

Digital Worlds:
Performativity and Immersion in VR Videogames

by

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B.A., University of the Fraser Valley, 2016

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Supervisory Committee

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Abstract

Virtual reality (VR) and videogames present, enable, and constrain human engagement with what may broadly be called digital worlds. Videogames have already become a global force in popular culture. Although VR technologies have existed for half a century, it is only during the past decade that VR has become more widely accessible to the public beyond the confines of research institutions and industry use. Very little scholarship has examined the interconnections of videogames and VR as co-extensive cultural forces that shape ideas and feelings about inhabiting digital worlds. This thesis specifically examines the often-employed lexicon of immersion, presence, or feelings being inside of computer-generated contexts as they exist across videogames and VR. By analyzing 15 participants' interactions with a contemporary VR videogame and interviewing them about this experience, I discuss how immersion, presence, or the feeling of being inside computer-generated worlds is performative and exceeds what the technology affords. Instead, engagement with digital worlds intersects with other performances, actions, and previous engagement with objects or other digital worlds to make sense of creating meaning in VR.

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Chapter 1: Welcome Back to Virtual Reality

A critical approach to VR is crucial at a time of a widespread rush to laud its liberatory possibilities and thereby accord VR great “cultural capital” on the part of media and publics, many academics included. (Hillis, 1999a, pp. xiii-xiv)

VR spaces are imbued with the values and judgements of those who construct both the technology and the medium, and are situated within broader historical contexts... (Unwin and Fisher, 2001, p. 299)

[T]he real power of VR is not necessarily to produce a faithful reproduction of “reality” but rather that it offers the possibility to step outside of the normal bounds of reality and realize goals in a totally new and unexpected way. (Slater and Sanchez-Vives, 2016, pp. 1-2)

There are no constraints in VR—the only limitation is the imagination. (Bailenson, 2018, p. 240)

Introduction

By way of an extended epigraph, I start this thesis by acknowledging that the development, use, and study of virtual reality (VR) has an elongated history, a history containing a spectrum of praises and critiques of VR as a medium. These brief examples are far from a complete picture of the discourse of VR. My intention is to emphasize that VR is not necessarily “new.” Whether a concept, technology, or assemblage, VR has existed for at least half a century since Ivan Sutherland (1968) created the Sword of Damocles (Figure 1), the first immersive head-mounted display (HMD). The HMD is the central physical hardware of VR “where one typically has a head mounted wide view stereo display coupled with head tracking, and some other means of input to support interaction” (Buxton & Fitzmaurice, 1998, p. 69). It is generally accepted that the term “virtual reality” was first officially coined later by Jaron Lanier in 1989 at the trade show

for the *Special Interest Group on Computer GRAPHics and Interactive Techniques* (Heim, 1998; Slater and Sanchez-Vives, 2016). Despite these key moments, more encompassing genealogies of VR go as far back as the nineteenth century by looking at panoramic murals such as Baldassare Peruzzi's *Sala delle Prospettive* (Figure 2) or even the different iterations of the stereoscope (Figure 3) (Che, 2017; Hillis, 1999b). These earlier art forms and devices are strong sources of inspiration and a general desire for immersive experiences (Grau, 2003).



Figure 1: The Sword of Damocles or the first HMD (Harvard, 1967).



Figure 2: The panoramic mural, *Sala delle Prospettive* (Hermoso, 2013).

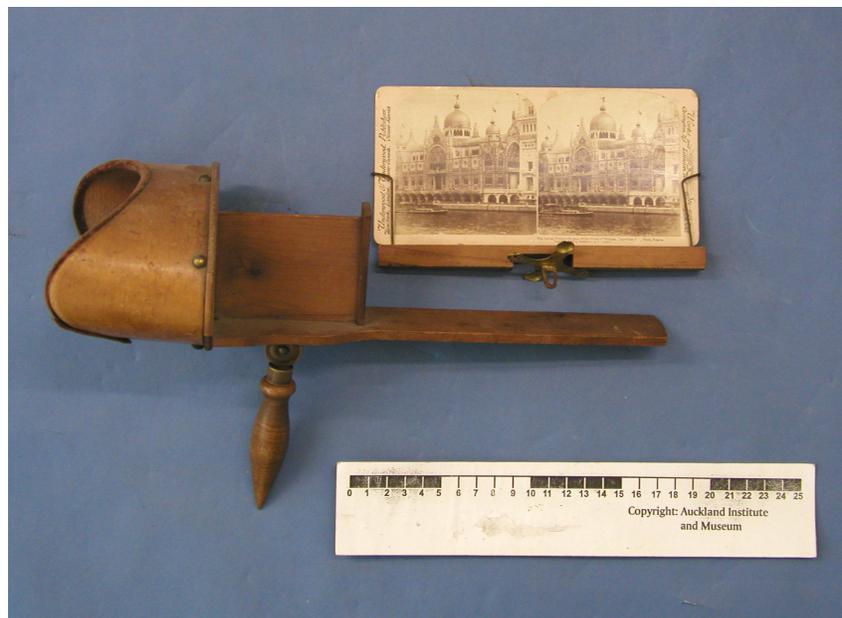


Figure 3: A handheld wooden stereoscope (Auckland Museum, 2017).

