the likely context of play. This is evidenced in the descriptive narration on the videos, which did not comment on aspects of Temple Bar such as the evidence of heavy drinking evident in discarded cans and broken bottles, or the presence of drug-users in doorways. For the most part, the narration did not reference the present-day inhabitants of the location, focusing instead on the built elements of the environment. This was a conscious decision on my part, since it was impossible to predict in advance who the participant might see in the location. However my conscious decision, made for practical reasons, nevertheless meant that *Just In Time* stumbled into the ethical gap that faces designers of mobile

experiences; how to acknowledge and account for the bodies and histories that produce a specific place, rather than capturing merely the 'abstract' qualities of space.

By not engaging with the lived experiences of those who inhabit Temple Bar, *Just In Time* did not draw a crucial connection between the inequal distribution of 'life' in the future, and the fact that this inequal distribution of health and life is already a lived reality for those inhabitants of Temple Bar who are not in the ABC1 socio-economic category. For example, a 2016 paper in the European Journal of Public Health notes that, while life expectancy rose overall in Ireland during the economic boom of the last decade, figures showed a much lower increase for working-class men and women (Layte and Banks). This finding echo a 2008 report by the Combat Poverty Agency, Ireland which states that, between 1989 and 1998 "the death rate for all causes in the lowest occupational class was 100 to 200% higher than the rate in the highest occupational class" (Farrell et al, 24). The report highlights how "inequalities in social conditions give rise to unequal and unjust health outcomes for different social groups" (ibid., 11), drawing attention the role played by key social determinants such as poverty, unemployment, social inclusion, and drug or alcohol abuse on a person's health and life expectancy. As I have discussed above, Temple Bar is a meeting point of people from across the spectrum of socio-economic classes in Dublin, many of whom share these social determinants. As such, present-day Temple Bar encapsulates the structural health and life inequalities I addressed as 'future' concerns in *Just In Time*[91].

In not making the connection between the theme of the game and the lived experience of location, *Just In Time* also did not address the obvious fact that, in this understanding, many of the Fringe participants (members of an ABC1 social category) were already directly implicated in the narrative as having privileged access to 'eternal youth'[92]. Had I made this connection, it would have been possible to use the game to both highlight the participants' privilege and challenge them as to their willingness and ability to change the immediate, lived future, as well as the fictional future of the game. As such, the question of whether or not they support La

91 It might also have been possible to widen the perspective of the piece to draw attention to the world-wide difference in mortality rates between Western countries and developing countries, again highlighting the fact that access to long-life is a present-day privilege of wealthier societies.

92 I include myself in this grouping. I also stress that as a statistical entity this category doesn't reflect the real differences between individuals in any social grouping.

Muerte becomes a question of whether they are willing to abandon their own position of privilege in the present in order to fight for a more just and equal society (tempered by the equally pressing question of whether violence is the answer). From a critical and ethical perspective, this would have increased *Just In Time*'s potential ability engage the participant in a reflective practice that opened them up to new understandings of themselves and the world. Instead, by encouraging participants to explore an 'abstracted' version of Temple Bar, uncritically treating it as a playground for the 'eternally young', *Just In Time* engaged participants in a re-inscription of the structural divisions and inequalities already existing in the location. In this case, therefore, my intention to critique neoliberal structures of 'long life' was undermined, and even reversed, by the lack of attention paid in the design to who could play, and to the specific lived experiences of the location.

In addition to removing the game from its lived context, the design of *Just In Time* also presented participants with decontextualised representations of culture and of acts of terror. The name 'La Muerte' and the face make-up of the La Muerte activists drew on representations of Mexican 'Day of the Dead' in popular culture, while the voice of Carmen was performed by an actress from Argentina who had a soft Hispanic accent. These visual and aural references were used in the game to present the participant with a futuristic 'other', appropriating a particular form of cultural expression and ritual without acknowledging or exploring the deep social and historical significance of that ritual. Equally, in not taking into account who might play the game, I did not question how a Mexican participant - perhaps someone living and working in Dublin - might respond to the representation of their culture (or an element of their culture) as futuristic and 'other'.

Similarly, although my intention in presenting the participant with images of La Muerte's 'future' acts of terror was to prompt them to question the ultimate cost of violence, the game did not acknowledge the ways in which terrorism and violence are a present, and more immediate reality in many countries outside the Republic of Ireland. In this way, the game utilised a decontextualised representation of terror, without drawing the participant's attention to their own position of privilege, as someone free to play a game in a relatively peaceful city[93]. This decontextualisation

93 The game's lack of connection to the lived reality of terror is perhaps even more obvious now that the question of online recruitment and indoctrination of people into terrorist organisations became a pressing, lived reality in many countries.

may be, in part, the reason that so many participants did not question the Manifesto de la Muerte, as I hoped they would. Rather than engaging with, and perhaps re-writing, the 'call to arms' within the manifesto, or rejecting the balaclava 'terrorist' image they were portraying, most participants seem to have happily adopted the role of sci-fi terrorist, with little thought to the violence their reading of the manifesto eventually wreaks.

The mechanics of the game were designed, therefore, without careful thought being given to who was likely to play, the context in which they were likely to play, and to the non-participants and lived experiences that were made an unknowing part of the game-play. This meant that the mechanics themselves involved participants in practices of decontextualisation, abstraction and privatization. This was especially evident in how participants experienced the location, and moving around the location. The first mechanic of the game asked participants to stand in a location and 'observe' the future of that location (via the video media on the smartphone). As I have noted above, despite referring to the built architecture and sensory experience of the location in the video, the video made no reference to the present-day lived experiences of people in that location. Instead, as one review suggests, the game encouraged the participant to to view "[t]he labyrinthine streets of Temple Bar ... as the set" of an action, science-fiction film (Kumagai). Although the participants enjoyed the opportunity to discover "hidden nooks and crannies around the streets of the city centre" (Kumagai), therefore, this sense of discovery led them less to an awareness of the complex lived experience of the location, and more towards an appropriation of the location as the private 'setting' of an unrelated experience. An example of this is moment captured in figure 4.7 above, where the participant observes a 'future' La Muerte protest while standing on the Temple Bar side of Dame Street, looking across at present-day Barnardos Square. Barnardos Square is a newly re-developed public square bordered on one side by Dublin City Hall. On the other side the square is bordered by a newly built office block, part of the re-development, which I used in the video as the offices of Singularia, the company La Muerte opposes and is protesting against. The present-day re-development of Barnardos Square has been widely criticized for its "overly hard" architecture which discourages its use by inhabitants of the city, and for the design of the office building "which has a responsibility to serve the square and instead retreats from it" (Lloyd). In this way, Barnardos Square, and the office block, with its "'squat, bunker-like

ground floor ... [that] ... resembles a security installation'" (McDonald, qtd. in Lloyd), is a particular example of the ways in which public space in cities can become contested, compromised and 'privatized'. While my choice of this building was in response to its 'bunker-like' architecture and the sense of 'privatized' space, I did not research the context of the location or incorporate this context into the design of the game. As such, the mechanic of standing and observing this contested space as the 'set' of their "own action film" (Kumagai) involved the participant in a re-inscription of the practices of 'abstraction' and 'privatization' that were already physically brought to bear on the public square through its re-development. Equally, the game design again missed an opportunity to reflect the story of the game into the participant's lived experience of the present-day by making them aware of the contested nature of the space, and by involving them in the physical act of re-claiming that space, as the La Muerte members do (fictionally) through their protest march. Thus a mechanic of actively crossing over to, and inhabiting the public square - rather than merely passively observing it from across the street - could have been used to awaken the participant's awareness of the location as a 'site' of real contestation rather than as a 'set' of fictional, futuristic protest.

The game design utilised a concept of movement that focused primarily on fixed locations, rather than the space between these locations. Thus, the story unfolded at specific points on the map, and the participant was urged to run quickly between these points. While my design of the music acknowledged the 'gaps' between points, and sought to create a sense of continuity between points, I did not give attention to the practice the participant engaged in as they negotiated these 'gaps'. As such, the mechanic of movement did not ask the participant to actively engage with the space they were moving through as they moved from point to point; instead, participants raced past other non-participants in that location without noticing them, and without taking note of the complex lived experiences of that location. This sense of a linear, progressive movement was actually enhanced by the music that accompanied participants as they ran. One reviewer noted that a key element of the experience was the "pulsing soundtrack that hurries your pace" (Cawley), and comments from participants after the experience suggested that the mechanic of running urgently from location to location, accompanied by the 'pulsing soundtrack' was one of the most enjoyable parts of the experience. The physical act of running elicited interoceptive sensations (heartbeat, breath) and proprioceptive

sensations (movement of the muscles, sweat, balance, etc.) that fused together and generated an affective experience of urgency and danger. However, this affective experience served to remove participant's attention from the world around them, rather than engaging them more deeply in the world. As such, it can be said that the game evoked a 'productive' mode of participation, rather than an 'active' mode of participation, whereby the participant produced sensations that then became a part of an experience to be consumed.

The mechanic of observing/listening to media at a fixed location, and the mechanic of running between locations, did not involve the participant in practices of reflection or critical engagement. Because of this, the key mechanic of the game - the participant's chance to actively engage with and influence the future by recording a manifesto - did not produce transformative, alternative versions of the manifesto. The cumulative experience of passively observing the 'future' unfold at a location, and then running at break-neck speed to the next location, seems to have left no time or opportunity for the participant to reflect on the themes of the game through the prism of their own lived experience and the lived realities of the present-day context.

Affective Mechanics in *Just In Time*

As part of this retrospective act of 'reflective practice' it is worth briefly examining the alternative practices *Just In Time* might have elicited in participants through affective mechanics, particularly mechanics rooted in an affective concept of movement. Focusing on the 'dynamic unity' of the experience, I might have redesigned the media in a way that allowed the story to unfold as the participant was moving, and in a way that linked in with their movement through the location, contextualising what they experienced around them. This mechanic might also have been designed to engage the participant in 'active participation', whereby their sensory awareness was involving them more deeply in the present-day lived experiences of the location and others in that location. The moments of stopping in specific locations might then have been designed as moments of 'dwelling', an opportunity for the participant to re-calibrate their scale of perception and take note of aspects of the location, and their bodily experience, that were previously 'invisible'. While the aesthetic composition of the video, and, in particular, the augmented audio, did serve to fragment the participant's perception and draw their

attention to sensory elements of the 'future' location, the game did not ask the participant to practice this 'active engagement' with the present-day location itself. As such, the mechanic of stopping did not allow space for a form of reflective reading of the 'future' back into the present day.

Rooting the mechanics of the game in an affective concept of movement, might, therefore, have involved the participant in alternative practices that evoked the central theme of the game - our relationship with time. While the game attempted to give the participant a sense that what they do in the present affects the future, the game actually presented the participant with a very linear concept of time, whereby the participant experienced time as a cumulative progression from the here-and-now to two hundred and fifty years in the future. An exception to this was the character of Carmen, who, by moving between times, and appearing physically in the participant's present, blurred the lines between past and future in the mind of the participant. One reviewer noted that a key moment for him was the "giddy shiver of seeing a character in the flesh" (Cawley), when he encountered the 'real' Carmen in St. Werburgh's graveyard. Equally, the final moment when Carmen tells the participant that they might be able to spot her in the crowd on the Ha'penny Bridge evoked a sense in many participants that the past and the future had fused together. This temporal practice speaks to Chang's suggestion that time should not be views as a line or trajectory, but instead as 'loops and recursivity, and fractures and folds in the space-time fabric of the city'. Thus the mechanics of interaction and physically moving around the city might have evoked this sense of looping back, of the future appearing in the present, and the present weaving into the future. In this way, the mechanics of the game might have involved the participant in alternative temporal practices that saw them actively and physically engage with virtual futures that exposed, rather than abstracted, the lived realities of the present.

This looped, recursive experience of time is evident in the dramaturgy of the Irish immersive theatre company ANÚ Productions, whose work utilises a 'now-then-now' framework to weave the present into the past and the past into the present. This affective dramaturgy focuses on creating 'ethical encounters' which ask the participant to respond to past social wrongs, and to address the ways in which these wrongs are still made manifest in the participant's present-day. Accordingly, ANÚ's production *Citizen X* forms the case-study of the final chapter of this thesis, which addresses the aesthetic potential of affective mobile experiences. This aesthetic

potential emerges from an affective dramaturgy that has a critical and ethical impetus, and that shapes the design of the individual elements, the structural composition, and the mechanics of mobile experiences in ways that open up the participant's understanding of alternative states of being and inter-connectivity, and involve the participant in alternative practices of social collaboration and interdependence.

CHAPTER 5
Haunted Bodies

In affective mobile experiences, mobile technologies become more than just a tool - they are re-purposed both theoretically and methodologically as technologies that can intervene in and shape the participant's affective, bodily understanding. Therefore, as I discuss in the Introduction, affective mobile experiences operate within a new 'bio-virtual' paradigm created "at the meeting point between human and machine entities" (Causey et al, 5). Causey et al go on to open up the questions that this new paradigm suggests: "at this meeting point (if we can still assume any boundaries) we wonder what is it we can know (epistemically), how we might act (ethically), and what shall we do with all of this useless beauty (aesthetically)" (ibid.). In the previous chapters of this thesis I have tried to unpick how the first two of these questions might be answered in the context of mobile experiences. In Chapter 5 I wish to turn to the last of these questions - *what shall we do with all of this useless beauty*? Josephine Machon describes how (syn)aesthetic performance practice seeks to "express ideas, thoughts, emotional experience, psychological states and so on, that are beyond the bounds of conventional communication" *((Syn)aesthetics,* 20*)*. In this final chapter, therefore, I examine how affective mobile experiences offer aesthetic ways to acknowledge and convey states of being and inter-connectivity that are currently elided, marginalized or ignored in normative, 'conventional' communication because they demand to be *felt (channeled through the body)* to be fully understood.

In developing an aesthetic rooted in affect it is necessary to address, insofar as they relate to mobile experiences, the significant criticisms directed at the use of affect as a means of both aesthetically structuring and critically evaluating works of art. These criticisms are summed up in Orit Halpern's review of Chris Salter's *Alien Agency,* where she argues that the affective approach to the creation, description and evaluation of the artistic case-studies in the book "defers extended engagement with the problem of translation or signification, and by extension any engagement with political economy, power, value, or subjective difference" (Halpern). To consider this further I examine Ruth Leys and Lisa Blackman's critiques of the current understanding of affect as a mode of knowing that completely by-passes cognition.

These critical perspectives suggest that affective approaches emphasize biology and technicity at the level of autonomic responses, thereby reducing the focus on the consciousness and subjectivity of the individual and on the material impact of the socio-economic and political structures in which they operate. As Halpern suggests, these critiques are often side-stepped in the creation and reception of work that is intentionally orientated towards engaging the participant affectively through their body. Yet, to do so in the context of this thesis not only opens up affective mobile experiences to valid and serious critique, but also leaves unexplored potentially fruitful directions for the development of an aesthetics of affective mobile experiences.

To address these criticisms I propose an *aesthetic of haunting* for affective mobile experiences. This aesthetic of haunting suggests that affective mobile experiences are uniquely placed to allow participants to feel, think through, and respond to the sensory manifestations of the people, things and social relationships which have been elided or ignored in normative discourse. To develop this aesthetic approach I connect and re-work Lisa Blackman's studies on affect and psychological phenomena and Avery Gordon's landmark sociological study on ghosts and haunting. Blackman's work on the body and affect interrogates specific 'para-psychological' phenomena such as voice hearing and telepathy. As such, Blackman's work addresses haunting directly as a phenomenon that offers a model of subjectivity that is open and porous, allowing for the experience of multiplicity evoked through sensory inter-connection with other people and things, while at the same time accounting for the experience of singularity that is often placed at the heart of the Western model of subjectivity. Gordon, conversely, interrogates ghostly phenomena as the manifestation of "the haunting way systematic compulsions work on and through people in everyday life" (197). As such, Gordon offers a way of understanding how personal, felt, experiences offers ways of "uncovering the work of unseen forces ... their harm, and the constricting parameters within which they force us to live" (196) which cannot be captured or accounted for through purely ideological or structural analysis. In engaging with and accounting for a ghost, therefore, Gordon suggest that we are finally 'seeing' these socio-economic, political and cultural forces and acknowledging our own implication in them. As such, haunting offers a means of acknowledging and interrogating unseen structures and

asymmetrical relationships as they are made manifest through a felt and sensuous experience of the ghost.

Through this aesthetic approach the hybrid bodies of affective mobile experiences become haunted bodies, which call on both the designer and the participant to acknowledge, welcome and reckon with "the things and the people who are primarily unseen and banished to the periphery of our social graciousness" (Gordon, 196). To examine how the aesthetic of haunting plays out I turn to my final case-study, *Citizen X* by ANU Productions. *Citizen X* was presented in the Dublin Fringe Festival 2013 as part of the project *Thirteen*, which interrogated the social and political histories around the 1913 mass labour strikes in Dublin (known as the Dublin Lockout) through thirteen different performances around Dublin City. Developed using ANU Productions' signature practice of layering past and present experiences, *Citizen X* involved the use of a half-hour mp3 track which audience members listened to and engaged with as they traveled through Dublin City by tram and on foot, following an un-named 'girl in the red jacket'. The piece brought together and interwove the harrowing conditions experienced by people living in tenements in Dublin in 1913 with the crippling conditions experienced by ordinary people in Dublin in 2013 as a result of the financial and housing crisis. Through the affective design of the mobile experience the audience member experienced both the ghostly presence of the 'invisible people' and the haunted landscape of Dublin City. As such, *Citizen X* demonstrates the potential of an aesthetic of haunting as applied to affective mobile experiences - conjuring up a nuanced, lived understanding of what it means to hear the voices of others in our own head, to experience location as a palimpsestic haunting of past-on-present, and to bodily feel sensations of echoing, refraction and dissonance as the manifestation of repeated patterns of social inequality and injustice.

Affective Aesthetics - critiques

The concept of affect, as utilised by scholars such as Brian Massumi, and as I have utilised it in the previous chapters of this thesis, posits that affect is a form of force or energy that is transmitted between and through bodies at a sensory level, prior to, and out-with, any conscious cognitive engagement. As I have discuss in the Introduction, the definition of affect in this way was (and is), as Massumi admits, an

over-emphatic statement intended to separate out and make space in cultural theory for a mode of understanding that was perceptible, and yet was not describable through the vocabulary of inscription or discourse; to give the way that experience worked on and through the body a legitimacy and a vocabulary. However, as scholars such as Ruth Leys and Lisa Blackman suggest, this approach re-establishes the dichotomy of mind and body, this time with the body supreme. As such, Leys argues that Massumi et al's approach to affect is 'anti-intentionalist' (Leys, 443), in the sense that it suggests that "power works 'autonomically', bypassing reason and criticality and seizing the body at the level of neural circuits, the nervous system, the endocrine system or other systems assumed to work independently of cognition" (Blackman, xi). While the 'turn to affect' in many fields has been fruitful in the ways that it has allowed scholars to engage with other modes of communication beyond inscription and signification, its critics point out that by emphasizing body over mind - 'autonomic' response over cognitive 'intentionalist' response - affect theory is "undermining the capacity for ideological critique important for challenging inequities and oppressions" (Blackman, iv). The aesthetic that emerges from this idea is one which does not seek to engage with the subjective intention of the artists, or the subjective reception of the participant; instead it "emphasizes the reader's or viewer's *experience* of a text or image to the extent that the experience might be said to stand in for the text or image in question" (Leys, 451 - footnote). The difficulty with this aesthetic, according to Leys, is that it makes autonomic, visceral experience the means of engaging with, and evaluating, a work of art, leaving aside all considerations of ideological and political content and context.

These critiques point towards two key questions which have implications for the aesthetics of affective mobile experiences. The first question concerns the extent to which affective mobile experiences contain a recognition of the socio-economic and political structures within which they are produced and received. If the establishment of an hybrid, inter-connected, body is at the heart of the aesthetic of affective mobile experiences, how can these interconnections be created and experienced in ways that acknowledge the structural forces that underpin these relationships, and that expose the sometimes unequal relationships between the people and/or things that are being connected? The second question concerns the nature of the subjectivity incorporated into, and created through, these experiences: to what extent can the audience member who is focused on a visceral, sensory

experience retain a sense of individual selfhood, and so retain the ability to reflect, critique and take action?

To answer these questions I turn to the concept of 'haunting' in sociological and philosophical discourse. 'Haunting' offers a unique lens by which to trace the ways in which experiences which are individual, sensory and visceral open the participant up to a new awareness of complex societal relations, and generate a form of subjectivity that engages with the other and the world. Accordingly, I develop an 'aesthetic of haunting' for mobile experiences that re-configures the hybrid bodies of Chapter 1 as haunted bodies. The hybrid body is the sensory experience of the body as an 'assemblage' of digital and physical elements, created through the affective design of mobile experiences (as discussed in Chapters 2, 3 and 4). The haunted body is the hybrid body aware of its own context and self-hood; in this configuration the bodily understanding of the hybrid body brings about a new sense of self as inter-connected with others and the world, a new awareness of the self's position within a network of (unequal) social, economic and political structures, and an ability to act on this awareness. To explore and develop this 'aesthetic of haunting' for mobile experiences I first turn to the writings of Avery Gordon and Lisa Blackman, both of whom address the ways in which the concept of 'haunting' creates a bridge between affective practice and structural analysis and critique. I then examine how this 'aesthetic of haunting' shapes and transforms the experience of the participant through my analysis of the final case-study of this thesis, *Citizen X* by ANU Productions.

The Ghost and Society

In her seminal work *Ghostly Matters: Haunting and the Sociological Imagination* (1997) Avery Gordon examines the ways in which modern works of literature have used ghosts to expose and discuss the 'invisible' workings of power in society. The presence of the ghost in the novels is the mechanism by which the reader is moved from individual experience into "complicated sociality" (Gordon, 184) and back again. In so doing, Gordon contends, the authors successfully make visible and tangible the 'negative space' created whenever a person or people are ignored or written out of society's narrative of itself. Gordon's analysis helps to understand how the aesthetic use of the ghost invokes individual experience to expose the ways in which power has worked on and through a social group or community. As such, I

turn to Gordon's discussion of how and why the ghost works in order to clarify and deepen my 'aesthetic of haunting' for the design and reception of mobile experiences. In particular I focus on three aspects of the ghost which set it apart from other mechanisms of social interrogation and critique: the 'personhood' of the ghost and its relationship to the living person it haunts, its re-working of the past in continuous relationship with the present, and its call for a reckoning, or a "something that must be done" (Gordon, 179).

In the novels Gordon analyses the ghost is a very real character, who interacts with, and exists in relationship to, the other living characters in the narrative. The ghost itself is, therefore, a "living force ... It has a life world, in the strongest sense of the term, of its own" (179). The personhood of the ghost is, Gordon argues, one of its key features, making it a tangible, affective being that can act on and affect the living bodies of those around it. As such, "when a ghost haunts, that haunting is real" (179). The reality of the haunting means that it cannot be explained away as sickness or metaphor - instead, it forces a confrontation with that which has not yet been resolved - the harm inflicted by "systematic compulsions" (197) on the lives of the living. As a living force with particular desires, and a particular agency over those it is haunting, the ghost makes manifest the "whole complicated sociality of a determining formation that seems inoperative (like slavery) or invisible (like racially gendered capitalism) but that is none the less alive and enforced" (184). Although the ghost is a real person, therefore, its significance is not that it is - or might be - the return of a deceased individual. Instead its personhood captures a multiplicity of individual experiences, manifesting "the articulated and often disarticulated traces of that abstraction we call a social relationship of power" (Gordon, 183).

Haunting equally serves to underline how the individual participant not only can be, but must be, at the heart of the experience. Gordon argues that "the modus operandi of a ghost is haunting, and haunting makes its only social meaning in contact with the living's time of the now ... In other words, the ghost is nothing without you" (179). The ghost can only exist in relation to a person or people who experience its haunting presence. In other words, the 'complexities of social relations' that a ghost makes manifest can only be revealed through the prism of an individual's experience of being haunted. Without that living body, the 'unseen forces' remain unseen, and the harm they inflict remains intangible and invisible.

Gordon argues that because of this vital connection to the living person, the ghost's meaning and intentions do not reside in the past, but instead are directly related to the living's 'time of now'. As such, the ghost is never just a manifestation of past wrong or injury - it is also "pregnant with unfilled possibility, with the *something that must be done* that the wavering present is demanding" (184, my emphasis). The ghost configures the traces of complex social relations into a 'living force' that acts on the living persons around it. It does so not merely to force a "return to the past but [as] a reckoning with its repression in the present" (184). As such, the key characteristic of the ghost, Gordon suggests, is its agency - its motivation towards the living. What does the ghost want of us? What does it need us to do in our own time?

The ghost demands a reckoning, the first step of which is to recognize and seek to talk to it. Gordon suggests that there are many stories, each of which are testament to the impact of structural forces on real lives. These stories have themselves been swept aside and buried by those same forces, which determine which stories are woven into the singular narrative society tells about itself. However, these lives remain as 'seething presences', haunting the 'now' of the living, whether the living realize it or not. Engaging with the ghost brings about a recognition of the ghost's agency towards them, and an awareness that this agency is focused not just on the past but on the participant's own present and future. This, according to Gordon, is the second step that must be taken in reckoning with a ghost; acknowledging that there is a 'something that must be done' in the present by the individual who is being haunted. As such, Gordon states that "[t]he ghostly matter will not go away ... [u]ntil you too stage a shared word, a something to be done in time and for another worldling" (190).

Gordon's theoretical (and yet very tangible) concept of ghosts and haunting works to break down the binary between what can be understood at an individual, affective level, and what can be understood at a social, structural level. She makes the case for how the work of unseen social forces can be made visible through the person of the ghost, and their real, bodily relations with the living. By affectively engaging with the ghost the individual opens themselves up to a felt engagement with, and new-found understanding of, the complexities of the social relations that the ghost figures. However, in order to reckon with, and assuage the ghost, the individual is forced to fold this new understanding back into their own 'now',

recognizing these 'unseen forces' in the present and actively doing the 'something that must be done' in order to effect change. As such, Gordon's theory works from the individual, out into society, and back to the individual again. Haunting, and the reckoning it demands, blurs borders between specificity and abstraction, individual and society, past and present. As such, it provides a strong theoretical and conceptual grounding for the ways in which affective mobile experiences can move beyond being 'experience machines' and instead offer unique ways of understanding wider socio-economic and political forces and our involvement in them.

The 'Other as Part of Me'

The second aspect of an 'aesthetic of haunting' concerns the ways in which sensory, visceral experience can evoke (rather than diminish) the individual's own sense of self and subjectivity. As I outline above, this ties into the question of the individual's ability to critically engage with, and respond to, affective experiences. To examine this question I turn to Lisa Blackman's writings on affect and 'para-normal' or ghostly phenomenon. Blackman argues that by re-framing the concept of 'self' as a more porous entity than it is traditionally conceived of in modern psychology, we can account both for the dynamism and non-cognitive aspect of affect while also allowing for affect to move through and interact with the individual self of a person. The common concept of 'self' as delimited and closed is challenged, according to Blackman, by phenomena such as 'voice hearing' which "reveal our fundamental connection not only to the other, but to pasts that cannot be articulated, and to distributed forms of perception" (127). The phenomena of voice hearing is often considered a symptom of schizophrenia within psychology and psychiatry, and is usually treated using neuroleptic drugs. As such, voice hearing has primarily been approached within a disease paradigm, and the voices themselves have been viewed as "a meaningless epiphenomenon of a disease process" (Blackman, 126). However, Blackman draws on her own personal family experience, and on the work of the Voice Hearing Network in the United Kingdom, to suggest that an often far more effective approach is to recognize the voices themselves as "meaningful modalities of communication" (Blackman, 125). She goes on to suggest that "[o]nce we start to listen to voices our conception of madness and the limits of understanding perception through a singularly bounded and distinctly human psychological subject might also be subject to change" (126).

At this point I wish to acknowledge that in drawing on experiences (including her own family experiences) of what is commonly termed schizophrenia, Blackman's argument is directly related to the often difficult and challenging life experiences faced by voice hearers and the families of voice hearers. In utilizing her argument to discuss the aesthetic potential of mobile experiences I do not in any way intend to suggest that mobile experiences can or should literally convey the experiences of voice hearers, or experiences generated through other psychological conditions. Rather, as with Josephine Machon's use of the psychological concept of synaesthesia to develop the theoretical concept of (syn)aesthetics, I wish to suggest that the diagnostic features Blackman identifies in relation to voice-hearing are valuable because they capture the quality of experience the participant undergoes within an affective mobile experience.

As I examine in further detail below, Blackman argues that the many voices heard by voice-hearers represent a form of distributed perception across space and time, and that this distributed form of perception offers a way of understanding the subject as being, in essence, a porous, multiple self, rather than the closed, singular subject posited by modern psychological paradigms. Significantly, Blackman suggests that technology offers a way of representing and tapping into the porous, multiple sense of self experienced through voice-hearing. She notes that “media technologies … can act as forms of distributed perception, allowing one to bring a trauma that has been foreclosed into the social, so that the voices can be listened to. This is not about historical accuracy but the staging of that which has never been spoken and to a certain extent is unrepresentable” (136). Blackman's analysis therefore offers a way to think through how the distributed perception created through the hybrid body of mobile experiences does not happen outside of, or beyond, the participant's sense of self - instead, it re-works their sense of self as porous, multiple, and interconnected, opening the participant up to experiences that are 'beyond the bounds of conventional communication' (Machon).

Blackman firstly suggests that the voice itself is a liminal phenomenon that crosses between the individual's understanding of their self and body as bounded and interior, and their sense of their self and body as exterior, open to the world. Voice originates inside the body, and yet must be exteriorized to be made materially manifest (or heard). As such, "[t]he voice is neither entirely inside or outside, self or other, material or immaterial" (138). Voice hearing blurs the boundaries between the

internal/external, self/other because the individual experiences voices that "are heard but cannot be seen" (138) - in other words, the individual hears voices that they *feel* are external to their own body, and yet are made manifest directly within their body. This experience, Blackman notes "does not shore up a clearly bounded, individual psychological subject. Rather, it is an experience of the self as more divided and distributed, of the 'other' as part of me" (152).

The shift from a singular concept of self and subjectivity to a more open understanding of the subject that encompasses the 'other as part of me' also requires a shift in the individual's mode of perception from 'hearing' to 'listening' to the voices. Blackman notes that “listening is the source and production of relational knowledge, and is about proximity and connectedness rather than separation and singularity" (139). She suggests that the act of hearing is 'monological', and focuses the individual on a bounded, singular sense of self. The act of listening, in contrast, is "always dialogical and relational, directed towards the other" (139). In this sense, the act of listening involves a process of becoming aware, and of opening up to others and to the world.

This process of opening up to the experience of the 'other' within the individual's own subjectivity is an embodied practice, in that the voices are contained within, and expressed through, the body of the individual. Blackman highlights one account of an emigrant Cambodian family whose only connection to their past experience of the genocide carried out by the Khmer Rouge in Cambodia (which led to their forced migration to the United States) was when they danced. As they danced they spoke about "the voices they heard whilst dancing, who communicated the traditional Khmer dance movements to them” (Blackman, 130). In this way the voices became "‘ghostly interlocutors’ that, although experienced as ‘other’ … nevertheless were integrated and enacted through forms of embodied practice" (ibid.). Blackman goes to note how, by acknowledging and 'listening to' the voices of 'others' through the medium of their own bodies, the Cambodian family members were utilizing "a form of affective symbiosis which allowed a reaching toward the unrepresentable and unknowable” (130).

The opening up of the individual's subjectivity and sense of self to allow for this inter-connection with others is a model of how bodies and understandings can become entangled, without dissolving into one another. Blackman notes how the voices heard by voice hearers are often “not the carriers of ‘the self or identity’ …

These phenomena are often experienced by voice hearers as coming from outside the self, as having an extra-personal dimension, which is often experienced as an assault on the person's psychological functioning" (138). This involves the individual in a recognition that their subjectivity and sense of self is comprised of a distributed, multiple form of perception that combines both the self and other. It also allows for the fact that external perceptual elements, such as voices that are perceived as 'other', may sometimes be challenging and difficult to experience. Blackman notes how "'"[t]he voice hearer may hear the voices of others, of people they do not know or cannot understand" (129). This ties into Avery Gordon's contention that to be haunted is not a choice. She notes that "[r]eckoning with the ghost is not like deciding to read a book: you cannot simply choose the ghost with which you are willing to engage" (Gordon, 190)[94].

As voices that are 'external' and sometimes difficult to understand, the 'other' voices are not simply a manifestation of the individual's own memory or subconscious. Instead, they are perceptual experiences that the individual clearly identifies as different from themselves, and as having distance from themselves, even while they manifest in the individual's body as a direct, sensory, felt experience. Blackman notes that "this moves the discussion of voice hearing beyond the function of the voice within the context of a person's autobiography, to the role of the voice as a ghost distributed across space and time, revealing perhaps the entanglement between past and present, living and dead, fantasmatic and real, self and other, and human and non-human" (129). The model of subjectivity that

94 This also brings the concept of the ghost and haunting into conversation with critical approaches to participatory performance, such as Claire Bishop's concept of 'relational antagonisms'. Bishop proposes the concept of 'relational antagonisms' in response to Nicholas Bourriaud's theory of 'relational aesthetics', which describes the aesthetic potential of participatory works in terms of the ways in which they forge new forms of relations between participants (Bourriaud). Bishop's argument is that the theory of 'relational aesthetics' does not take into account political and ethical consideration of "what types of relations are being produced, for whom, and why?" (Bishop, 65), and therefore suggests that the relations that are established or revealed through participatory performance are always equal and unproblematic. What is missing, according to Bishop, from 'relational aesthetics', is a means of acknowledging the discomfort and tension created in the meeting of, and negotiation between, 'decentred' subjectivities that cannot easily and cosily identify with one another. Accordingly, she proposes the concept of 'relational antagonisms', which acknowledge the involvement of both the artist and the viewer/participant in networks of social relationships that are unequal, and asking them to engage with and seek to work through these relationships. Their involvement in these relations is apriori - as Gordon suggests, they cannot 'choose' their ghost. Yet, as both Blackman and Gordon argue, they must 'listen' and engage with the sometimes uncomfortable ghosts these complex social relationships reveal.

acknowledges, and listens to, the 'other as part of me', therefore allows for a sense of self that extends beyond the individual's own singular experience of space, time and matter. As Blackman notes, this model of subjectivity suggests an experience of the self as entangled with, and therefore open to perceptual experiences from, other sources distributed across space, time and matter, from past human experiences, to present-day experiences of non-human entities. As such, voice hearing chimes with (and, in its consideration of the non-human, goes beyond) what Alison Landsberg has described as 'prosthetic memory' whereby a person "takes on a more personal, *deeply felt* memory of a past event through which he or she did not live" (2 - my emphasis). Crucially, 'prosthetic memory' involves finding ways "to inhabit other people's memories *as* other people's memories and thereby respecting and recognizing difference" (Landsberg, 24). In other words, the perceptual experiences the individual incorporates into their subjectivity from 'other' sources are not simply collapsed into a singular, bounded subjective experience.

At the same time, the entanglement of the self and other in this model of subjectivity opens the self up to a process of continual re-formation and change. The ways in which the individual defines their own sense of self are, in this understanding, "transitive and processual" (Landsberg, 152). In other words, the self is not a fixed, *apriori* entity, it defines and re-shapes itself through its interaction and entanglement with the 'other'. In a similar way, Landsberg notes how the experience of "prosthetic memory has the ability to shape that person's subjectivity and politics" (2) precisely because it offers a way of acknowledging and affectively connecting across cultural, geographical, temporal and material differences. Accordingly, the importance of the sensory, visceral operation of affect is that it "directs us towards psychic dynamics of sociality and subjectivity ... where the ‘other’ is embodied as a voice or trace registered corporeally” (Blackman, 130).

Both Blackman and Langsberg point towards the importance of technology in re-framing the concept of subjectivity from a closed, bounded and singular idea of subjectivity, to a more open, porous subjectivity that acknowledges and engages with the 'other as part of me'. As I note above, Blackman suggests that media technologies can act as forms of distributed perception, "allowing one to bring a trauma that has been foreclosed into the social, so that the voices can be listened to" (136). She goes on to note that "[t]his is not about historical accuracy but the staging of that which has never been spoken and to a certain extent is unrepresentable”

(136). Equally, Landsberg points to the fact that 'prosthetic memory' is a phenomena that has arisen through, and in response to, the growth of 'mass cultural technologies' such as film and the internet. Through their fundamental connection with, and use of, these technologies, she suggests, "the construction of prosthetic memories might serve as grounds for unexpected alliances across chasms of difference" (3). Both these perspectives, therefore, indicate the potentially unique ability of mobile experiences to engage the participant in a new understanding of their own subjectivity, and their sense of personal, social responsibility, by generating an affective experience of the 'other' as sensory, embodied, 'traces' - 'ghosts' distributed across space and time, made manifest within and through the participant's own body.

The 'aesthetic of haunting' therefore brings together two approaches. One approach, as outlined by Gordon, uses the sensory manifestation of the ghost to reveal the 'unseen' forces operating on people both past and present. The other approach, as outlined by Blackman, uses the sensory manifestation of the ghost to re-work the participant's sense of their own subjectivity, opening them up to others and the world. To investigate how these two approaches within the 'aesthetic of haunting' play out in the design and experience of mobile experiences, I turn to my final case-study, the mobile experience *Citizen X*, by ANU Productions.

To develop my analysis I first discuss ANU Production's overall dramaturgical approach to their work, which emphasizes the ways in which the sensory, visceral experience of the audience member can open them to the lived experiences of others, and to an understanding of wider socio-economic, cultural and political forces. I then examine how ANU Production's dramaturgical approach shaped the design of *Thirteen*, the series of thirteen inter-connected performances the company created to mark the centenary of the 1913 Dublin Lockout of which *Citizen X* was the first performance. Building on this context, I then address the design of *Citizen X* and provide a sequential analysis of the experience of *Citizen X* which clearly demonstrates the various ways in which the performance manifests an 'aesthetic of haunting'. In this way, I show how the design and experience of *Citizen X* reveals the ways in mobile experiences are uniquely placed to allow participants to understand the 'complexities of social relations' (Gordon) in a lived and embodied way, and how mobile experiences can prompt the participant to reflect on, and engage with these social relations by re-working their sense of self and subjectivity to encompass the 'other as part of me' (Blackman).