For the past several years, there has been a “resurgence” of VR technologies as they have become increasingly accessible in Western consumer culture (Evans, 2018). This current boom in VR continues to be facilitated by the introduction of now popular VR systems such as the *Oculus Rift* (Facebook), the *Vive* (HTC), the *PlayStation VR* (Sony), *Daydream* (Google), *GearVR* (Samsung), and many others. What constitutes contemporary VR is defined and pushed forward by these modern HMDs created by large tech companies. This thesis is aimed squarely at present-day VR in how it is used, framed, and the experience of engaging with VR. In short, VR is the object of study. As my opening epigraph suggests, I am keen to work across the lines of VR’s lauded potential and critiques levied against it. My goal here is not to embolden either of these refrains per se. Instead, my goal is to “intervene from a fundamentally embodied or minoritarian, perspective” by drawing on critical lenses that prioritize social, cultural, and political accounts both within and beyond VR (Kozel et al., 2018). There is a need to seek out alternatives to standoffs such as VR is all bad or all good, but instead approach theorizing around VR as “relentlessly transformative and inextricably relational” (Katz, 1996, p. 489).

Jaron Lanier once proposed that the generation born in the 1990s would at some point in their lifetime experience VR with the same ubiquity as the telephone (Lanier & Biocca, 1992). Such ubiquity has yet to happen, despite VR’s substantive growth since approximately 2012-13. Born in 1990, I am too young to remember the expansion of academic and public excitement for VR technologies in the late 1980s and subsequent decline in the 1990s. My perspective puts me at some distance from many current and past scholars writing and researching around VR. In writing this thesis, I recognize that

“there is no neutral space outside of society, and that every description of the world also participates in the social and material agenda-setting” (Law & Singleton, 2000, p. 767). In this sense, my writing and researching on VR is a situated intervention to add some nuance to the current social-cultural realms with which VR’s resurgence is co-extensive. There are many reasons why such a response is warranted. The particular intervention I take up here is troubling the concept of “immersion,” specifically by analyzing VR videogames. Before attending to this specific pathway, I introduce just what exactly VR is and why immersion is such a durable and vital concept when discussing VR.

Defining VR and the Importance of Immersion

There are many different definitions of VR. Table 1.1 shows a few examples from which I draw. In Jaron Lanier’s (2017) latest book, he intersperses 52 different definitions of VR. If anything, this shows that a consensus over the definition of VR does not exist. The definitions I provided in Table 1.1 and many of Lanier’s definitions of VR prioritize two key elements: (1) that VR is a technology or technological system and (2) that VR offers a unique way of seeing or experiencing as an effect of its technological affordances. Holding these key points in tension some two decades before the current resurgence in VR, Nicola Green pointed out that VR was not just the fantasy of science-fiction, but an actually existing technology comprised of a myriad of technological components “put together as mutable systems” that were “heterogenous in their development across time and geographical space” (1999, p. 410).

Green argued that a purely technical definition of VR is problematic. Instead, Green proposed VR as a technology that “has layered meanings: physical objects, forms of knowledge, and human practices” (1999, p. 412). Or, in other words, VR is more than

one single technology, but many assembled (stereoscopic screens, audio devices, wireless antenna, computer processing units, handheld devices, system memory, storage, circuit boards, data cables, etc.). Moreover, VR is part of and productive of broader power relations existing across VR design and usage (Green, 1999). Earlier critical contextualization's of VR like Green's remain essential now amidst a surge of VR growth — a surge that is linked to the history of VR but embedded in the current contexts of technology and media practices.

Table 1: Sample definitions of VR.