Case-study: *Citizen X*

ANU Productions' dramaturgy and the 'ethical encounter'

ANU are an Irish theatre company founded in 2009 by theatre director Louise Lowe and visual artist Owen Boss. Their numerous works have focused on the interrogation of present-day Irish society through the lens of the past, most often through their creation of immersive, site-specific performances. They are perhaps best known for 'The Monto Cycle', a "tetralogy of performances (2010-14) ... that operated at the intersection of performance, installation, visual art, choreography, technology and community arts" (Singleton, 1). Set in an area of Dublin's north inner-city colloquially called The Monto "the four performances featured social concerns that have blighted the area over the past 100 years, including prostitution, trafficking, asylum-seeking, heroin addiction, and the shame and scandal of the Magdalene laundries" (Singleton, 1-2). For instance, *Laundry*, the second performance in the tetralogy, brought participants into the site of a disused former Magdalene laundry[95], "challenging spectators by making them copresent at moments of committal and escape from the asylum/laundry ... as well as to assist, interact and bear witness to the histories and experiences of some of the women incarcerated there" (Singleton, 2). 'The Monto Cycle' established ANU's particular form of immersive theatre, which is grounded in site-responsiveness, history and social reality (although adopting a decidedly non-realist mode of performance). In 2013, between the third and fourth parts of 'The Monto Cycle', ANU produced *Thirteen*, 13 performances in response to the centenary of the 1913 Dublin Lockout, of which the performance *Citizen X* was one. Subsequent to 'The Monto Cycle' ANU have gone on to create works in the context of Ireland's 'Decade of Centenaries'[96], including *PALS - the Irish at Gallipoli*, *Sunder* and *These Rooms* (both focusing on the 1916 Rising), as well as a number of other works.

95 Magdalene laundries were institutions from the 18th to the late 20th centuries created ostensibly to house "fallen women", a term used to imply female sexual promiscuity or work in prostitution. However, most women entering these such laundries were unmarried mothers.

96 The 'Decade of Centenaries' is a Government of Ireland initiative, which has, and is, taking place from 2012 - 2022, aimed at commemorating the period from 1912 - 1922 in Ireland. This decade saw huge political and social change in Ireland, a change that the 'Decade of Centenaries' hopes to commemorate "in a tolerant, inclusive and respectful way" (www.decadeofcentenaries.com).

ANU's aesthetic focus is on the creation of ""ethical encounters" where the participant[97] will experience "moments of communion"" (Lowe, Personal interview in Haughton, 73). These 'ethical encounters' are intended not only to illuminate the past, but also to point the participant towards wrongs which still exists in the present, and to which the participant is asked to respond. To bring about these 'ethical encounters' ANU have developed an affective dramaturgy that focuses on re-presenting and inter-weaving the testimonies of individuals to convey the complex, shared experience of a community across space and time. These testimonies are often researched and dramaturged by the performers themselves, who draw on a number of different art forms, including dance, visual art and theatre, to create a 'cubist' approach to the re-telling of these stories (Lowe, quoted in Haughton, 73). In consequence, as McIvor describes, ANU's works are frequently:

> "non-linear and blur the line between performance and installation. While there is spoken dialogue, there is no coherent narrative to trace in terms of story or characters ... [They] heavily utilise movement and dance and are designed to make use of the scenography of the neighbourhood, whether within buildings or on the streets themselves." (McIvor, 2016).

This cubist approach means the performance is both rooted in the uniqueness and complexity of individual experiences, and, at the same time, resists any attempt to collapse it into a single, fixed narrative by "exposing all sides simultaneously" (Lowe, Personal interview, quoted in Haughton, 73). Equally, in re-presenting these testimonies through various forms, ANU seek to make space for different registers of experience - some which can be conveyed through direct, spoken accounts, and some which can only be conveyed indirectly through the evocation of bodily sensations such as gestures, textures, smells and silences. In this way, as Haughton suggests, "histories of Ireland are open to scrutiny in new light" (73) - this new light is not a

97 As Haughton identifies, the term 'participant' is somewhat problematic, as ANU's productions often offer the opportunity to participate in performances to varying degrees, but do not enforce this participation. However, I follow Haughton in using the term to suggest that more is required from an audience member than spectatorship, as ANU productions often constitute "a major personal experience shared between each performer and person in attendance" (Haughton 73). This term also forwards my own contention that Citizen X pushes ANU's dramaturgical approach forward in some ways, in that the audience member is, from the moment they put on headphones and press 'play', an active participant, without whom the performance could not be realised.

single beam but a constellation of small illuminations, each revealing different shapes and shadows which have been elided in dominant historical narratives. As such, ANU makes a powerful argument for the importance of understanding the socio-economic and political forces that have shaped and are shaping Irish society by exploring the ways in which these forces move through and act on individual persons.

ANU's approach to the concept of the 'collective' and society is one rooted in multiplicity. Their work does not present the experiences of individuals unified through the performance into a single, collective experience - rather it focuses on the collective experience as an experience of multiplicity, a kalidascopic performance where fragments of individual experience can be shaken and recombined to form many different understandings.

This aesthetic approach is carried through in ANU's focus on the individual participant as the lens through which the performance is refracted, both bodily and psychologically. As such, most ANU performances seek to place the individual participant physically at the centre of the performance. Performances are primarily created in response to, and located in, specific locations (e.g. a dis-used Magdalene laundry in *Laundry*, a network of streets in Dublin's 'Monto' district in *Vardo*, and the house that housed the temporary headquarters of the Irish Provisional Government in 1916 in *Sunder*), and participants move through the location, experiencing the space of the performance through their proprioceptive and haptic senses. The participant's bodily awareness is further enhanced by focusing their perception on particular sensations, such as the strong smell of carbolic soap in *Laundry*, or the smell of dust and rubble in the aftermath of an explosion in *Boys of Foley Street*.

This sense of embodied space is further enhanced by the presence of performers, who interact with and around the participant. Participants are sometimes invited to actively interact with a performer, either by participating in a conversation, or by aiding them in a task. In this way to participants are asked to "make choices about whether or not to intervene in the stories or dilemmas of the protagonists" (McIvor, 58). At other times, participants are free to take on the role of observer/ listener, yet even this carries weight as the participant is placed in the position of a witness, and is aware that they are being asked to actively re-consider their own sense of self in the context of the histories that are being revealed to them. Thus, Haughton

describes that she exited ANU's performance *Laundry* "confused and horrified by the history that I shared with a regime capable of such injustice, of bringing such despair to the weak and struggling members of Irish society" (69). Haughton's analysis demonstrates the way in which ANU's affective approach, by directing and refracting the performance through the individual participant at its the centre, creates a spectrum of response that begins with the individual's affective experience but that stretches out into their subjective understanding of their own self and society. As McIvor therefore observes, "While spectators experience themselves singularly in the moment of performance, ANU's body of work ... is directed towards using these one-on-one or small group immersions to highlight the larger structural systems of power that comprise the workings of the Irish state and mark the limits of the imaginary of the Irish nation as a shared community" (60). As such, ANU's affective dramaturgical approach utilizes an aesthetic that allows them to begin with individual experiences: the experiences of those whose testimonies they draw on, of the performers who embody and re-present those testimonies, and of the participant who moves through and brings their own sensing body to the understanding of the performance. However, these individual experiences are deliberately fragmented and brought together in new ways, such that the individual participant experiences a multi-faceted, 'cubist' assemblage - an individual experience that is also an experience of collective multiplicity that stretches from past to present, and on into the future.

The juxtaposition of past and present in ways that allow for resonances between the two is a second key feature of ANU's aesthetic. McIvor describes how "ANU's work emphatically does not focus on recreation, but rather the splitting of time between past and present by throwing up fragments of events and stories that emerge from the company's engagement with the history of particular sites" (McIvor, unpublished, 4). As the participant moves through the performance they may encounter individuals who lived in that location at different moments in time. Equally, although the internal spaces of the location are often dressed with scenographic detail to capture a particular era, the participant enters and exits these spaces via the shops and streets of present-day Dublin. These shops and streets themselves often become liminal spaces where performers, often representing characters from another time, interact with the participant, bringing past and present into conversation with one another. ANU do not seek to create re-tellings of these

histories as stories and experiences that are 'past' - instead they seek to examine how those histories echo and resonate with the present.

McIvor utilises M. Jacqui Alexander's concept of palimpsestic time to discuss how ANU's practice of juxtaposing past and present seeks to reveal the invisible, material forces that shape peoples' lives. 'Palimpsestic time' is "time which is both 'here and there, then and now' and which makes visible 'the ideological traffic between and among formations that are otherwise positioned as dissimilar'" (McIvor, 2016, 50). By bringing 'past' individual experiences into conversation with the current experiences ANU's goal is not, therefore, to suggest that these experiences and contexts are the same. Instead, past and present are brought into an 'analogous relationship' (McIvor, 2016) with one another that reveals a similarity in how underlying forces such as capitalism, state control, and religious ideology have shaped and are shaping the resources and opportunities of Irish citizens and residents in both the past and present. The conversation is not just about how these systemic forces shaped the lives of those in the past, it is also about how those forces are operating in society today, in similar but mutated forms. ANU's interest, therefore, is not in 'immersing' the participant in the past to the extent that it overwhelms their own individual experience of the present. Instead it is "attuned to seeking correspondences of 'two or more things *with* each other' that may or may not elicit the strong invitation to compare" (52).

As I will examine in further detail below, *Citizen X* brings the 'past' history of the Dublin tenements in 1913 into conversation with the current experiences of home-owners who purchased poorly-built accommodation at high prices during the Celtic Tiger. ANU's intention is not to suggest that the home-owners of 2013 are exactly like the tenement dwellers of 1913. Instead, the testimonies of both are brought into an 'analogous relationship' with one another that reveals how the underlying forces of property ownership, labour, capitalism and lack of state regulation are made manifest in the ways that they impact on the lives of individual persons. Recognizing the resonances thrown up by this 'analogous relationship' involves the individual participant in an experience of collectivity that propels the past urgently into their own present. As such, McIvor suggests that ANU's use of palimpsestic time can "engender critical openings in the present that encourage shared futures through collective political action and structural transformation" (2016, 51). These critical openings form the third key aspect of ANU's aesthetic

approach - their invitation to the participant not just to take action within the performance but to choose to *act differently* in the future.

This 'call to action' is at the heart of ANU's aesthetic. By evoking an experience of collective multiplicity within and through the individual participant, ANU gives the participant a sense of being both acted on and taking action. By exciting resonances that reveal the invisible socio-economic and political forces moving and shaping lives past and present, ANU asks the participant to consider how they are both shaped by, and are part of, these forces. As Miriam Haughton observes of her experience as a participant in the performance *Laundry*, "I was no longer a spectator in a theatrical, imagined performance but a complicit member of Irish society, asked to consider the limits of my own social responsibility and willingness to intervene" (Haughton, 77). However, it is important to note that this 'call to action' is not a direct order, and rarely involves the participant being asked point-blank to commit to taking action. Instead the 'call to action' is an invitation to the participant to open themselves up to, and engage with, stories and experiences that are not their own, and yet that reveal something about the time and space they inhabit. As such, ANU create experiences that contain a potential for transformation, but which do not proscribe or dictate this transformation. Where a performance does engender a transformative effect on the participant (as experienced by Haughton), it opens up new spaces of possibility in both their psychological and bodily understanding of self. These spaces of possibility allow the participant to perceive what might previously have been invisible, both in the past and in the future, and to imagine alternative ways of perceiving and acting, both personally and as a member of society. As such, these spaces generate what Haughton terms a 'post-performance efficacy' (Haughton, 90) - a momentum whereby participants are impelled to share their experience with other non-participants, to communicate what their transformation revealed to them, and to connect with and involve others in a new awareness of what needs to be acknowledged and 'seen'.

In this way, ANU's performances move from being affective 'experience machines' where the sensory, bodily experience is the end-point of the performance, to being affective experiences where the sensory, bodily experience is a way of revealing and bringing the participant into conversation with the stories and experiences of groups of individuals who have been (and are being) forgotten, elided or discarded through the homogenizing force of dominant social and historical

discourse. As such, ANU's work is intentionally political, in that it addresses the participant as a member of wider society, and raises the question of what they might do to both re-dress these acts of 'making invisible' in the past, and ensure that others are not 'made invisible' in the present or future.

'Thirteen' in the Dublin Fringe Festival, 2013

Citizen X formed one of the works in *Thirteen*, a series of thirteen interconnecting performances created by ANU for the Dubin Fringe Festival 2013. *Thirteen* was an ambitious project which overlayed and interconnected the causes and effects of the Dublin Lockout[98] in 1913 with the social, economic and political effects of the economic collapse of the Celtic Tiger[99], as manifest in the Dublin of 2013. It is worth quoting ANU's project description in full as it lays out both their ethical and aesthetic approach to the work:

> "The closest thing Ireland has ever had to a socialist revolution, the Dublin Lockout provides us with a glimpse of an alternative Ireland. The current economic collapse and the resulting national distress pulls

98 The Dublin Lockout remains the largest industrial dispute in Irish history, during which over 25,000 workers were laid off by employers in response to their efforts to unionise. The Lockout commenced in August 1913, against the backdrop of socio-economic and political unrest in Ireland. Industrial working-class families were living in extremely over-populated tenement 'slums', on very low wages, a situation which gave rise to severe social deprivation, including high instances of disease and mortality. As almost a quarter of slum landlords were city councillors little was done by Dublin Corporation to relieve the suffering of the workers. The trade union movement led by the Irish Transport and General Workers Union, under Jim Larkin, began to organise workers to protest against their living and working conditions. Employers, led by William Martin Murphy (owner of the Dublin United Tramsway Company), fought against the unionisation of the workers, sacking those they suspected of membership of the ITGWU. On the 26th August, 1913 tram drivers and conductors in Martin's company went on strike. In response, Martin 'locked out' unionised workers and employed non-union workers. The dispute quickly spread throughout Dublin, with over 20,000 workers and 400 employers becoming involved in strikes and lock-outs. Both the Catholic Church and the forces of the State became involved in the dispute, primarily on the side of the employers. The Lockout continued until January 1914, ending with the defeat of the unions and Larkin's recommendation to workers to "return to work on the best terms they could secure". The unions did not recover until the labour shortages of World War 1 gave workers greater power. The events of the Lockout also convinced many people that workers in Ireland would never secure fairness and equality under British rule. This belief ultimately fed into the 1916 Rising, the military rebellion against Britain rule in Ireland which precipitated Irish independence. (See the National Library of Ireland - http://www.nli.ie/lockout/).

99 The term 'Celtic Tiger' refers to the Irish economy from the mid-1990s to 2008, when the country experienced high and sustained economic growth, driven by investment from high-tech multinationals, and a subsequent property bubble (Donovan and Murphy, 27). The economy suffered a dramatic reversal from 2008 onwards, when 'Black 2008' "caused extensive damage to a sizeable part of Ireland's economic fabric and had major repercussions for all parts of Irish society" (Donovan and Murphy, 1).

> the issues of one hundred years ago sharply into focus. Echoes of mass meetings and marches, industrial unrest and the very rights of the citizen reverberate today as it did then.
>
> Building incrementally day by day over thirteen days of the festival, ANU presents a series of thirteen interconnecting works combining performance, installation and digital technology allowing audiences to immerse themselves in the tumultuous events of 1913 as they unfold in present day Dublin."[100]

Through this project, therefore, ANU sought to 'humanise' history by infusing the accounts of the 1913 Lockout with the lived awareness of present-day socio-economic struggles and suffering. At the same time, they sought to use history to 'activate' the present by reading the ideology and activation of the 1913 workers forward into 2013, where it could offer 'a glimpse of an alternative Ireland' rooted in a more equal, social form of citizenship.

Thirteen was commissioned by the Dublin Fringe Festival, with additional financial support from the Arts Council of Ireland, Dublin City Council and the Irish Congress of Trade Unions. All the performances in the series were free, although, because of capacity restraints, audience members were required to book tickets. The free ticketing was a direct response to the financial suffering of much of the Irish population post the economic collapse. By removing financial barriers to attending the event, the Fringe and ANU potentially widened the audience base beyond the traditional ABC1 demographic of the Fringe audience (as discussed in the context of *Just In Time* in Chapter 4). However, the limited capacity of many of the performances meant that the event sold out in a matter of hours, meaning that those 'in the know' (those who had already read the Fringe programme, or followed the Fringe on social media) were more likely to access tickets. Nevertheless, performances such as *Citizen X, Speakers Corner,* and *Assembly*, which utilised public spaces (and public transport, in *Citizen X*), had relatively unlimited capacity, and so offered potential audience members a fair and democratic opportunity to access, and participate in, the event.

100 http://anuproductions.ie/thirteen/

The series commenced on the 9th of September, 2013 with *Citizen X*, which ran for the following thirteen days, and finished with *Assembly*, which was performed only once, on the 21st of September, day thirteen of the series. The thirteen performances loosely followed the historical trajectory of the Lockout, beginning with an interrogation of citizens' working and living conditions prior to the Lockout, through to the strike and subsequent lockout, and on to the various ways in which the workers' attempts to withstand the lockout were frustrated by the hegemonic forces of capitalist industry, the Catholic Church, and the State (Dublin Corporation and the Dublin Metropolitan Police). This historical trajectory was refracted and reflected into present-day Ireland of 2013, and on towards a potential future, through ANU's multi-disciplinary and site-responsive performance practice. For instance, *Resilience*, the second performance in *Thirteen,* took place in a former tenement house (now museum) at 14 Henrietta Street, and used a combination of dance and spoken word to express the dilemma faced by parents who, in 1913, had to make the difficult choice to send their children to England to prevent them dying of starvation. Later in the series, the piece *Speakers' Corner* took place outdoors at the statue of James Connolly, outside Liberty Hall (headquarters of Ireland's largest trade union, SIPTU), and took the form of a public address and open debate which gave "a clear voice to the issues affecting people today" (McCormack, "Why Should We Fight").

In the last performance, *Assembly*, the audience assembled at 9.30pm in the Art Park, Spencer Dock, a public space that ANU also utilised as the final location in *Citizen X,* thereby giving a 'palimpsestic' sense of returning "to where it all began" (McCormack, "Where Do We Stand Now?"). The video projection of *Citizen X,* interweaving images from 1913 and 2013 (see below), still illuminated the wall of one of the buildings, and this time formed the backdrop to a collective performance by the entire cast of the thirteen performances. In the performance, the cast read aloud an open letter by Colm O'Gorman, director of Amnesty International, Ireland, which asked the audience to consider what type of state was being rebuilt from the ashes of the Celtic Tiger, and called for constitutional reforms that would protect citizens in the event of future economic crises. Through O'Gorman's words, the 'then' of 1913 was worked back into the 'now' of 2013 and "a course of action in the present ..[was].. made visible" (ibid.). The performance concluded by asking audience members to divide into pairs and respond to two questions: 'where do you

stand ?' and 'how do you begin ?', inviting them to actively engage with what they could do at an individual and collective level to "reimagine their lives and improve their living situations" (ibid.) in 2013 and beyond.

With its numerous, simultaneously running performances, and its attempt to actively evoke an 'alternative Ireland', *Thirteen* was ANU's most ambitious and also their most overtly polemical work. In some cases, the political intent of some of the performances took away from ANU's 'cubist' and multi-faceted approach to historical and social narratives: as reviewer Chris McCormack noted, "Halfway through *Thirteen* ... we realise that the devices of audience implication it insists on are problematic... [that] the work is more affecting when it presents unheard histories with voices on either side of a crisis ... and strongest when it makes you feel part of a greater unit: a people, a city" (ibid.). McCormack goes on to suggest that "whatever civic action a theatre-goer decides to take, it needs to come from a self-realisation" that comes "from a powerful sense of the present being refracted through the past, of the spectator acquiring a lived memory of a hidden history and bringing it into the political landscape of the present" (ibid.). This 'self-realisation' was arguably most effectively evoked in the first of the thirteen performances, *Citizen X,* whose 'now-then-now' dramaturgy interwove the effects of landlord greed and lack of government oversight on living conditions in Dublin 1913 with the effects of property developer greed and lack of government oversight on living conditions in Dublin 2013.

The 'now-then-now' of Citizen X

In *Citizen X* the participant experienced the interweaving of the 'now' of a character identified only as the 'girl in the red jacket', the 'then' of the tenement crisis of 1913, and the 'now' of the participant's own lived experience of the performance and, more widely, their lived experience as citizens of the Irish state in 2017. The 'now' of the girl in the red jacket examined her lived experience as someone who had bought an expensive, newly built apartment which was later deemed to be unfit for habitation due to a large number of safety defects. This 'now' referenced the real experiences of residents of the Priory Hall apartment complex, one of the most high-profile example of the consequences of the lack of government over both the construction of property and the lending of mortgages during the Celtic Tiger. Following a report in 2011 by Dublin City Council which highlighted severe fire safety issues the High Court

ordered that all residents of the Priory Hall apartment complex were to be evacuated and housed in alternative accommodation. In 2013 residents were still living in temporary accommodation while legal battles raged between the property developer, insurers and Dublin City Council over who was ultimately responsible for the property. Despite being unable to live in their homes, the owners of apartments, most of whom had taken out substantial mortgages, were pursued by their banks for repayments and arrears[101]. The girl in the red jacket drew the participant into the lived experience of this 'now' - into the daily struggle to "stay positive" while coping with the huge burden of financial and personal insecurity.

The focal point of 'then' in the piece was the collapse, in September 1913, of two extremely dilapidated tenement houses on Church Street, Dublin. The collapse resulted in the deaths of seven residents, including four children, and drew public attention to the housing and poverty crisis in the slums of Dublin. The Church Street tenement tragedy, which occurred on the day the Lockout began to take effect,, highlighted the interconnection between the exploitation of workers, the endemic poverty of the working class in Dublin, and the appalling living conditions in which many working-class families lived, brought about by landlord self-interest and lack of government regulation. In *Citizen X* this focal point provided a way to examine the wider, systematic forces at work both leading up to and driving the workers' strike and the subsequent Dublin Lockout. The invoking of this 'then', therefore, prompted the participant to read the stark lessons of the past forward into the analogous space of the present 'now'.

The second 'now' of the piece constituted the participant's lived, sensory experience during the piece. This 'now' was infused with both the 'now' of the girl in the red jacket, and the 'then' of the tenement crisis, and drew attention to the ways in which the victims of the Celtic Tiger property crash and mortgage crisis were (and are) silent sufferers, lacking even the support of an out-raged public united in solidarity behind them. Commenting on his own experience of the piece, Irish Times critic Peter Crawley noted that "[i]n 1913, tragedy and uproar became huge public displays. Now it takes an artistic intervention to bring countless, isolated sufferings to the surface." (Crawley, "Return Journeys"). *Citizen X* highlighted this

101 The resulting intense personal pressure and stress experienced by residents was brought sharply into focus by the tragic death by suicide of Fiachra Daly, and his partner Stephanie Meehan's subsequent open letter to Taoiseach Enda Kenny in August 2013.

atomized and isolated suffering - epitomized by the girl in the red jacket, and also possibly felt by some of the participants themselves - by drawing the participant's attention to their own inter-action (and lack of inter-action) with others. As Crawley's review highlights, it also prompted the participant to consider their own relationship to the economic crisis and their own responsibility to act. In drawing on the testimonies and responses to the Church Street tenement collapse, the piece suggested that the participant's active role was, in part, to recognize the failure of the Irish state (post independence from Britain) to provide its citizens with housing security. It also prompted participants to recognize that the systemic forces of capitalism exerted as strong an impact on the lives of citizens of the Ireland of 2013 as they did on the lives of citizens of Ireland in 1913. However, in the overall context of *Thirteen,* and in particular the final performance, *Assembly*, *Citizen X* challenged the participant to carry this 'post-performance efficacy' one step further into a more active form of civic engagement - to "choose another way" (as the LUAS voice suggests at the end of the piece), an alternative way that opposes the systematic forces of 21st century neoliberal capitalism through a collective, societal force focused on the human rights of the citizens and inhabitants of Ireland.

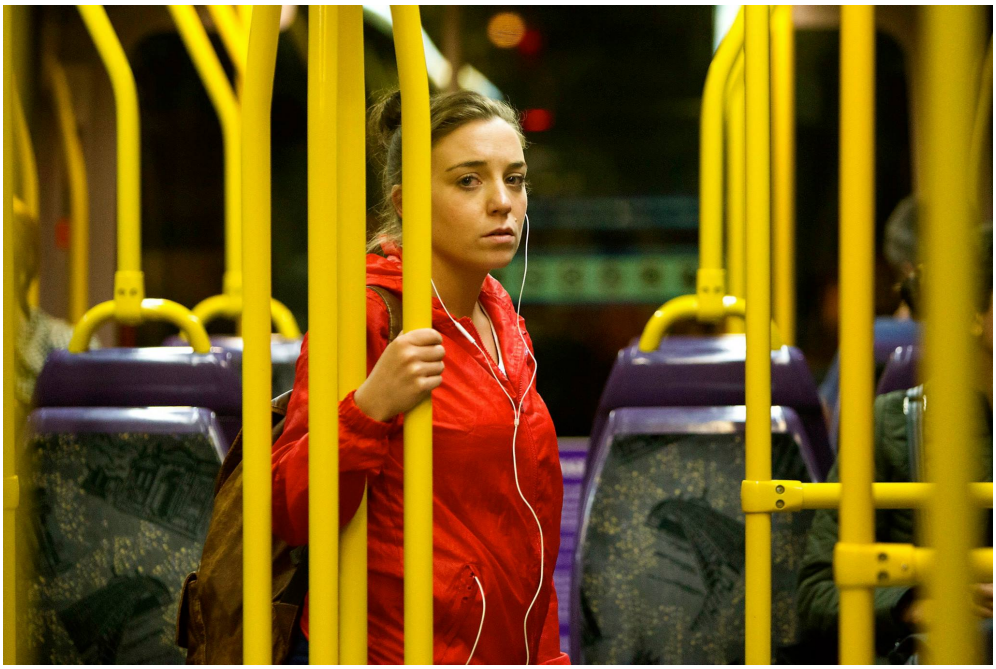

Fig. 5.1: Dee Burke in the role of the 'girl in the red jacket'. 'Citizen X' by ANU Productions, 2013. Photo by Patrick Redmond.

Citizen X: Design

Citizen X was a mobile experience that brought participants, via public transport (the LUAS tram), from Jervis Street in the City Centre to Spencer Dock in the Dublin Docklands area. Each participant was asked to download an mp3 track to a smartphone or mobile mp3 player in advance. The mp3 track provided a 'soundscape' for the performance that combined voices, sound and music, to which participants listened (via their headphones) for the duration of the performance (30 minutes). On their journey from Jervis Street to Spencer Dock participants were asked to observe (and later follow) a single performer (Dee Burke), simply identified as 'the girl in the red jacket'. The girl in the red jacket alighted at the Spencer Dock LUAS stop and led participants to the Art Park, Spencer Dock. There, participants experienced a large-scale video montage, projected onto one of the buildings, which juxtaposed images and text from 1913 and 2013. The girl in the red jacket went inside an office building and participants watched her from outside, through the windows of the lit foyer, as she performed a series of movements that escalated into a frenetic dance piece (still accompanied by the soundscape of the mp3 track). The performance finished with the dance piece, and participants were left to make their own way back from Spencer Dock.

The mp3 track was an integral part of the performance; at the beginning of the performance, as they stepped onto the LUAS at Jervis Street, the participant began to play the mp3 track, and the track accompanied the performance for its full 30-minute duration. Each participant listened to the mp3 track via headphones, creating a dual experience of having both an individual and intimate 'one-on-one' performance, while being part of a larger group of participants. On the track the participant heard a 'cubist' collection of four different voices: the interior thoughts of the girl in the red jacket; the (female) voice of the automatic announcement system on the LUAS tramline[102]; a (male) voice speaking reading out extracts from various media and political responses to the collapse of two tenement houses in 1913; and a (female) voice that spouted the sales language of property brochures from 2005-'07. The four voices did not interact with each other - they were not characters in a

102 Performed by Doireann Ní Bhriain, the original voice artist who recorded the automatic LUAS announcements.

drama. Instead, they appeared in fragments, often addressing the audience member directly. The voices inter-wove with a continuous soundscape that fused synthetic sounds (such as low, pulsing drones) and environmental sounds (such as the sound of the LUAS doors closing) with moments of music, creating a shifting aural landscape that built to an uncomfortable crescendo. The track also made use of repetition, and played with distance and echoing, such that phrases that had been spoken came echoing back later in the track, and began to layer up and distort as the track built to its final crescendo.

In addition to the mp3 track, the performance also incorporated one performer (Dee Burke). The performer took on the role of the 'girl in the red jacket'; however, unlike other ANU performances, the performer did not interact directly with the participants, remaining at a physical distance from them, much like a normal passenger on the LUAS who was lost in her own world. As with *Just In Time* (Chapter 4), therefore, each participant experienced the 'character' of the girl in the red jacket both physically - as a body in the space around them - and virtually - as a digital voice, intimately audible through their headphones.

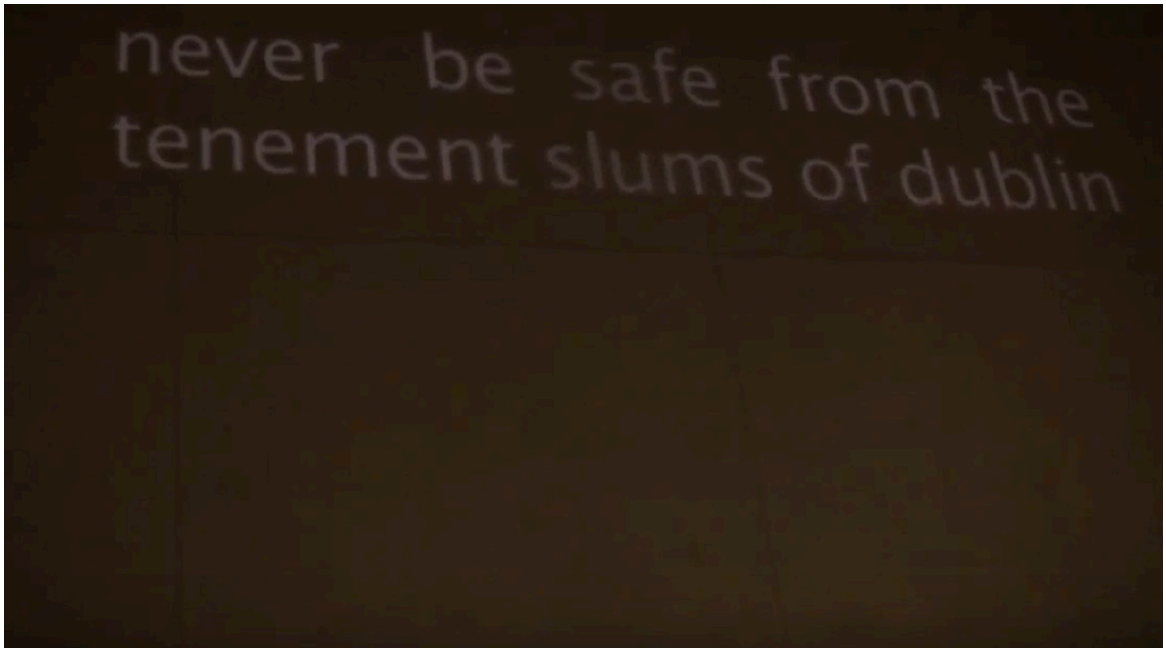

Fig 5.2: Video projections on the wall of the Art Park, Spencer Dock. 'Citizen X' by ANU Productions, 2013.

This 'cubist' approach to experiencing the character was reinforced by the digital video projection which participants viewed towards the end of the piece, where pictures of the private, everyday life of the girl in the red jacket were projected onto a large outdoor wall in a public space (Art Park, Spencer Dock). These images were juxtaposed with images of the living conditions of families in the tenements of 1913, and with text that visually echoed phrases spoken on the mp3 track from the responses to the Church Street tenement collapse (fig. 5.2).

Both the voices on the mp3 track (particularly the LUAS voice), and the digital projections, heightened the participant's awareness of the physical spaces around them as they made the journey from Jervis Street to Spencer Dock. These spaces included the highly 'clean', technological space of the LUAS tram itself, the architectural landscape of Dublin along the LUAS route (incorporating both areas of high street development and turn-of-the-century buildings, some in poor repair), the streets around the Docklands area (a ghost-land of finished and unfinished office buildings from the Celtic Tiger era and subsequent property market collapse), and the Art Park, Spencer Dock, "a clean, corporate interpretation of a public space" (Cawley, "Return Journeys"). As the performance began at 8.15pm (with a subsequent show at 9.15pm) the participant experienced these spaces in the evening, lending a particularly abandoned quality to the Docklands area, which was largely deserted after office hours. The darkness also allowed for large-scale video projection, and created a contrast between spaces of brightness/darkness that emphasized the themes of proximity/distance and visibility/invisibility in the piece.

Fig 5.3: The girl in the red jacket (Dee Burke) beats on the window as participants watch from outside, towards the end of the performance. 'Citizen X' by ANU Productions, 2013.

Citizen X: Experience[103]

Arriving at the Jervis Street LUAS stop the participant first bought their LUAS ticket. They then boarded the LUAS and pressed 'Play' on the mp3 track[104]. In their headphones they immediately heard the voice of the automatic LUAS announcements echoing the announcement that issued over the loudspeaker of the LUAS itself as the door closed: "Next stop Abbey Street. An chéad stád eile - Sráid na Mainistreach". The voice, a cool female voice with an Irish accent, is a very familiar one, particularly to Dublin residents and regular visitors to the city, and its familiarity tied the piece in tightly to the participant's own immediate reality and their awareness of their surroundings. As the LUAS pulled away from the Jervis Street stop a pulsing beat began on the track, echoing the physical movement of the

103 As I did not attend a performance of Citizen X in person, this description of the participant's experience is based on my own 'close reading' of the mp3 track (which I downloaded separately - see ANU Productions, "Citizen X", mp3). I have combined my 'close reading' of the mp3 with published accounts of the experience (Crawley "Return Journeys", McCormack, "Why Should We Fight"), video of the performance (see "Citizen X - ANU Productions" (Short Video), images and information from the ANU website (see "THIRTEEN"), my own personal experience of the LUAS journey from Jervis Street to Spencer Dock and of the surrounding location, and anecdotal evidence from friends and colleagues who did attend in person.

104 All quotes in this section are taken from the mp3 track (see - ANU Productions, "Citizen X", mp3).

tram. As the participant stood or sat, feeling this physical (possibly familiar) movement, the LUAS voice suddenly addressed the them directly, asking them "How was you day?". Delivered through their headphones, her voice took on a very intimate and personal quality, suggesting a very particular interest in them alone. This direct interaction immediately complicated the sense of familiarity the participant felt in listening to the voice announcement, a familiarity based on the idea that the announcements are predictable and general (rather than personal). By complicating this sense of familiarity the track also called into question the neutrality of the voice - and, by extension, the neutrality and trustworthiness of the technological system the voice was a part of - a tension the track continued to highlight throughout the performance.

The LUAS continued to move slowly along the street, an chain of illuminated carriages moving through the dusk. The sense of being separate from the world outside was reinforced by the soundscape on the mp3 track which combined the low pulsing with distorted sounds that seemed to pass by, as though the tram was in a tunnel. The LUAS voice instructed the participant to "Concentrate. Listen to my voice. Breath In". After a pause the voice asked them "What is the air like?". These instructions and questions focused the participant's attention on the aural sensation of the voice, the physical sensation of breathing, and on their own sense of the air and space around them - its smell, density, warmth, etc.. As such they awoke a bodily awareness in the participant, whereby they were receptive to their sensory experience of both their own body, and to other bodies and the space around them. Having asked what the air was like, the LUAS voice went on to conversationally impart information on the definition of 'personal space'. She noted that "in crowded urban communities it is at times difficult to maintain personal space - for example, in a crowded train". Her unspoken insinuation was that, standing amongst the crowd on the LUAS tram, the bodies of numerous strangers were within 'intimate distance' of the participant's own body. "Intimate distance," the LUAS voice dulcetly informed the participant, "is reserved for lovers, children, close family members, friends and pet animals". Having drawn the audience members' attention to their own bodily closeness to others, and to the personal connection this closeness implies, the LUAS voice asked them "How are you feeling? What is the air like now? How is it different to before?". Her questions served to prompt the audience member to reflect

on their heightened awareness of the bodies of others in the space around them, and, possibly, to recognize their discomfort at this forced intimacy with strangers.

The participant's awareness of the separateness and 'atomisation' of the passengers in the tram was underscored by the LUAS voice, which instructed them to "Look around at the other passengers ... If you make eye contact, look away. What are they thinking? Did they dream last night? Where are they going?" (2:27 - 2:48). In (furtively) observing the other passengers, and making an attempt to answer these questions, the participant was brought to a recognition of the gap between their bodily closeness to these strangers and their sense of personal connection (and responsibility) to these strangers. The LUAS voice then extended this awareness beyond the confines of the tram itself, prompting the participant to look out the windows and take note of the space they were passing through. The voice drew their attention to the people they were passing - people they were physically separate and distanced from. "There's a woman on her way to work," the LUAS voice told them, "She is tired. She burned her hand today on a hot iron. She wasn't concentrating" (3:31 - 3:41). This momentary insight into an individual experience, which the participant is prompted to 'read' onto the body of a woman (a non-performer) on the street, evoked a sense in the participant of the thousands of small 'invisible' moments and experiences occurring the lives of the people around them. This awareness of a multiplicity of lives and experiences was evoked a number of times throughout the LUAS journey; later, as they travelled past Connelly Station, the LUAS voice recounted momentary glimpses of peoples' lives to the participant: "There's a man on the LUAS who had his lunch in a soup kitchen this morning. He never thought he'd have to do that. ...The driver is thinking about his long bus ride home" (7:19 - 7:45). These momentary glimpses again generated an awareness in the participant of the gap between their physical proximity to the people around them and their personal connection with these people, and paved the way for the introduction of the girl in the red jacket, a stranger whose intimate, personal world fused, for a brief time, with the participant's own world.

The girl in the red jacket (performed by Dee Burke) was a young woman wearing a red jacket and backpack and, like the participants, wearing headphones (fig. 5.1). The LUAS voice informed the participant that "A girl will get on at Abbey Street in a red jacket" (1:43). As the LUAS moved on from the Abbey Street stop towards the next stop, Bus Áras, the participant heard the voice of the girl in the

red jacket (also performed by Dee Burke) for the first time - a stream-of-consciousness, interior monologue of lists and financial calculations:

> "Six hours sleep. Thirty four minutes walk to Luas, Abbey Street, Reynolds Shop. Coffee - one fifty, adult return - three seventy. 'Round three hundred a month. ESB - twenty five a month, internet - twenty a month, food - one twenty a month. Transport - eight eighty a month, nappies - forty four a month. Formula - fifty two a month, baby wipes - eight a month. Baby food - forty a month ..." (3:53 - 4:13).

The first-person delivery of these thoughts and the intimacy of the delivery of audio through headphones conjured up a felt awareness of the voice, such that it almost felt to the participant like these thoughts were occurring in their own head. The girl then began to describe the cleaning tasks she undertook night after night:

> "I'm able to clean and disinfect sinks, counter-tops, floors, toilets. I repeat the same jobs in the same order night after night. Start in the reception. Hoover. Polish. Clean the glass. Survive on five euro fifty five cents a week" (4:15 - 4:28).