Author (Date)	Definition of Virtual Reality
Fisher & Unwin (2002, p. 1)	VR is the ability of the user of a constructed view of a limited digitally encoded information domain to change their view in three dimensions causing an update of the view presented to any viewer, especially the user.
Sanchez-Vives & Slater (2016, p. 2)	VR offers us a way to simulate reality. We do not say that it is 'exactly as real' as physical reality but that VR best operates in the space that is just below what might be called the 'reality horizon.'
Hillis (1999a, p. xiv)	VR is a technological reproduction of the process of perceiving the real.
Brooks (1999, p. 19)	I define a virtual reality experience as any in which the user is effectively immersed in a responsive virtual world. This implies user dynamic control of viewpoint.
Steuer (1992, p. 74)	Most popular definitions of virtual reality make reference to a particular technological system. This system usually includes a computer capable of real-time animation, controlled by a set of wired gloves and a position tracker, and using a head-mounted stereoscopic display for visual output.
Heim (1998, p. 7)	VR is a technology defined by the three I's: immersion, interactive systems based on computable information.

Like Green, Melanie Chan (2015) has more recently argued that virtual reality continues to have many “layers of meaning” that have “become encrusted around the

term” itself (p. 1). Chan explores the meaning of VR through its representation in the media and popular culture as both a technology and in “relation to debates about what constitutes the real and the virtual” (p. 1). Similarly, Daniel Golding (2017) writes that the “image of virtual reality is much more ubiquitous than its experience” (p. 1). Golding situates VR as a “visible apparatus” that exists “between the body of the user and its affective relationship to the apparatus” (Golding, 2017, p. 2). Both Chan and Golding emphasize how VR does not exist in a social-cultural vacuum in that how VR is represented is important to the effects it has. Again, definitions of VR are not universal, but they do crystallize around the unique way VR grips the senses. It is my observation from these polyvalences that definitions of VR need to be active and mobile concepts to tackle the diversity of what VR represents and what it does. I therefore want to put forward my own definition of VR as it guides this thesis. My definition is more of a proposition of what contemporary VR is and its effects, not a firm assertion. I think of VR as a technological system that foregrounds constructed digital worlds and (re)produces moments of perceiving, experiencing, and seeing in these digital worlds through embodied interaction that happens across the physical world, our bodies, and the links established by joining them with a VR system. With this proposition of VR in mind, I want to turn toward the effects of VR. Frothing out of the representations of VR is the concept of “immersion.”

Similar to defining VR itself, immersion remains a hard term to define. VR research has often drawn on the definition of immersion as “a psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences” (Witmer &

Singer, 1998, p. 227). For some, the sense of immersion is linked to VR technology explicitly. In 2009, prominent VR scholar Mel Slater advanced the term “place illusion” which is the strong illusion of being in a virtual environment despite knowing that you are not actually there (Slater, 2009). Slater and others have advanced a distinction between immersion and the specific functions of presence such as the place illusion (Slater & Wilbur, 1997; Slater, 1999). As Slater and Sanchez-Vives (2016) put it, immersion “describes the technical capabilities of a system, it is the physics of the system” while presence is the illusion of “being there” (p. 74). However, just like the concept of immersion, presence in virtual environments also has many different framings (see Heeter, 1992; Lee, 2004; Lombard & Ditton, 1997; Slater, 2005).

Recent scholarship still relies on this separation where immersion is defined as “an objective and descriptive measure” (Herrera et al., 2018, p. 2) or the “technical ability of a system to support sensorimotor contingency” (Pan & Hamilton, 2018, p. 407) to create a “vivid illusion of reality” (Slater & Wilbur, 1997, p. 3). By contrast, presence is the “subjective feeling of being inside” a digital world (Herrera et al., 2018, p. 2). Thus, there are strong habituations of immersion as an effect inherent to VR as a technology. VR is the ultimate presence-generating machine because it is immersive technology. I argue that immersion in this framing comes to be a sort of pure effect of VR. Immersion exists because VR is claimed to be *a technology that produces a different way of seeing or experiencing*.

Despite the strong intentions of having clear distinctions for what immersion and presence are, the term immersion is far too ubiquitous within popular culture and the VR industry for it to hold fast to more rigid definitions. The terms often collapse together and

are used in similar ways. Immersion to the VR user is much more contingent to their subjective feeling of being “drenched in sensation” (Hillis, 1999a, p. 70). Returning to Green’s (1999) figuration of VR as an assemblage of physical objects, forms of knowledge, and human practices, it makes sense that immersion too as an effect of VR must also be scrutinized as it is part of and reproduces these power-laden fields of experience. For example, Leighton Evans (2018) has taken immersion seriously in his recent work calling into question the “revolutionary nature of the medium” (p. 11). What Evans demonstrates through interviews with different VR developers, programmers, and artists is that immersion is an assemblage of maximizing the capacities of various components found in VR (screens, audio, haptics, narrative, etc.). Immersion in this context is not exclusive to VR but exists across other immersive media, and importantly VR content creators have different understandings of immersion in their practice (Evans, 2018). Across these texts, the concept of immersion remains slippery as it is grasped epistemologically and what it does as an ontological frame of experience. Ultimately, immersion or the sense of being there has an important effect on the way we come to understand digital worlds. Whatever terminology one uses, the sense of being within a digital world or of digital inhabitation is a monumental force in the discourse of VR.