The girl's voice stopped and the participant heard her words on the track as a distant echo, the aural pattern of repetition echoing the girl's description of repeating the same tasks every night. The LUAS voice spoke to the participant again, suddenly shifting them from the 'now' of the girl in the red jacket, back to their own 'now', where she instructed them to:

> "Look around at all the other people. Look at someone you don't know. What kind of person do you think they are? Imagine what they might be thinking. Imagine what they might be thinking about you. Notice if anyone is looking at you" (4:28 - 4:54).

These instructions prompted the participant to engage with both how they read, and were read by, others around them. The instruction to look at someone they didn't know and imagine their thoughts followed on from the participant's awareness that they had just 'heard' the inner thoughts of the girl in the red jacket, and knew that she was under huge financial strain. However none of this was obvious from her appearance - she was, from the outside, an 'average' young woman riding the LUAS. As such, the LUAS voice's instruction pointed up the gap between what we might assume about people and the reality of their lived experiences.

As the LUAS journeyed on from Bus Áras past the Connelly Station stop and on towards George's Dock, the voice of the girl in the red jacket and the LUAS voice interwove with each other, juxtaposing the participant's felt understanding of the girl's desperation and strain, and their experience of also being on the outside, a party to the LUAS voice's observations about her:

LUAS voice: Look for the girl in the red jacket ... Waster.

GIRL: Two cleaning jobs. No space or time for anything else. No way out, no way back.

LUAS voice: She is a burden on the State" (5:31 - 5.46).

This sudden change of tone in the LUAS voice, from 'neutral' to harshly judgmental, was re-enforced by a change in the tone of the soundscape, which began to fill with the low thrumming twang of strings, generating an uncomfortable and on-edge sensation. As the track continued, the girl's voice moved from being in the foreground to being an echo in the background, and back to the foreground again. Although it wasn't immediately obvious, the participant began to hear phrases the girl would later speak clearly echoing distantly as part of the underlying soundscape. They caught the word "suffocating" (6:14), which bubbled desperately to the surface of the soundscape, and punctuated the LUAS voice's direct address. Later, they caught more distant snatches of the girl's experience: "It's putting strain on our relationship. We can't talk about it anymore" (6:34 - 6:38).

As the LUAS continued to move, the LUAS voice again drew the participant's attention to their own sensory experience - instructing them to look out the window at the people passing, to notice the vertical yellow handrails, run their eyes along the floor of the tram, and become aware of the lurching movement of the carriage. Echoing one of the real announcements passengers hear on the LUAS, the LUAS voice warned the participant that: "Pickpockets operate on this LUAS" (6:25). She then commented: "That man in black holding The Sun newspaper looks suspicious" (6:30). The personal nature of the second observation highlighted the way in which the more general warning subtly suggests to passengers that they should not trust the people around them. The LUAS voice went on to tell the participant: "I watch everything. I've watched you before. Look left, look right, look left again. Look up. Remember - you are being watched. Hold on to something. Do you feel safe? Do you trust me?" (6:40 - 7:02). By conflating her own surveillance with the instructions given to children when crossing the road the

LUAS voice suggested to the participant that she was in the position of the 'responsible adult', and that, because she watched everything, she was to be trusted. However, in the next moment she misnamed the upcoming station: "Next stop, Connelly ... Sorry - my mistake. Next stop, George's Dock" (7:03 - 7.10). Catching herself up quickly, the LUAS voice continued to project an air of calm authority; however, following on from her sudden harsh judgment on the girl in the red jacket, the participant was again made aware of the potential for surveillance and bias within this supposedly 'neutral' and authoritative system (and, by extension, within the mobile technology the participant was themselves using to access the performance).

As the LUAS moved on from the George's Dock stop towards the participant's final destination, Spencer Dock, the performance began to focus more directly on the experience of the girl in the red jacket. The tone of the soundscape changed again, using long, reflective notes on strings that created a sombre and melancholy sound. The LUAS voice again drew the participant's attention to the physical presence of the girl, instructing them to "Look at the girl in the red jacket". She then told them that "Dublin City Council has gone to the Supreme Court to say it should no longer be responsible for her. The government says it's not responsible. The banks refuse to comment on her present circumstances" (7:47 - 8:03). Intersecting with the LUAS voice, the girl in the red jacket's voice read aloud from a letter sent to her by Dublin City Council: "Your homes are no longer safe to live in and we'll be going to court to seek to have you removed" (8:13 - 8:17). Overlapping and intersecting with each other, the voices of the LUAS and the girl in the red jacket conveyed a glimpse of the girl's story. The two voices presented contrasting perspectives: the LUAS voice was cool, factual, and systematic, while the girl's desperate and exhausted voice conveyed the lived experience of this lack of housing, financial and personal security: "We thought it would be for a few weeks, but we are still refugees. ...I now hate what other people have. ...I don't just have little money, I have less than money. I don't own anything" (8:28 - 9:13).

The girl in the red jacket's experience led the participant to a growing awareness that, like the flaws in the supposedly 'neutral' system of the LUAS voice announcements, the state and economic systems were also deeply flawed. This sense of the failure of systems was highlighted by the LUAS voice's repetition of her earlier questions to the participant - "Do you feel safe? Do you trust me?" (9:16).

These questions were immediately followed by the voice of the girl in the red jacket, listing a long litany of safety defects in their new home: "Unsecured railings; flooded car-parks; cracks in the walls; flooded sitting rooms; inadequate fire resistance in wall cavities, inadequate alarms and potential problems with gas and electrical installations" (9:20 - 9:29). Against this evidence of the failure of the state and the market to provide safe, well-built houses the LUAS voice's questions took on a wider resonance, and this time asked the participant to consider if they felt protected by, and trusted in, the state and societal systems they were enmeshed in. The subsequent few moments asked the participant to begin to realize that real security might lie in trusting other people and themselves:

LUAS Voice: Who do you trust?

GIRL: The blame game is long over.

LUAS Voice: There's a woman sitting down. There's a person holding a handrail like it's a lifeline.

GIRL: It's time for real solutions.

LUAS Voice: Stand where you can see a window. Can you see your reflection? What else can you see? (9:30 - 9:54).

Through this juxtaposition of voices the 'real solution' needed by the girl in the red jacket was linked to the question of who the participant felt they could trust. By directing the participant to consider the other passengers around them, and their own selves, the performance suggested that what was needed was a renewal of empathy and solidarity between strangers on a train.

The segment of the performance that took place on the LUAS ended on this note, and the participants followed the girl in the red jacket as she alighted at the Spencer Dock LUAS stop. As they stepped out of the lit LUAS carriage into the evening landscape of the Docklands, the LUAS voice drew their awareness to this new environment: "Lots of empty space. It's like it got ready for a party that never happened. ... Look at the surfaces of the buildings as they pass. How dirty are they? When was the last time they were cleaned?" (10:13 - 10:48). The participants followed the girl in the red jacket across the road towards the rear of the Dublin Convention Centre. Away from the crowded LUAS it was now clear who the other participants in the performance were. This time, the LUAS voice encouraged the participant to notice and connect with the other participants, asking them: "Who do you see? Who do you know?" and instructing them to "Make eye contact with

someone" (11:09 - 11:17). The participants proceeded as a group through the dark Docklands landscape of newly-built and half-finished office and apartment blocks, following the lone moving body of the girl in the red jacket, and accompanied by the soundscape of the mp3 track, which again used long low notes on strings to generate a reflective and elegiac atmosphere. "What was here before all this?" the LUAS voice wondered (11:53).

As if in response, the strings soundscape dropped away and the participant suddenly heard bright, jingle music begin. Over this jingle they heard a new voice which, it quickly became apparent, was the voice of multiple property development brochures from the Celtic Tiger era, describing the qualities of as-yet-unbuilt properties. The voice was that of an effusive, almost pantomime, female sales-woman. She conjured up images of a "superior, brand-new apartment development in one of Dublin's most talked about developments", listing the range of amenities and features, including "contemporary, fully-equipped kitchens" and "luxury bathrooms". These apartments, she concluded triumphantly, represented "a wonderful opportunity to acquire" (12:00 - 12:44). The girl's voice cut into this over-the-top sales patter, so representative of the Celtic Tiger, creating an immediate contrast with the situation of the girl in the red jacket, one of the people who believed the sales pitch and bought property in such a development. The bright music vanished and the soundscape behind her voice was bleak, conjuring up the sense of cold wind in an empty space. Speaking in a low tone of voice, the girl listed out her daily tasks as an office cleaner, and the participant was shifted abruptly from the bright, fantasy world of the sales brochure to the grim, human consequences of the property bubble. The participant heard the girl in the red jacket's thoughts continue: the careful calculations of every penny she had to spend that day; the step-by-step naming of her daily routine; each list a precarious attempt to stay in control and stave off chaos and despair. "Survive on five euro fifty five cents a week" she concluded. "Catastrophe" (13:38 - 13:44).

As participants congregated in the Art Park, at the rear of the Dublin Convention Centre, a digital video projection appeared on the wall. Another new voice - this time a man's voice (the Report voice) - intersected with the girl's voice, declaring that: "Some of these structures scarcely deserve the name of house, and could more aptly be described as shelters" (13:08 - 13:14). The man's voice, it later became clear, was speaking words from the report on, and responses to, the Church

Street tenement collapse in 1913. The girl in the red jacket herself sat down alone amongst the grey concrete benches and pillars in the Art Park, still with her headphones on. As the participants watched the projection they saw images of the girl's private life appear on the wall of the public space - photographs of her with her husband and daughter, smiling at the camera; images from their home together. These images became juxtaposed with images of the 1913 tenements, and with text that spelt out some of the responses to the tenement collapse (fig. 5.2). As they watched they heard the girl's voice interweave with the Sales voice and with the Report voice. The girl listed out her daily routine as an office cleaner, and offered brief glimpses into the efforts she and her husband had made to save for their mortgage, and the dreams they had for their house together. In short snatches, the participant learned of her struggle to pay the mortgage arrears by working two jobs, and the strain it has taken on her psychologically. The sound of a cold wind blowing rose, filling the emptiness of the space around the participant. The girl's words interwove with the words of the Report voice, who spoke snatches of sentences from 1913 that eerily echoed the girl's own circumstances. "Returning to the death trap we call home" (17:27) he commented at one point, and, at another: "Houses were allowed to stand until they gave magic proof of their dangerous character" (21:32). The Sales voice continued to interpolate with contrasting snatches of bright sales speak, which took on an increasingly sinister aspect, becoming a siren call luring young, hopeful couples to their doom.

As this interweave of voices continued the girl in the red jacket stood up and moved away across the square. As the participants followed they saw her enter the lit reception area of an office building. Taking off her backpack and jacket she began to go through the movements of her cleaning routine. The participants stood outside in the darkness, separated from her physically by the glass of the large reception window. On the mp3 track, the sound of the wind died away and the participant heard again the low throbbing pulse that underscored the beginning of the performance. The girl's movements began to become more stylized, repeated over and over again.

"I'm tired of staying positive" (22:49) the participant heard her say, while the Report voice warned that: "We shall never be safe from the tenement slums of Dublin ... Abolition is the only cure." (22:50). The analogous consequences of the tenement collapse of 1913 and catastrophic safety failures in the girl's newly-built property

became steadily clearer as the Report voice described how "Homes made with the hard-won labour of a lifetime of toil have been utterly destroyed ... and the owners, where miraculously spared, are left with the few poor ruins of what made their houses" (24:41 - 24:57). Repeated snatches of the girl's voice reminded the participant that she was now without a home, forced to live in a hotel, working two jobs in an attempt to stave off huge mortgage arrears. The Report voice noted that "It is impossible not to associate this calamity with the present labour troubles in Dublin" (25:00), revealing the interconnection between the issue of safe housing in both 1913 and 2013 with wider societal and political forces. The words of the Report voice also began to question the participant's own response to the girl's situation and suffering: "It is the duty of the citizens to come forward at once and generously enable our families that have been so afflicted to be afforded some relief ... Have we something more than barren words or mute thoughts of sympathy to offer the survivors?" (25:30 - 25:53).

As the participants observed the girl from beyond the glass window the girl's movements became more frenetic. On the mp3 track a clashing, banging sound began and the Report voice rapidly spoke the 'small print' of the sales brochures: "Visual representations, layouts and or scales may be approximate or representative of the development rather than exact specifications ..." (26:58 - 27:08). The participant heard sound of burning flames against the frantic clashing and banging, which began to sound like someone trapped or beating a door in frustration. Slowly the girl's voice, the Sales voice and the Report voice began to layer upon each other, repeating words and phrases. The voices began to distort and the soundscape grew steadily more intense as the participant watched the girl inside the glass window repeat her movements more and more frantically. Finally she approached the window and began to beat against the glass that separated her from the participants. As the cacophony rose to a higher and higher pitch the participant suddenly heard the LUAS voice repeat the words: "Breath in ... Breath in" (28:20). Such was the visceral connection between the participant's sense of unbearable tension (generated by the soundscape) and the visible manifestation of this tension and overload in the girl's physical body that it was unclear to whom the LUAS voice was speaking. As the cacophony reached its climax the Sales voice emerged clearly, declaring triumphantly - ".. and comfort!" (28:31). In the silence that followed the participant heard the LUAS voice again:

> LUAS voice: Leave now. Go home. Go to your own home. Enjoy your home. Get the LUAS. Or choose another way. (28:35 - 28:50).

The girl disappeared into the office building, and participants were left to make their own way from Spencer Dock. Unlike many of ANU Productions' works, all the participants finished the performance at the same time and in the same place; once they removed their headphones, they emerged from the intimate, singular space created through the mp3 track, into a collective gathering of people who had all witnessed, and been a part of, the same performance. Through this performance, as I will examine below, *Citizen X* gave form to the 'ghosts' of both 1913 and 2013, whose lives have been[105] harmed by the 'systematic compulsions' working on and through them, in a way that allowed the participant to acknowledge that they, and the society they live in, are haunted. In this way, ANU Productions encouraged the participant, in community with the performer, the inhabitants of the haunted space of the performance, and the other participants, to begin to engage with the ghost.

The Ghost in the Experience Machine: *Citizen X* and an 'aesthetic of haunting'

Citizen X demonstrates an 'aesthetic of haunting' both in its overall affective dramaturgy (shaped by ANU Productions' dramaturgical approach), and in its affective use of mobile technology to evoke voices that open up the participant to the experience of the 'other as part of me'. As such, it shows how mobile experiences can move beyond being 'experience machines' that re-inscribe neoliberal capitalist ideology and behaviours, and become experiences that evoke a form of 'ethical citizenship' that allows the participant to engage with, and act in response to, the 'unseen' things, people and experiences that lie 'beyond the bounds of conventional communication'.

The design of *Citizen X* was shaped by ANU Productions' 'cubist' approach to creating work; the participant heard four distinct voices, yet none of them told a 'story'. Instead, each voice provided glimpses of different experiences and perspectives, some human (in the case of the girl in the red jacket, and the male voice reading the 1913 response), and others non-human (in the case of the LUAS

105 I use the present perfect tense in this context to indicate that the harm inflicted on individuals by the 'systematic compulsions' of the failure of the economy and housing market in Ireland continues on into the present of 2017.

voice, and the Sales voice). As such, the experience of the girl in the red jacket was not collapsed into a singular – and therefore isolated – narrative. Instead, it became a prism through which the whole, complex interaction of the 'unseen forces' of neoliberal political ideology, economics and society was viewed and, more importantly, *felt*. Like Gordon's ghost, therefore, the girl in the red jacket was a 'living force' whose personhood captured a multiplicity of individual experiences, stretching back to 1913, and forward into Ireland's future.

Her personhood was made manifest through the (primarily) affective design of the 'digital' voice. The girl's voice spoke softly and intimately in the ears of the participant, sometimes seeming like stream-of-consciousness thought inside their head. For a large part of the experience she spoke lists of prices, times, tasks, that did not tell a story as much as evoke a sense of trying to control an already precarious situation. Although the participant gleaned some cognitive information about her situation from these lists, their experience focused, more directly, on her need to itemize all aspects of her day, and the desperation and exhaustion in her voice as she did so. These lists came back as echoes and repetition throughout the duration of the mp3 track, disturbing the idea of sequential cause-and-effect; instead, the participant experienced the girl in the red jacket's voice as both 'now' and 'then', caught in a never-ending cycle of social and economic injustice.

The affective design of the girl in the red jacket's voice allowed the participant to experience her voice both on, and through, their own body, and, at the same time, to map her voice onto the body of the performer. As such *Citizen X* captured the way in which the ghost is only made manifest in relation to a living person; the girl in the red jacket came into being through the sensory operation of the digital audio media on the body of the participant, fused with the sensory operation of their own body (which the LUAS voice evoked through her instructions to 'breath' and 'look'). At the same time, the participant also experienced the ghost as 'other', sometimes different and distanced from them, as when the LUAS voice suddenly suggested that the girl in the red jacket was a 'waster' and a 'burden on the State'. In this way *Citizen X* served to expose the gap between what we know (or chose) to know of people, and what their lived reality might be.

The idea of the voices as 'other' was also evoked through the participant's experience of the LUAS voice and the Sales voice. Although the Sales voice was more clearly 'other' and antagonistic, the participant's relationship to the LUAS

voice was more complex, as she instructed and guided them, but also suggested that she 'watched' and judged them and others in the LUAS. Again, her voice blurred the boundaries of internal and external for the participant; while they rode on the LUAS they could hear the same voice, external to them, announcing the LUAS stops, and voicing various warning announcements. However, through their headphones, they also experienced the voice as intimate and internal. This relationship evoked a different aspect of the ghost; the participant's and their society's reliance on systems, and the very real biases and gaps within those systems.

The male voice, in conjunction with the girl in the red jacket's voice, evoked a *felt* understanding of 'palimpsestic time', whereby the ghost only makes its meaning 'in contact with the living's time of now' (Gordon, 179). Thus, the words he spoke took on a resonance (literally captured and affectively communicated in the echoing and refracting soundscape of the mp3 track) that linked the girl in the red jacket's experience analogously with the experiences of tenement dwellers in 1913. The participant bodily felt this link in the final moments of the experience, when the girls frantic movements and beating on the window (syn)aesthetically fused with the sounds of banging, of houses collapsing, and of fires burning that they heard in their ears. In these moment, *Citizen X* brought about a 'reckoning' with the ghost, whereby the participant could experience the 'unseen' harm that capitalist economic forces, lack of state regulation, and landlord greed had (literally) wreaked on countless real lives.

This 'reckoning' pointed towards what Gordon terms the 'something that must be done', firstly by asking the participant whether they (collectively, as an audience) had more than 'barren words' to offer the victims (of both crises), and secondly by offering them a metaphorical choice – take the LUAS, the 'reliable', privatised system, or 'choose another way'. This choice was preceded by the LUAS voice telling them to "Go home. Go to your home". In this moment the participant's awareness of the 'other as part of me' was used to highlight their 'antagonistic' relationship to the girl in the red jacket: they were not she, the LUAS voice seemed to suggest. They had a home, and they could enjoy their home. As such, the participant experienced their subjectivity as both open to, and yet distinct from, the girl in the red jacket. Their embodied awareness of this empathetic, and yet antagonistic relationship served as preparation for both the 'call to action' of

Citizen X, but also, more broadly, the 'call to action' of *Thirteen*, when performers and participants gathered (or re-gathered) together in the Art Park, Spencer Dock to "stage a shared word, a something that must be done in time and for another worldling" (Gordon, 190).

As a performance that utilises mobile technology to engage the participant intimately through their bodily experience, *Citizen X* responds to the need, identified by Maria Chatzichristodoulou and Rachel Zerihan, to "consider intimacy beyond its aesthetic manifestations and articulate its efficacy in igniting and responding to the social and the political, through the force of its personal affect" (4). Through an 'aesthetic of haunting' *Citizen X* mobilizes the affective potential of mobile technologies to open up participants to new modes of subjectivity, and new experiences of inter-connection with their bodies, others and the world around them. It does this using a single mp3 track, thereby tapping into an early form of mobile digital technology. As such, *Citizen X* captures palimpsestic time not only in its content, but also in its form, allowing us to understand how the technologies of 'then', 'now', and the future can inform each other, and point towards a new, alternative *affective* ways of understanding our bodies, our selves and our world at the dawn of the 'bio-virtual' age.

CONCLUSION

In this thesis I have sought to articulate the stakes and the potentials involved in the integration of the digital and the physical through users' embodied interaction with mobile technologies. I have done this by examining the use of mobile technologies in 'mobile experiences' - apps, games and performances - through the lens of arts practice, tapping into arts practice's ability to extend our range of understanding by accounting for the role of the imagination and sensing intellect in the production of a particular form of knowledge. Interrogating mobile technologies in this way, therefore, responds to Howard Rheingold's suggestion that now is a time when art is, in relation to mobile technologies, "influencing the most important step in the evolution of any communication technology - the literacies that people invent, transmit, and evolve when a new technology makes a new means of discovering, representing, and transmitting knowledge possible" (2). The theoretical model and practical design methodology that I have proposed in this thesis extends the new 'literacies' of mobile technologies by focusing on their unique capacity to tap into, and transform, the affective knowledge generated through the user's sensory, bodily understanding. By clearly articulating a 'bridging vocabulary' of terms and concepts that underpin my theoretical model and design methodology, I offer a means by which theatre and performance practitioners, together with scholars and makers in the field of human-computer interaction, as well as scholars from other fields, can engage in a 'radically interdisciplinary dialogue' (Wright et al) that is aimed at realising the affective potential of mobile technologies. This affective potential ultimately underpins the capacity of mobile experiences to offer new ways of thinking about, and experiencing ourselves as 'bio-virtual' - ways that reveal the operation of neoliberal values on our lives (particularly in Western 'developed' societies), and offer modes of resistance that emphasize alternative states of being and inter-connection.

Thesis Summary

In Chapter 1 I laid the foundations of an affective theoretical model for mobile experiences by showing how mobile experiences can create 'hybrid bodies', whereby the participant experiences their body as an 'assemblage' of sensations, both physical and digital. 'Hybrid bodies' stand in contrast to the 'quantitative bodies' created by

many mobile experiences that use mobile technologies to quantify, calculate and compare the sensory and visceral workings of the participants body. Whereas the experience of their body as 'quantified' has a reductive effect on the participant's lived experience, the experience of their body as 'hybrid' augments and opens up the participant's lived experience. The case-studies of *Mobile Feelings*, *World Ripple* and *Jekyll 2.0* all point to the ways in which, by creating the experience of 'hybrid bodies', mobile experiences can open the participant up to new experiences of inter-subjectivity and inter-connection. At the same time, they highlight a fundamental challenge for the design of such affective mobile experiences - how to render digital data effective in the physical world. In this way, as Brian Massumi suggests, the potential of the digital is missed "as long as the relationship between the digital and analog is construed in mutually exclusive terms, as if one entirely replaced the other … The challenge is to think (and act and sense and perceive) the co-operation of the digital and the analog, in self-varying continuity ... The analog and the digital must be thought together, asymmetrically. Because the analog is always a fold ahead" (143).

In Chapters 2, 3 and 4, therefore, I have sought to develop an 'affective dramaturgy' for mobile experiences that engages with the asymmetrical relationship between the physical (or analog) and the digital. This 'affective dramaturgy' represents an alternative design methodology for mobile experiences that focuses on 'folding' the digital effectively into the physical in order to generate an affective, bodily response in the participant. Accordingly, in Chapter 2 I have examined how current design approaches to the individual elements of a mobile experience focus on their cognitive use as signs, and how, conversely, these same elements can be used to stimulate a sensory, visceral awareness. I have examined this through the lens of my own personal experience of conducting a workshop in mobile experience design for my fellow Digital Arts and Humanities (DAH) students, and also by drawing on my experience as a designer of the location-based game *Carolan's Last Tune* (which I have considered in conjunction with the related location-based mobile game, *Viking Ghost Hunt*). In Chapter 3 I have gone on to examine how, in order to structure and bring these elements together to produce a holistic affective experience, we are required to move away from a coherent structuring model with a singular, linear dynamic and instead embrace a model comprised of inter-linking, non-hierarchical, porous states with internal scenic dynamics. This chapter examined the project *I*

Seek The Nerves Under Your Skin and the commercial app *Inception - The App.* Finally, in Chapter 4 I have considered how critical and ethical perspectives on the mechanics of mobile experiences (what they ask the participant to do) can be incorporated into the design of affective mobile experiences. Using the case-studies of *Pokémon Go* and *Just In Time* I have examined the ways in which current mechanics in mobile experiences involve the participant in re-inscribing 'productivist' modes of behaviour, rooted in neoliberal capitalist ideology, and the ways in which mobile experience might be designed to incorporate alternative, affective mechanics.

In Chapter 5, I have worked this affective design methodology back into my affective theoretical model to show how the 'hybrid' bodies created through the inter-weaving of the real and the digital can become 'haunted bodies' which convey new experiences of subjectivity and inter-connection with others and the world. To do this I have proposed an 'aesthetic of haunting' that articulates the ways in which affective mobile experience design can engage bring together affective, individual experience and structural, social critique, using *Citizen X* as a case-study.

More broadly, I have also sought to engage with both the potential of affect as a theoretical, methodological and aesthetic approach to the creation of art works, and with the valuable insights offered by critics of this affective approach. In this way, I hope to have contributed to the much wider debate around the effectiveness and ethical implications of affect in artistic practice and analysis. By engaging with, rather than side-stepping, critiques of the affective approach I have shown how affect can be used in ways that engage the participant's subjectivity, and provoke an extended engagement with questions of power, value and subjective difference. The 'aesthetic of haunting' that I propose in Chapter 5 is not limited to mobile experience design, and can be extended to other forms of affective artistic practice. As such, it is a theoretical and methodological tool that, I hope, will aid the work of both practitioners and scholars of affective experiences.

As I note in the Introduction, this thesis is broad in scope and ambition. In Chapters 1 - 4 I identify and discuss the different senses that are engaged through mobile experiences in relation to particular case studies. However, this analysis could be usefully opened out into a fuller, more focused examination of the ways in which these senses function, and the ways in which mobile technologies tap into and intersect with these senses. Equally, while I show how 'traditional' game design

concepts such as 'game/play' and 'immersion' can be critiqued and re-configured through an affective performance lens (Chapter 2), this affective analysis could usefully be applied to other key concepts in mobile experience design, such as 'augmented reality' and 'presence'.

Similarly, as I indicate in the Introduction, my approach in this thesis has been to focus solely on the affective possibilities and potential of mobile experiences. This deliberate focus was necessary to separate out and delineate an affective methodology that is fundamentally different to cognitive methodologies in the mode of understanding it appeals to, the form of response it seeks, and the design approaches it uses. However, as Brian Massumi points out in his analysis of the snowman experiment (Chapter 2), 'quality' and 'intensity' in fact operate in parallel and at the same time (although in very different ways) – this points to the need to work the affective dramaturgy I propose back into conversation with the cognitive. As I note in the introduction, this thesis is rooted in Jason Farman's model of the sensory-inscribed body, which captures both the affective and the cognitive. Accordingly, it would be fruitful, in future, to draw on Massumi's insights to re-work my affective dramaturgy back into the sensory-inscribed body in a way that can fully account for both the affective and the cognitive in mobile experiences.

Cross-cutting Concerns: mobile experiences in a neoliberal world

A theme I have addressed through my case-studies is the often complex inter-relationship between mobile experiences and their spheres of production, which opens up into questions of 'scaling up', co-option, and access. In the case of *Jekyll 2.0* (Chapter 1) and *Viking Ghost Hunt* (Chapter 2), both began as research projects that the designers then focused on 'scaling up' into commercial experiences. In both cases the designers attempted to make the venture commercially viable by re-designing their experience to allow more people to play it: the singular, individual experience of *Jekyll 2.0* was developed into the collective, game experience of *Hyde,* while the location-specific design of *Viking Ghost Hunt* was re-designed in the *Haunted Planet* app to offer an additional 'Play Random' option that would allow players around the world to play the 'ghost hunts' in whatever location they happened to be in. However, the *Hyde* game experience, whereby only one person wore the 'bio-harness', meant that not all participants experienced their bodies in direct inter-relationship with their surroundings. Equally, in the *Haunted Planet* 'Play Random'

option the digital elements were not designed in response to the location, and so the participant (potentially) did not experience as strong a sense of inter-connection between the digital and the real. In both cases, therefore, 'scaling up' the project to reach more participants (potential consumers) meant a 'scaling back' on the affective design approaches that rendered the research projects so effective.

The extent to which mobile experiences are embedded in neoliberal structures based on consumption and profit is evidenced both in the case-studies of *Pokémon Go* (Chapter 4) and *Inception - The App* (Chapter 3). *Pokémon Go* demonstrates how the commercial goal of transforming participants into consumers through 'mechanics of monetization' in the *Pokémon Go* app involves the commodification of both participants' bodies and public space. In this way, it represents the clearest example of how mobile experiences can become the 'experience machines' of neoliberal capitalist societies. In contrast, *Inception - The App* is a more nuanced example of the tension between artistic and commercial goals. In creating an app that is available on the global Apple App Store, the designers of *Inception - The App* have been able to 'scale up' and widely disseminate an affective mobile experience with no corresponding diminution in the experience of the participant. This affective experience, nevertheless, is underpinned (very subtly) by the commercial goal of building 'brand retention' in the participant. The ethical dilemma this presents is not new; Martin Reiser, for example, critiques the "convenient way artist's projects have often aligned with the consumer research interests of mobile phone companies, where yesterday's locative project becomes tomorrow's 'killer app'" (Rieser, 5).

This critique, however, becomes more complex when we consider questions of access and availability. *Inception - The App* successfully made an affective experience available to a much wider number of participants than either the research projects of *Jekyll 2.0* and *Viking Ghost Hunt,* or the performances of *Just In Time* (Chapter 4) and *Citizen X* (Chapter 5). Arguably, its reach was augmented by the film's commercial success and 'brand recognition'. This is evidenced through comparison with a very similar app, *In Your Own Time,* created by Irish music artist David Collier. Like *Inception - The App*, *In Your Own Time* utilized sensor technologies to create a sound experience that responded to the participant's movements and location. Collier released *In Your Own Time* for free on the Google Play Store, and it received over 1,000 downloads (Collier), a number that contrasts

with the estimated 1,000,000 downloads of *Inception - The App* from the App Store[106]. This begs the question - if artists and designers wish to increase access to affective mobile experiences (and their potential to offer alternative modes of being and inter-connection) is working within commercial structures inevitable? Or, can artists and designers find 'another way' to open up affective experiences to more participants, while at the same time not sacrificing the core design that makes the experience affective in the first place?

Undoubtedly the critical and ethical questions that I have outlined in relation to mobile experiences and their spheres of production will continue to pose challenges to artists and designers in the future. Nevertheless, as the adoption and use of mobile technologies continues to grow around the world, affective mobile experiences offer new, and potentially crucial, ways to aesthetically respond to this 'slippage of computation into the fabric of everyday life' (Causey et al). In the final part of this Conclusion, therefore, I wish to sketch out how this affective theoretical and methodological model for the design of mobile experiences could fruitfully be brought into conversation with a number of other fields and discourses. To do this I first illustrate how this theory and methodological model will impact on my own practice, and outline how it will contribute to the design of a specific project, *Shelter from the Storm*. To conclude, I briefly outline three future directions for research: 1) the intersection of disability studies and mobile experience design, 2) the synergies between mobile experience design and environmental studies, and 3) the interplay between mobile experience design, memory and history in museum and archive projects.

Development of Arts Practice

As I discuss in the Introduction, and later in Chapter 4, a key goal for me in undertaking this research was to develop and extend my own practice by addressing the methodological and theoretical questions I encountered during my research as Theatre Artist in Residence, including my design of projects such as *Just In Time* (Chapter 4). By developing a clear theoretical and methodological approach I have

106 The number of downloads is not made available on the Apple App Store. However, an industry rule-of-thumb is to multiply the number of reviews received by an app by 100. Inception - The App has, to date received just over 10,000 reviews, meaning that by this calculation it has been downloaded over 1,000,000 times (est).

sought both to unpack the affective potential of mobile technologies for my own understanding, and also to find ways of communicating this affective potential - and the design strategies that might realise it - with collaborators, particularly engineers, programmers and media designers.

From an interest in mobile technologies as location-based technologies, my focus, over the course of this research, has turned to the increasing inter-connection between these technologies and our bodies, and the understanding we make through our bodies. My artist mission statement, which I have developed to articulate the next stage in my practice, captures this focus:

> My practice focuses on the body of the individual audience member as the site of performance. I am interested in using mobile digital technologies (particularly sensor-based technologies) to allow people to tune into their bodies, and the knowledge we gain about ourselves, the world and others through processes of sensing and feeling. This work 'dis-assembles' the body into the experience of individual senses and weaves digital and real sensations together: a real sound is picked up by the microphone on the audience's smartphone, and is run through a filter and played back to the audience through their headphones so they hear the sound again, slow and distorted. An audience member wears a heartbeat sensor that is linked, via Bluetooth, to the lights in the room, and as their heart beats faster the lights flicker to the rhythm of their heart. A person makes a gesture in the air with their hand and an audience member 'feels' this touch through the vibration of a haptic sensor on their skin.
>
> I am interested in exploring the creative and communicative possibilities of 'dis-assembling' the body and creating a 're-assembled' body made up of real and digital sensations. How might performances like this open audiences up to new understandings of their interconnection with other people, with their environment, and with technology? How can performances that ask the audience to feel and engage with their bodily understanding also prompt them to critically engage with relationships of power and privilege in society? What is the relationship these performances have with their context of their own creation, particularly the growing permutation of the digital into the fabric of everyday life (from home monitoring systems like Nest to fitness devices like FitBit)? As our bodies become more and more entwined with technology, I believe that these

> performances, and the powerful sensory experiences they generate, offer us new, vital ways of exploring our humanity and our inter-connection with the world around us.

In line with this mission, I will utilise the affective dramaturgical model developed in this thesis to design a new performance, *Shelter from the Storm*, which I propose to run initially in September 2018[107]. *Shelter from the Storm* will involve an individual participant walking the Salthill promenade in Galway, entering into and exploring the life-guard huts they pass on the way, and finishing their journey outside the Eglinton Hotel, currently a direct provision centre for asylum seekers[108]. Using mobile technologies worn on the body of the participant and installed in the life-guard huts, the performance will seek to open the participant to a *felt* understanding of what goes beyond 'conventional communication' in the discussion of migrant experience in journalism, activism and academia - the complex and mutating thoughts, emotional experiences and psychological states of people undergoing the process of migration and reception. In this way, the performance will seek to explore impetuses and experiences of forced migration, focusing in particular on the complex reasons that people choose to leave their country (the storms they flee), and their equally complex experiences of reception in other countries (the shelters they find). It will be developed with particular reference to the experience of victims of forced migration in Ireland, and the Irish asylum system. However, it will also seek to speak more broadly to the experiences of migrants in Western societies.

The design of the performance will focus on on creating an experience of a 'hybrid' body, whereby the participant's sense of their body is comprised of sensory, visceral experiences that are both real and digital. For instance, their physical experience of struggling against the wind as they walk will be augmented by an aural soundscape that grows stronger and stronger, only easing when at last they enter the life-guard's hut and find a moment of physical and mental calm. This sense of calm

---

107 I have applied for a Theatre Bursary from the Arts Council of Ireland to undertake this project, as well as a process of career-planning. Should I not be awarded this bursary, I plan to develop Shelter from the Storm through other means (sourcing funding through Galway ECOC 2020, and Science Foundation Ireland - Public Engagement Strand).

108 The owners of the Eglinton Hotel, which has been leased by the Irish State as a Direct Provision Centre for asylum-seekers, applied in June 2017 to redevelop the site as a hotel. While its use may alter, the performance will still be relevant in raising participants' awareness of its hidden (hi)story as a detention centre.

will then become problematized as they realise they cannot leave the hut, and technologies that respond to their heartbeat and breath will be used to create an experience of claustrophobia and dis-empowerment. At another point, they will be asked to perform the task of throwing glass bottles into a bottle bank - as they undertake this repetitive action, the technology will responsively draw the sound of the crash of glass into a soundscape. At the same time this soundscape will draw their attention to the physical sensation of this throwing and smashing, weaving it together with the voice of a person who speaks of their sense of growing frustration and despair. The 'hybrid body' the participant experiences will explore not only the negative aspects of migrant experience, but also positive aspects - dreams, relationships and joys - and involve the participant in physically enacting and sensing these emotions. By using the 'hybrid body' as a design concept, however, the performance will seek to ensure that it offers the participant an experience that is enfolding, disjunctive and emergent, and so moves the participant away from the idea that they now 'know what it's like' towards a more open-ended, *felt* understanding that embraces what cannot ever be fully accounted for, articulated or 'known'.

Ultimately the design of the performance will seek to generate the experience of a 'haunted body', bringing about a recognition in the participant of the present-day 'haunting' of Irish society, and the individuals in Irish society, by its treatment of forced migrants. In seeking to generate the experience of a 'haunted body', the performance will move the awareness of the participant from their sense of their body being entangled with the bodies of others, to the sense that their body and other bodies are, together, entangled in an (unequal) web of social and political structures. As such, the design of the performance will pay particular attention to how the participant can, if they choose, 'stage a shared word' that acknowledges this relationship and explores - if only briefly - an alternative mode of being (while bearing in mind the difference between an act of awareness and acknowledgment in theatre and an act of political activism). In this way, a key aspect of the design process will be the identification of alternative mechanics that involve the participant in physically embodying practices that challenge their 'habits of mind' and so open them up to alternative modes of thought and action.

Throughout the development of the performance I will consult closely with migrants and asylum-seekers themselves, inviting them to experience the

technologies, contribute to the creation of the piece, and experience the final piece. I will also seek the input of scholars on migration in Ireland, such as Dr. Charlotte McIvor (NUI Galway) and organisations such as the Irish Refugee Council. Throughout the process I will seek to be mindful of the contextual aspects of the performance - for example, the use of mobile technologies by migrants themselves as a means of connecting with those they have left behind, and the monitoring and surveillance aspect of these technologies, as well as my own position as a white Irish citizen creating a work that seeks to convey an experience I have not personally had. Developing and staging this performance will, therefore, allow me to explore the concepts and methods I have investigated in this thesis, and to continue to develop my affective dramaturgical model for mobile experiences. In the coming years I intend to continue to develop this approach to mobile technologies, researching the potential of affective mobile experiences to contribute to a number of other fields and discourses. I outline these future directions for research briefly below.