Research Goals and Objectives

The goal of this thesis is to examine the meanings and experiences of immersion in VR and how they are performative. I draw on performativity theory to explore how “reality” is enacted through embodied, world-making practices (Barad, 2003; Butler, 1993, 1997, 2004). For Judith Butler, performativity is “understood not as a singular or deliberate ‘act,’ but rather, as the reiterative and citational practice by which discourse

produces the effect that it names” (1993, p. 2). It is my aim, then, to consider how immersion, or a sense of being there, acquires a “performative force, or the power to produce the ontological effect of bringing something into being through the repetition of performative acts” (Rose-Redwood & Glass, 2014, p. 2). The performative occurs across digital technologies as well as human and non-human entanglements. It is crucial to examine how performative practices are shaped by technological conditions and, in turn, how performative practices reflect or alter these technological conditions (Leaker et al., 2017). Therefore, I ask: what are the performative acts that (re)produce a sense of immersion and how are subjectivities entangled throughout ongoing engagement with VR?

Moreover, in what way is immersion a “practice of improvisation” within VR’s “scene of constraint” (Butler, 2004, p. 1)? Performative acts and the digital are also spatial. As Gregson & Rose (2000) have pointed out, spaces themselves are performative, since spaces “do not pre-exist their performances, waiting in some sense to be mapped out by performances; rather, specific performances bring these spaces into being” (p. 441). Spatiality and the digital are co-extensive as “space is always in the process of becoming, and this becoming is performative by being highly subjective and contingent on the technologies present and available to different embodied subjects” (Leszczynski, 2018, p. 17). If immersion is characteristically the feeling of being-there, then the “there” of immersion is a sense of space produced through embodied action with VR.

I advance the argument that being “immersed” in VR is not a performance reducible to an essential capacity of the technology itself or some culturally pure proprioceptive capabilities of human bodies. Instead, immersion is performative through

social-cultural contexts that the subject being immersed brings with them into engagement with VR. We do not automatically accept what VR presents as passive psychologized receptacles where the technology fills us out. In other words, my goal is to understand immersion in a way that does not just hail or recall our bodies/selves but actively reconstitutes them. Importantly, we too act in this constitution. Donna Haraway's essay "A Cyborg Manifesto" discerns that bodies and digital technologies are cyborgian: "a cybernetic organism, a hybrid of machine and organism" (1991, p. 149). Immersion in VR is enacted through the hybridity between the human body and VR.

I will argue that immersion is performative as a pressing of flesh into technology that cannot be removed from the social, cultural, and political contexts in which bodies and technology are entangled. Haraway positioned technologies as "crucial tools for recrafting our bodies" and that their discourses can be "instruments for enforcing meanings" (1991, p. 161). Accordingly, I view technology as "a site of power in which the human is produced and reproduced" (Butler, 2004, p. 11). In other words, I am advocating for a politics of technology that is linked to the performative to make sense of immersion and experiencing VR. A digital politics of technology should consider how various digital worlds are always caught up in an irreducible wider world. There are social differentiations and power relations unfolding in the design, use, and impacts of digital worlds on everyday life. VR specifically requires a kind of political thought and action that will rework norms that perpetuate a narrowing of which digital worlds can exist, who gets to create them, who can access them, and what "being there" ought to be.

VR is productive as an assemblage between bodies and technology in experiencing different constructed digital worlds — for better or for worse. What often

remains assumed is that VR allows us to transcend or shut out the external reality outside of VR or that the digital worlds of VR are unrestrictive apolitical fantasies. This is not the case, and it is only ever through embodied action that VR can even exist. Haraway's intention, in part, behind the cyborg manifesto is to navigate out of "the various purifications and sortings of the world, two by two," such as mind/body, human/animal, or organism/machine (Haraway & Wolfe, 2016, p. 269). I argue that VR is always cyborgian in its instantiations, a hybridity of human and machine, making a mess of the virtual/actual binary. As cyborgs, our bodies are still the "maps of power and identity" (Haraway, 1991, p. 180). Responding to Matthew Wilson's (2009) call for cyborg geographers, I believe a performative approach to VR might both "inhabit the spaces where the human and nonhuman are composed and question the knowledges made through its technological assemblage" (p. 512). Through the context of VR videogames and contemporary VR HMDs, I will examine VR and the performative force of immersion.