Future Directions for Research

Non-normative bodies and mobile experiences

There is an urgent need to bring mobile experience design into conversation with the field of disability studies, and considerations of affect within disability studies. A limitation of the case-studies in this thesis - and of most mobile experience design to date in general - is that they uncritically adopt a particular, normative concept of 'body'. For example, many of the case-studies in this thesis assume that the participant is mobile, and is able to walk and run over distances. Equally, they assume that the participant has good eyesight, and can visually take note of and negotiate the physical world around them. As such, affective mobile experience design is both challenged by, and offers a way of engaging with, one of the fundamental concerns in disability studies - questioning that which is 'normative'. In *The Disability Studies Reader* Lennard J. Davis places this concern squarely in the context of today's rational, quantitative society, arguing that, "[w]e live in a world of norms. Each of us endeavors to be normal or else deliberately tries to avoid that state" (1). Through measurement and calculation "[w]e consider what the average person does, thinks, earns, or consumes ... There is probably no area of contemporary life in which some idea of a norm, mean or average has not been calculated." Davis argues that "[t]o understand the disabled body, one must return to

the concept of the norm, the normal body ... because the 'problem' is not the person with disabilities; the 'problem' is the way that normalcy is constructed to create the 'problem' of the disabled person" (1). However, "the idea of a norm is less a condition of human nature than it is a feature of a certain society" (1) - therefore, challenging the concept of the 'norm' means challenging the underlying social structures that produce and incorporate that concept. As I have argued throughout this thesis, an affective approach to the design of mobile experiences actively seeks to move away from the concept of what is 'quantitative', measurable and calculable and instead address the moment-by-moment uniqueness that comes from an awareness of the 'qualitative' experience of the self, others and the world. Davis' argument indicates how the affective dramaturgy I propose could usefully be critiqued and expanded in conversation with disability studies: how can mobile experiences re-work the quantitive technologies used to calculate the 'normative' body in ways that allow participants to question and resist these norms? How can designers avoid incorporating this 'normative' concept of the body into the design of mobile experiences? And how can mobile experiences contribute to re-working the social context of disability by critiquing the idea of the 'norm' in society?

From a practical perspective, the creation of mobile experiences by, with, and open to people of different abilities could expose many of the underlying assumptions of the 'normative' body in mobile experience design, and open up new understandings of the body-as-assemblage. Josephine Machon highlights the example of Extant Theatre, an immersive theatre company that uses haptic technologies to draw the participant's attention to the inner workings of their own body. A primary concern of Artistic Director Maria Oshodi, who is visually impaired, was to capture her own experience of her awareness being closer to her own body than the awareness of a sighted person. By using haptic technologies she focused on 'translating' her own sensory experience "to an audience that was sighted or visually impaired" (quoted in Machon, 2013, 81). This example demonstrates how re-orientating the participant's awareness away from vision and hearing, and towards 'less familiar' senses such as touch, heartbeat, or balance is one way of re-working the participant's affective experience of their body-as-assemblage in a way that challenges the 'normative' idea of how a body perceives and experiences the world.

Mobile experiences and 'ecological perception'

A second direction for future research is the potential synergy between an affective dramaturgy of mobile experiences and the fields of environmental and sustainability studies. Josephine Machon notes how "[i]mmersive practice that concerns itself with the environment is capable of locating the individual organically within *and* as a continuum of the wider environment, physically and politically" (Machon, *Immersive Theatres*, 92). As an immersive practice that focuses on engaging the 'hybrid body' through mobile technology, mobile experience design offers new ways to explore this organic connection between individual and environment. Alternative mechanics based on a practice of 'dwelling' (Chapter 4), could, for example, offer a new understanding of 'environmental hazards' by re-framing participants' understanding of time. Barbara Adam argues that although environmental hazards may begin at a certain moment in space and time (the moment of an oil spill, for example), many of their consequences are 'invisible', "and by the time they finally materialize as inter-connected webs of symptoms, they will not be traceable with certainty to any particular causes" (Adam, 25). The ways in which modern Western culture perceives and conceives of time, she argues, account for this "'ice-berg phenomena' ... hazards that defy the theories and methodologies of traditional science because they are both visible and invisible, material and immaterial" (Adam, 26). In this way, by re-working the participant' sense of time from a 'quantitative', calculated sense of time to to a complex, sensory experience of temporality, mobile experiences offer a way to affectively engage with the "below-the-surface and beyond-the-present" (Adam, 26) aspects of humanity's inter-connected place within the dynamic unity of the Earth's environment.

Engaging with environmental and sustainability studies would also extend affective approaches and practice in relation to mobile experience design. Creating mobile experiences that speak to landscape and environment in rural areas would widen the scope of projects and analysis in this field, as most mobile experiences are created in response to urban areas and therefore embody urban understandings of concepts such as the environment, landscape, and community. Equally, ecological practices could be drawn on to further develop the affective design methodology I have outlined in this thesis. In 'The Skill of Ecological Perception', for example, Laura Sewall outlines 'five perceptual practices', or 'skills' of ecological perception, that could serve as a fruitful jumping-off point in the development of affective

mechanics in mobile experiences (additional to 'dwelling'). Sewall describes these 'skills' as: "1) learning to attend, or to be mindful, within the visual domain; 2) learning to perceive relationships, context and interfaces; 3) developing perceptual flexibility across spatial and temporal scales; 4) learning to re-perceive depth; and 5) the intentional use of the imagination" (204). These practices, she argues, allow a person to "experience sensuality, intimacy, and identification with the external world ... allowing one's identity and boundaries to be permeable and flexible" (ibid.). This, in turn, serves "to alter consciousness and behavior" (ibid.) towards the external world. Thus Sewall's 'skills of ecological perception' appear to have practical applicability in the context of an affective dramaturgy of mobile experiences which opens up the participant to their body-as-assemblage of human and - crucially - non-human elements.

Opening up to the 'non--human' aspects of the external world takes affective mobile experience design in the direction of 'deep ecology', which argues for "a conception of an ecological self, in which the division between inner and outer worlds becomes an arbitrary and historical distinction" (Sewall, 203). In this understanding the participant may experience their body as a fusion of human and animal, or human and landscape. How might it change a participant's understanding of their connection with the global rise in sea-water if, for example, they 'feel' the steady rise of waters traveling in haptic vibrations up their body? How might a participant (syn)aesthetically 'sense' the slow erosion of a beach, or experience the long migratory journey of a sea-bird? These speculative challenges point to the creative possibilities that potentially exist at the intersection of mobile experience design with environmental and sustainability studies. Instead of creating experiences that collapse into a singular, anthropomorphic understanding of the natural world, however, the 'aesthetic of haunting' at the core of my affective dramaturgy of mobile experiences offers a way of experiencing an 'ecological self' that weaves together inner and outer worlds while, at the same time, acknowledging the non-human 'otherness' of animals and the natural environment.

History, memory, and mobile experiences

The potential of mobile experiences to re-calibrate and re-make the participant's experience of time (as outlined above) also speaks to the ways in which an affective dramaturgy of mobile experiences can challenge and expand practices in the fields of memory, museum and archive studies. In my Introduction I suggested that these practices, many of which form part of the genre of 'mobile digital storytelling' projects, focus on memory as narrative, gleaned from visual or textual information in historical archives. They do not, therefore, distinguish between the moment-by-moment, multi-sensory lived experience, and the subsequent 'narrativized' account of that experience (often through a single-sense medium such as image or text). By not focusing on the experiential aspect of memory, however, this design approach fails to explore the ways in which past, present and future are, as the dramaturgy of ANU Productions suggests, analogous and palimpsestic (Chapter 5). In contrast, Alison Landsberg's concept of 'prosthetic memory' (Chapter 5) clearly indicates the way in which an affective dramaturgy of mobile experiences can intersect with furthering the aims and outreach of museums and archives.

The concept of 'prosthetic memory' focuses on the experiential aspect of memory. It is a "more personal, deeply felt memory" (Landsberg, 2) that is experienced through the body of the participant. Prosthetic memories, therefore "become part of one's personal archive of experience, informing one's subjectivity as well as one's relationship to the present and future tenses" (26). Landsberg suggests that although "these memories are not 'natural' or 'authentic' ... they organize and energize the bodies and subjectivities that take them on" (26). As I suggest in Chapter 5, 'energizing' the body and subjectivity of the participant with the 'seething presence' of the ghost (or memory) is work that can be undertaken by affective mobile experiences. At the same time, however, the dangers I highlight with regard to the commodification and 'scaling up' of mobile experiences point to the problems inherent in the concept of 'prosthetic memory', a form of memory which, Landsberg suggests, is predicated on a "commodified mass culture capable of widely disseminating images and narratives about the past" (26).

The spread of mobile technologies continues to grow - more than one-third of the world’s population - 2.5 billion people - now access social media services via mobile devices each month. This figure grew by 581 million in the past year alone, and

continues to grow at the rate of 18 users per second ("Digital in 2017"). To put this in perspective, in the time it has taken to read this thesis, over 1,000,000 new users will have accessed social media (via the internet) on their mobile device. While this statistic emphasizes the particular sea-change in intra-personal and social communication brought about by mobile technologies, it also points to a more fundamental shift in the form of technology that people around the globe are adopting and using on a daily (and hourly) basis. The difference between mobile technologies and other forms of technology is, as Mark Sample suggests, a "matter of size and intimacy" (71). Quoting the science-fiction writer Bruce Sterling, Sample suggests that this new form of technology "sticks to the skin, responds to the touch" (71) in a way that brings the digital uniquely into direct inter-connection with the user's sensory, visceral body. As they continue to be adopted and utilized by more and more of the world's population, therefore, mobile technologies are also challenging and changing the ways in which people experience their own bodies, and experience other people, objects, and the world around them through their bodies. In light of these challenges, and ever more rapid changes, it is clear that there is much yet to unpack regarding the aesthetic potential of affective mobile experiences to generate sensory and visceral experiences charged with present-day meaning and intent.

Works Cited

"1916 Rising | The Irish Times Easter Rising Commemoration." *The Irish Times*, 2017, www.irishtimes.com/1916.

"1916 The Battle of Mount Street." *RTÉ Television - Who Do You Think You Are?*, 15 May 2009, www.rte.ie/tv/whodoyouthinkyouare/social_diarmuid1.html.

"7Scenes Mobile Storytelling Platform." 7scenes, www.7scenes.com.

Adam, Barbara. *Timescapes of Modernity: the Environment and Invisible Hazards*. Routledge, 1998.

Akhtar, Allana. "Holocaust Museum, Auschwitz Want Pokémon Go Hunts Out." *USA Today*, Gannett Satellite Information Network, 13 July 2016, www.usatoday.com/story/tech/news/2016/07/12/holocaust-museum-auschwitz-want-pokmon-go-hunts-stop-pokmon/86991810/.

Allain, Paul, and Jen Harvie. *The Routledge Companion to Theatre and Performance*. Routledge, 2006.

Alston, Adam. *Beyond Immersive Theatre: Aesthetics, Politics and Productive Participation*. Palgrave Macmillan, 2016.

ANU Productions. "Citizen X." Dublin, Ireland. Presented as part of Dublin Fringe Festival. 9th - 21st September, 2013.

ANU Productions. *Citizen X*. MP3 track. Downloaded to the author's computer from www.fringefest.com/thirteen - no longer available online.

"Apple Watch Series 1." *Apple (Ireland)*, www.apple.com/ie/apple-watch-series-1/. Accessed: 15 September 2017

"Argon." *The Argon Project*, argon.gatech.edu/.

"ARIS." *Field Day Lab*, fielddaylab.org/.

Auslander, Philip. *Liveness: Performance in a Mediatized Culture*. Routledge, 2011.

Ballagas, Rafael, et al. “Gaming Tourism: Lessons from Evaluating REXplorer, a Pervasive Game for Tourists.” *Lecture Notes in Computer Science Pervasive Computing*, 2008, pp. 244–261., doi:10.1007/978-3-540-79576-6_15.

Barton, Bruce, and Richard Windeyer. “Immersive Negotiations: Binaural Perspectives on Site-Specific Sound.” *Performing Site-Specific Theatre*, edited by Anna Birch and Joanne Tompkins, Palgrave, 2012, pp. 182–200.

Benford, Steve, and Gabriella Giannachi. *Performing Mixed Reality*. MIT Press, 2011.

Benson-Allott, Caetlin. “Cinema's New Appendages.” *Film Quarterly*, vol. 64, no. 4, 2011, pp. 10–11., doi:10.1525/fq.2011.64.4.10.

Bentley, Frank, and Edward Barrett. *Building Mobile Experiences*. MIT Press, 2012.

Bishop, Claire. “Antagonism and Relational Aesthetics.” *October*, no. 110, 2004, pp. 51–79., academicworks.cuny.edu/cgi/viewcontent.cgi?article=1095&context=gc_pubs.

Blackman, Lisa. *Immaterial Bodies: Affect, Embodiment, Mediation*. Sage, 2013.

“Blog.” *Niantic*, 14 Dec. 2016, www.nianticlabs.com/blog/.

“Blog.” *Niantic*, 22 Dec. 2016, www.nianticlabs.com/blog/.

“Blog.” *Niantic*, 8 June 2017, www.nianticlabs.com/blog/.

Boehner, Kirsten, et al. “How Emotion Is Made and Measured.” *International Journal of Human-Computer Studies*, vol. 65, no. 4, Apr. 2007, pp. 275–291., www.sciencedirect.com/science/article/pii/S1071581906001844.

Bourriaud, Nicolas. *Relational Aesthetics*. Les Presses Du Reèl, 2010.

Bradshaw, Tim, and Leo Lewis. “Advertisers Set For a Piece of 'Pokémon Go' Action.” *Financial Times*, The Financial Times Ltd., 13 July 2016,

www.ft.com/content/75942b12-48ba-11e6-b387-64ab0a67014c. Accessed 14 Dec. 2016.

Broadhurst, Susan. “Theorising Performance and Technology: Aesthetic and Neuroaesthetic Approaches.” *Australasian Drama Studies*, vol. 65, 2014, pp. 212–236. *Brunel University Research Archive*, bura.brunel.ac.uk/handle/2438/12359. Accessed 13 Jan. 2017.

Bull, Michael. “Investigating the Culture of Mobile Listening: from Walkman to IPod.” *Consuming Music Together*, edited by Kenton O'Hara and Barry Brown, vol. 35, Springer Netherlands, 2006, pp. 131–149.

Bull, Michael. *Sounding out the City: Personal Stereos and the Management of Everyday Life*. Berg, 2000.

Carrigy, Tara, et al. “Design and Evaluation of Player Experience of a Location-Based Mobile Game.” *Proceedings of the 6th Nordic Conference on Human-Computer Interaction Extending Boundaries - NordiCHI '10*, 2010, pp. 92–101., doi:10.1145/1868914.1868929.

Causey, Matthew, et al. “General Introduction: In the After-Event of the Virtual.” *The Performing Subject in the Space of Technology*, edited by Matthew Causey et al., Palgrave, 2015, pp. 1–8.

Chandler, Daniel. *Semiotics: the Basics*. Routledge, 2001.

Chatzichristodoulou, Maria, and Rachel Zerihan. *Intimacy across Visceral and Digital Performance*. Palgrave , 2014.

“Circumstance.” *Circumstance*, wearecircumstance.com/. Accessed February 11th, 2018.

Circumstance. “Claire.” *Our Broken Voice*. Transcription by the author.

"Citizen X - ANU Productions (Short Video)." *YouTube*, 16 Jan. 2014, www.youtube.com/watch?v=4ElvDjXLSZY.

City Saga - An Urban Adventure Engine, D.E.A.N. LLC, 2 Feb. 2017, www.citysaga.tech/.

Collier, David. "Release - In Your Own Time #3." *David Collier*, 11 June 2014, davidcollier.ie/out-in-the-world-one-year-on-part-3/.

Counsell, Colin, and Laurie Wolf. *Performance Analysis: an Introductory Coursebook*. Routledge, 2001.

Crang, Mike. "Rhythms of the City: Temporalised Space and Motion." *TimeSpace: Geographies of Temporality*, edited by Jon May and Nigel Thrift, Routledge, 2001, pp. 187–207.

Crawley, Peter. "Review: Just In Time." Review of *Just In Time*. *Irish Times*, www.irishtimes.com/blogs/festival-hub/2012/09/13/review-just-in-time/.

Crawley, Peter. "Loath to Close." Review of *ANU, 'Thirteen'*. *The Irish Times*, 22 Sept. 2013, www.irishtimes.com/culture/stage/loath-to-close-1.1537199.

Crawley, Peter. "Return Journeys." Review of *ANU, 'Thirteen'*. *The Irish Times*, 10 Sept. 2013, www.irishtimes.com/culture/stage/return-journeys-1.1522222.

Davis, Lennard J. *The Disability Studies Reader*. Routledge, Taylor & Francis Group, 2013.

De Souza e Silva, Adriana. "Are Cell Phones New Media?" 29 Oct. 2004, souzaesilva.com/wp-content/uploads/2004/06/trace_article.pdf.

De Souza e Silva, Adriana. "From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces." *Space and Culture*, vol. 9, no. 3, Jan. 2006, pp. 261–278., doi:10.1177/1206331206289022.

Decade of Centenaries, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, www.decadeofcentenaries.com/.

Deleuze, Gilles, and Feì□lix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia*. University of Minnesota Press, 1987.

"Digital in 2017: Global Overview." *We Are Social*, wearesocial.com/special-reports/digital-in-2017-global-overview.

Dixon, Steve. *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation*. MIT Press, 2007.

Dolan, Jill. *Utopia in Performance: Finding Hope at the Theater*. University of Michigan Press, 2010.

Donne, John. "Meditation 17." *John Donne: Devotions Upon Emergent Occasions*, edited by Anthony Raspa, Oxford University Press, 1987, pp. 86–87.

Donovan, Donal, and Antoin E. Murphy. *The Fall of the Celtic Tiger Ireland and the Euro Debt Crisis*. Oxford Univ. Press, 2014.

Dourish, Paul. "What We Talk about When We Talk about Context." *SpringerLink*, Springer-Verlag, 5 Dec. 2003, doi.org/10.1007/s00779-003-0253-8.

Doyle, James. "Statement of Witness." 16 Oct. 1949. Available at: http://www.bureauofmilitaryhistory.ie/reels/bmh/BMH.WS0309.pdf#page=1

"Dublin Fringe Festival Programme 2013." *Issuu*, Dublin Fringe Festival, 15 Aug. 2013, issuu.com/dublinfringefestival/docs/fringeprog2013_issuu_new/7.

Engberg, Maria. "Augmented and Mixed-Reality Design for Contested and Challenging Histories." Digital Scholarship Seminar. Digital Scholarship Seminar, 8 Feb. 2017, Galway, Hardiman Research Building, NUI Galway.

Farman, Jason, editor. *The Mobile Story: Narrative Practices with Locative Technologies*. Routledge, 2014.

Farman, Jason. *Mobile Interface Theory: Embodied Space and Locative Media*. Routledge, 2012.

Farrell, Clare, et al. *Tackling Health Inequalities: An All-Ireland Approach to Social Determinants*. Combat Poverty Agency, 2008, *Tackling Health Inequalities: An All-Ireland Approach to Social Determinants*, www.combatpoverty.ie/publications/TacklingHealthInequalities-AnAllIrelandApproachToSocialDeterminants_2008.pdf.

Fisher, Mark. "The Lost Unconscious: Delusions and Dreams in Inception." *Film Quarterly*, vol. 64, no. 3, 2011, pp. 37–45., doi:10.1525/fq.2011.64.3.37.

Flanagan, Mary, and Helen Nissenbaum. *Values at Play in Digital Games*. The MIT Press, 2014.

Flanagan, Mary. *Critical Play: Radical Game Design*. MIT Press, 2009.

Fowler, C. J. "Visceral Sensory Neuroscience: Interoception." *Brain*, vol. 126, no. 6, Jan. 2003, pp. 1505–1506., doi:10.1093/brain/awg120.

Fuchs, Elinor. "Review: Postdramatic Theatre." *TDR (1988-)*, vol. 52, no. 2, Re-Reading Grotowski, 1 July 2008, pp. 178–183. *JSTOR*, www.jstor.org/stable/10.2307/25145519?ref=search-gateway:b5e506e830db91b19a56fb1aa8bb3b5f. Accessed 26 June 2017.

"Gartner Says Worldwide Sales of Smartphones Grew 7 Percent in the Fourth Quarter of 2016." *Gartner*, Feb. 2017, www.gartner.com/newsroom/id/3609817.

Goggin, Gerard, and Larissa Hjorth. *The Routledge Companion to Mobile Media*. Routledge, 2014.

Gordon, Avery. *Ghostly Matters: Haunting and the Sociological Imagination*. University of Minnesota Press, 1997.

Greco, Monica, and Paul Stenner. *Emotions: a Social Science Reader*. Routledge, 2008.

Greenfield, Adam. *Everyware: the Dawning Age of Ubiquitous Computing*. New Riders, 2006.

Gregg, Melissa, and Gregory J. Seigworth. *The Affect Theory Reader*. Duke University Press, 2010.

Halpern, Orit. "Chris Salter's Alien Agency." *NMC Media-N*, Journal of the New Media Caucus, 10 May 2015, median.newmediacaucus.org/the_aesthetics_of_erasure/chris-salters-alien-agency/.

Haring-Smith, Tori. "Dramaturging Non-Realism: Creating a New Vocabulary." *The Routledge Companion to Dramaturgy*, edited by Magda Romanska, Routledge, London, 2015, pp. 408–413.

Harvey, David. *A Brief History of Neoliberalism*. Oxford University Press, 2005.

Hassenzahl, Marc. "User Experience and Experience Design: The Encyclopedia of Human-Computer Interaction, 2nd Ed." *The Interaction Design Foundation*, www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/user-experience-and-experience-design. Accessed 13 Feb. 2017.

Haughton, Miriam. "From Laundries to Labour Camps: Staging Ireland's 'Rule of Silence' in Anu Productions' Laundry." *Modern Drama*, vol. 57, no. 1, 2014, pp. 65–93., doi:10.3138/md.0595R.

"Haunted Planet." *Google Play* , 2.3, Haunted Planet Studios, 20 July 2016, play.google.com/store/apps/details?id=com.hauntedplanet. Accessed 12 Dec. 2016.

"Haunted Planet Studios." *Haunted Planet Studios*, www.hauntedplanet.com/.

Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. University of Chicago Press, 1999.

Hemmnet, Drew, et al. "Loca: 'Location Orientated Critical Arts'." *The Mobile Audience: Media Art and Mobile Technologies*, edited by Martin Reiser, Rodopi, 2011, pp. 235–243.

Hilliard, Mark. "Meeting of Temple Bar Residents Hears of Local Drug-Use and Violence." *The Irish Times*, The Irish Times, 21 Oct. 2015, www.irishtimes.com/news/crime-and-law/meeting-of-temple-bar-residents-hears-of-local-drug-use-and-violence-1.2399381. Accessed 14 Dec. 2016.

Höök, Kristina. "Affective Computing." *The Encyclopedia of Human-Computer Interaction*, Edited by Mads Soegaard and Rikke Friis Dam, The Interaction Design Foundation, www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/affective-computing#toc_4. Accessed 12 Dec. 2016.

Hurley, Erin. *Theatre & Feeling*. Palgrave Macmillan, 2010.

"Hyde Is Coming." *YouTube*, YouTube, 18 June 2015, www.youtube.com/watch?v=Az6l5HKS9UU. Accessed 12 Dec. 2016.

"In Your Own Time." 1.1, 23 Aug. 2013, play.google.com/store/apps/details?id=com.davidbcollier.inyourowntime.

"Inception - The App." *Apple App Store*, 2.0, Remote Control Productions, 25 July 2016, itunes.apple.com/ie/app/inception-the-app/id405235483?mt=8. Accessed 12 Dec. 2016.

"Irish Consumer Marketing Database." *Dataireland.ie*, Data Ireland, www.dataireland.ie/Services/Pages/Consumer-Lists-Irish-Consumer-Marketing-Database.

"Jekyll 2.0 - Project Video." *REACT Books and Print Sandbox - Projects 2013*, ISHED, old.react-hub.org.uk/books-and-print-sandbox/projects/2013/jekyll-20/. Accessed 12 Dec. 2016.

Johnson, Simon. "The Black Maze." *Simon Johnson*, 5 Feb. 2016, www.s-j.io/index.php/2015/12/02/theblackmaze/.

Kaynar, Gad. "Postdramatic Dramaturgy." *The Routledge Companion to Dramaturgy*, edited by Magda Romanska, Routledge, 2015, pp. 391–396.

Klich, Rosemary, and Edward Scheer. *Multimedia Performance*. Palgrave Macmillan, 2012.

Kozel, Susan. *Closer: Performance, Technologies, Phenomenology*. The MIT Press, 2008.

Kumagai, Clare. "Absolut Fringe: Just In Time." Review of *Just In Time*. *Irish Theatre Magazine*, www.irishtheatremagazine.ie/Reviews/Current/Absolut-Fringe-2012--JUST-IN-TIME. Accessed 14 Dec. 2016.

Landsberg, Alison. *Prosthetic Memory: the Transformation of American Remembrance in the Age of Mass Culture*. Columbia University Press, 2006.

Lankoski, Petri, et al. "A Case Study in Pervasive Game Design." *Proceedings of the Third Nordic Conference on Human-Computer Interaction - NordiCHI '04*, 2004, doi:10.1145/1028014.1028083.

Laurel, Brenda. *Computers as Theatre*. Addison-Wesley Publ. Company: Reading, 1993.

Layte, Richard, and Joanne Banks. “Socioeconomic Differentials in Mortality by Cause of Death in the Republic of Ireland, 1984 - “2008.” *The European Journal of Public Health*, vol. 26, no. 3, Nov. 2016, pp. 451–458., doi:10.1093/eurpub/ckw038.

Lee, Dave. “Pokémon Go Is a Monster Mobile Hit.” *BBC News*, 11 July 2016, www.bbc.com/news/technology-36763504.

Lehmann, Hans-Thies. *Postdramatic Theatre*. Translated by Karen Jurs-Munby, Routledge, 2006.

Leslie, Jack. “Wearable Tech Sales Explored: Just How Many Devices Have Been Sold?” *Wareable*, 22 July 2016, www.wareable.com/wearable-tech/how-many-apple-watches-sold-2016.

Leys, Ruth. “The Turn to Affect: A Critique.” *Critical Inquiry*, vol. 37, no. 3, 2011, pp. 434–472., doi:10.1086/659353.

Lloyd, Helen. “Barnardo Square – A Lesson in Public Space Architecture Ireland.” *Architecture Ireland*, Royal Institute of the Architects of Ireland, 20 Mar. 2016, architectureireland.ie/barnardo-square.

Lynley, Matthew. “The Brilliant Mechanics of Pokémon Go.” *TechCrunch*, 11 July 2016, techcrunch.com/2016/07/11/the-brilliant-mechanics-of-pokemon-go/.

Machon, Josephine. *Immersive Theatres: Intimacy and Immediacy in Contemporary Performance*. Palgrave Macmillan, 2013.

Machon, Josephine. *(Syn)Aesthetics: Redefining Visceral Performance*. Palgrave Macmillan, 2009.

Mandal, Anthony, et al. “Jekyll 2.0.” *REACT Books and Print Sandbox - Projects 2013*, ISHED, old.react-hub.org.uk/books-and-print-sandbox/projects/2013/jekyll-20/. Accessed 12 Dec. 2016.

Mandal, Anthony. “Gothic 2.0: Remixing Revenants in the Transmedia Age.” *New Directions in 21st-Century Gothic: the Gothic Compass*, edited by Lorna Piatti-Farnell and Donna Lee Brien, Routledge, Taylor & Francis Group, New York, 2015, pp. 84–100.

Mann, Steve. “Wearable Computing.” *The Encyclopedia of Human-Computer Interaction*, Edited by Mads Soegaard and Rikke Friis Dam, The Interaction Design Foundation, www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/wearable-computing. Accessed 5 Feb. 2015.

Manovich, Lev. “The Poetics of Augmented Space.” *Visual Communication*, vol. 5, no. 2, Jan. 2006, pp. 219–240., doi:10.1177/1470357206065527.

Marshall, Joe, and Steve Benford. “Using Fast Interaction to Create Intense Experiences.” *Proceedings of the 2011 Annual Conference on Human Factors in Computing Systems - CHI '11*, 2011, pp. 1255–1264., doi:10.1145/1978942.1979129.

Marshall, Joe, et al. “I Seek the Nerves under Your Skin: A 'Fast' Interactive Artwork.” *Leonardo*, vol. 44, no. 5, 2011, pp. 401–404., doi:10.1162/leon_a_00239.

Marshall, Joe. “I Seek the Nerves Under Your Skin: a Movement Poem.” Paper delivered at the (re)Actor3 conference, Liverpool, 2008. Available at: http://www.cs.nott.ac.uk/~pszjm2/uploads/2008/11/movementpoems1.pdf

Marshall, Joe. “I Seek the Nerves under Your Skin.” *Proceeding of the Seventh ACM Conference on Creativity and Cognition - C&C '09*, 2009, pp. 477–478., doi:10.1145/1640233.1640364.

Massumi, Brian. *Parables for the Virtual: Movement, Affect, Sensation*. Duke University Press, 2002.

McCormack, Chris. "ANU Productions, 'Thirteen': Where Do We Stand Now?" *Musings in Intermissions*, 8 Oct. 2013, musingsinintermissions.blogspot.ie/2013/10/anu-productions-thirteen-where-do-we.html.

McCormack, Chris. "ANU Productions, 'Thirteen': Why Should We Fight?" *Musings in Intermissions*, 20 Sept. 2013, musingsinintermissions.blogspot.ie/2013/09/anu-productions-thirteen-why-should-we.html.

McIvor, Charlotte. *Embracing a Microhistorical Dramaturgy of Immersive Performance: Affective Site-Ations and Ethical Opacity in ANU Productions*. 2017. In Preparation.

McIvor, Charlotte. "Historical Duty, Palimpsestic Time and Migration in the Decade of Centenaries." *Irish Studies Review*, vol. 24, no. 1, 23 Nov. 2015, doi:10.1080/09670882.2015.1113012.

Media Kit. *Media Kit*, Tiger Dublin Fringe, 2015. Available at: http://www.fringefest.com/assets/tiger-dublin-fringe-media-kit-2015-final.pdf

Montola, Markus, et al. *Pervasive Games: Theory and Design*. Morgan Kaufmann Publishers, 2009.

Munslow, Alun. *Deconstructing History*. Routledge, 2006.

Murray, Janet. "From Game-Story to Cyberdrama." *From Game-Story to Cyberdrama | Electronic Book Review*, 1 May 2004,

www.electronicbookreview.com/thread/firstperson/autodramatic. Accessed 2 July 2017.

Ní Chróinín, Máiréad. “Just In Time.” *7Scenes Scenes Portal*, 7Scenes, 15 Aug. 2012, web.7scenes.com/. Search 'Dublin' for 'Just In Time' scene.

Newman, Peter. “Fitbit Sees Slight Sales Bump but Issues Remain.” *Business Insider*, Business Insider, 4 Aug. 2017, uk.businessinsider.com/fitbit-sees-slight-sales-bump-but-issues-remain-2017-8?r=US&IR=T.

Niantic, Inc. “Ingress on the App Store.” *App Store*, 22 Aug. 2017, itunes.apple.com/us/app/ingress/id576505181?mt=8&ign-mpt=uo%3D4.

Niantic, www.nianticlabs.com/.

Nisi, Valentina, et al. “Location-Aware Multimedia Stories: Turning Spaces Into Places.” Universidade Católica Portuguesa. Escola Das Artes, *Artech 2008. Proceedings of the 4th International Conference on Digital Arts*, Nov. 2008, hdl.handle.net/10400.2/1973.

Oddey, Alison, and Christine White. *Modes of Spectating*. Intellect, 2009.

O'Dwyer, Néill. “The Cultural Critique of Bernard Steigler: Reflecting on the Computational Performances of Klaus Obermaier.” *The Performing Subject in the Space of Technology*, edited by Matthew Causey et al., Palgrave, 2015, pp. 34–52.

O'Sullivan, Simon. “Fold.” *The Deleuze Dictionary*, edited by Adrian Parr, Edinburgh Univ. Press, Edinburgh, 2011, pp. 107–109.

Paterson, Natasa, et al. “Design, Implementation and Evaluation of Audio for a Location Aware Augmented Reality Game.” *Proceedings of the 3rd International Conference on Fun and Games - Fun and Games '10*, 2010, pp. 149–156., doi:10.1145/1823818.1823835.

Paul, Ian Alan. “Desiring Machines in American Cinema: What Inception Tells Us about Our Experience of Reality and Film.” *Sensesofcinema.com*, Oct. 2010, sensesofcinema.com/2010/feature-articles/desiring-machines-in-american-cinema-what-inception-tells-us-about-our-experience-of-reality-and-film/.

Phelan, Peggy. *Unmarked: the Politics of Performance*. Routledge, 1993.

Pine, B. Joseph., and James H. Gilmore. *The Experience Economy*. 2nd ed., Harvard Business Review Press, 2011.

“Pokémon GO.” *Apple App Store*, 1.19.1, Niantic, Inc., 8 Dec. 2016, itunes.apple.com/gb/app/pokemon-go/id1094591345?mt=8.

“Pokémon Go.” *Thinkgaming.com*, Think Gaming, Inc., Aug. 2017, thinkgaming.com/app-sales-data/130634/pokemon-go/.

“Pokémon GO Website.” *Pokémon GO*, Nintendo / Niantic Inc., www.pokemongo.com/en-uk/. Accessed 14 Dec. 2016.

Rau, Henrike, and Ricca Edmondson. “Time and Sustainability.” *Methods of Sustainability Research in the Social Sciences*, edited by Frances Fahy and Henrike Rau, Sage, Los Angeles, 2013, pp. 173–190.

Reid, Josephine. “Design for Coincidence.” *Proceedings of the 3rd International Conference on Digital Interactive Media in Entertainment and Arts - DIMEA '08*, 2008, doi:10.1145/1413634.1413643.

Rettberg, Jill Walker. *Seeing Ourselves through Technology: How We Use Selfies, Blogs and Wearable Devices to See and Shape Ourselves*. Palgrave Macmillan, 2014.

Rieser, Martin, editor. *The Mobile Audience: Media Art and Mobile Technologies*. Rodopi, 2011.

Rohlf, Jan. *Invasive Sound*. *Invasive Sound*, TodaysArt Festival, 2009. Available at: http://www.janrohlf.net/index.php?id=77

Romanska, Magda. "Introduction." *The Routledge Companion to Dramaturgy*, edited by Magda Romanska, Routledge, 2015, pp. 1–15.

Royle, Nicholas. *The Uncanny*. Manchester University Press, 2008.

Russell, Jon. "Report: Pokémon Go Has Now Crossed $1 Billion in Revenue." *TechCrunch*, TechCrunch, 1 Feb. 2017, techcrunch.com/2017/02/01/report-pokemon-go-has-now-crossed-1-billion-in-revenue/.

Sample, Mark. "Location Is Not Compelling (Until It Is Haunted)." *The Mobile Story: Narrative Practices with Locative Technologies*, edited by Jason Farman, Routledge, 2014, pp. 68–78.

Schiphorst, Thecla. "Forward." *Identity, Performance and Technology: Practices of Embodiment, Empowerment and Technicity*, Palgrave, 2012, pp. xi-xvi.

Schwartz, Joseph. "5 Charts That Show Pokémon GO's Growth in the US." *Similarweb Blog*, 24 July 2016, www.similarweb.com/blog/pokemon-go.

Sciullo, Maria. "Pokemon Go Creating Real Clashes, Opportunities for Landmarks." *Pittsburgh Post-Gazette*, PG Publishing Co., Inc., 14 July 2016, www.post-gazette.com/local/city/2016/07/14/Pokemon-Go-creating-real-clashes-opportunities/stories/201607130193. Accessed 14 Dec. 2016.

Sewall, Laura. "The Skill of Ecological Perception." *Ecopsychology - Restoring the Earth, Healing the Mind*, edited by Theodore Rozak et al., Sierra Club Books, 1995, pp. 201–215.

Simonet, Andrew. *Making Your Life as an Artist*. ArtistsU, 2014. Available to download at ArtistsU.org: http://www.artistsu.org/download-the-book

Smith, Patti. "Babelogue." 1978.

Sommerer, Christa, and Laurent Mignonneau. “Mobile Feelings: Wireless Communication of Heartbeat and Breath for Mobile Art.” *The Mobile Audience: Media Art and Mobile Technologies*, edited by Martin Rieser, Rodopi, Amsterdam, 2011, pp. 269–276.

Stenslie, Stahl. “World Ripple.” *Stahl Stenslie*, Stahl Stenslie, stensliehome.files.wordpress.com/2014/06/world-ripple-pdf.pdf. Accessed 12 Dec. 2016.

Sullivan, Graeme. *Art Practice as Research: Inquiry in the Visual Arts*. Sage Publications, 2005.

“Thirteen - ANU Production - Dublin Fringe Festival - Review.” *No More Workhorse*, 20 Sept. 2013, nomoreworkhorse.com/2013/09/20/thirteen-anu-production-dublin-fringe-festival-review/.

“THIRTEEN.” *ANU Productions*, 22 Mar. 2016, anuproductions.ie/thirteen/.

Tiger Dublin Fringe. *Fringe Programme*. *Fringe Programme*, Tiger Dublin Fringe, 2012, issuu.com/dublinfringefestival/docs/fringe-2012.

Tuters, Marc, and Kazys Varnelis. “Beyond Locative Media: Giving Shape to the Internet of Things.” *Leonardo*, vol. 39, no. 4, Aug. 2006, pp. 357–363., doi:10.1162/leon.2006.39.4.357 .

Van Gulick, Robert. “Consciousness.” *The Standford Encyclopedia of Philosophy*, Edited by Edward N. Zalta, Stanford University, 2016, plato.stanford.edu/archives/win2016/entries/consciousness/. Accessed 12 Dec. 2016.

Weiser, Mark. “The Computer for the 21st Century.” *Scientific American*, Sept. 1991, pp. 94–104. https://www.lri.fr/~mbl/Stanford/CS477/papers/Weiser-SciAm.pdf

Wetzel, Richard, et al. “Guidelines for Designing Augmented Reality Games.” *Proceedings of the 2008 Conference on Future Play Research, Play, Share - Future Play '08*, 2008, doi:10.1145/1496984.1497013.

Wilson, Japhy. “‘The Devastating Conquest of the Lived by the Conceived’: The Concept of Abstract Space in the Work of Henri Lefebvre.” *Space and Culture*, vol. 16, no. 3, 2013, pp. 364–380., doi:10.1177/1206331213487064.

Wither, Jason, et al. “The Westwood Experience: Connecting Story to Locations via Mixed Reality.” *2010 IEEE International Symposium on Mixed and Augmented Reality - Arts, Media, and Humanities*, 2010, doi:10.1109/ismar-amh.2010.5643295.

Wright, Peter, et al. “User Experience and the Idea of Design in HCI.” *Interactive Systems. Design, Specification, and Verification Lecture Notes in Computer Science*, 2006, pp. 1–14., doi:10.1007/11752707_1.

Zaiontz, Keren. “Narcissistic Spectatorship in Immersive and One-on-One Performance.” *Theatre Journal*, vol. 66, no. 3, 2014, pp. 405–425., doi:10.1353/tj.2014.0084.

Zimmerman, Eric, and Katie Salen. *Rules of Play: Game Design Fundamentals*. MIT Press, 2003.

“Zombies, Run!” *Apple App Store*, 5.1.1, Six to Start, 12 Dec. 2016, itunes.apple.com/ie/app/zombies-run!/id503519713?mt=8. Accessed 12 Dec. 2016.