Significance of the Research: VR Videogames and Immersion

Immersion is a durable concept and one worth investigating critically in specific contexts. Nowhere else is the idea of being immersed in digital worlds more inflected than videogames. Videogames as cultural products have longstanding popularity as they cultivate immersive and exhilarating digital worlds. The videogame industry was estimated to be worth \$134.9 billion in 2018 (Batchelor, 2018). This makes it a powerful force, setting the benchmarks of innovation and development not just of VR videogames but VR technologies themselves. It is through the examination of VR videogames that I will investigate the performative thrust of immersion.

Videogames as cultural objects are steeped in representations through their ongoing performances of how the world should be or what it could be through frames of dystopia, utopia, or more blurred formations of the past, present, or possible futures (Longan, 2008; Sculzke, 2014, Shaw & Sharp, 2013). Videogames broadly, and the digital worlds they present, are increasingly being designed to dwell in, be affective, create immersion, and build a particular sense of space and place through embodied experiences (Ash, 2009; Dormann et al., 2013; Gee, 2008; Paiva, 2015; Shaw & Warf, 2009). They are decidedly political constructs and players indisputably bring prior knowledge with them into digital worlds as they experience them (Consalvo, 2009; Yee, 2014). The representational logics and embodied experience of VR videogames, then, also have a substantial stake in meaning-making or producing popular understandings of what it means to be present in digital worlds.

How exactly popular culture is taken up by individuals and how it becomes rendered meaningful in everyday life, not as something that spills over or leaks into the everyday but is imbricated within it, is an ongoing research objective (Boss, 2018; Dittmer & Gray, 2010). Accordingly, there have been various appeals for scholarship that does not just study videogames as objects unto themselves but to focus on players and their everyday practices, especially as playing games is interconnected to wider social, political, cultural, and economic processes (Ash & Gallacher, 2011; Malaby, 2007; Shaw A., 2010; Steinkuehler, 2006; Taylor, 2009). I situate immersion amidst these frames, as something tethered to the practices and popular culture of videogame play. Game studies scholars have already contributed their own critiques of immersion, though not specifically focused on VR videogames (Calleja, 2011; Keogh, 2018a; Salen &

Zimmerman 2003; Thon, 2008; Welsh, 2018). VR videogames double down on the power of immersion — now you can experience videogames in an even more immersive way through VR.

There are several contributions this research attempts to make. There are already numerous and multidisciplinary literatures discussing VR, digital worlds, videogames, immersion, and presence. In an effort to think of experiencing VR and the concept of immersion in a performative way and continue to push for politics of technology regarding the medium, I bring together diverse ideas and theoretical perspectives, primarily from human geography and game studies. Critical conceptions of space and place in human geography combined with game studies' focused efforts to examine an ever-expanding media that is built upon the premise of embodied experience make an apt combination to study contemporary VR.

As anthropologist and game studies scholar Thomas Malaby (2007) writes, “every game is an ongoing process. As it is played, it always contains the potential for generating new practices and new meanings, possibly refiguring the game itself” (p. 102). Likewise, James Ash and Lesley Anne Gallacher (2011) describe world-making in videogames: “The sense of ‘world’ here is not of some stable and neutral thing which pre-exists users’ interaction with it” (p. 359). Importantly, VR grips the body as an experiential medium, complicating any assumed distinctiveness of the actual and the virtual through our senses, space, and bodily actions (Popat, 2016). Performative, processual, and embodied understandings of the worlds of VR are needed to understand VR and immersion as they are impinged upon and governed by sociocultural norms. The

perspectives I prioritize are vital in unpacking the emergent use of VR videogames which have only recently been widely commercially available.

This research seeks to contribute to understanding how VR videogames might impinge on what we already know about the world and how we come to know the world around us. There is no doubt something unique and powerful about using VR. However, there is also something troubling about VR. In this, I am inspired again by Haraway (2016) in “staying with the trouble.” For Haraway, staying with the trouble is a focus on being present, not oscillating between idyllic or apocalyptic pasts/futures. It is the learned stratagem of recognizing our situatedness and entanglement in “unfinished configurations of places, times, matters, meanings” (p. 1) and being generative of “unexpected collaborations and combinations” (p. 4) to make sense of the world together. In describing feminist digital geographies, Sarah Elwood and Agnieszka Leszcynski (2018) view staying with the trouble as a vital practice:

staying with the trouble means attending to and unpacking how people make sense and meaning of data and technologies in the spaces and practices of their everyday lives, how they grapple with the effects and consequences of a digital society, and how these effects and consequences manifest differently across spaces and subjectivities. (p. 12)

To this end, I argue that there is a broad-based need to stay with the trouble of VR as it continues to grow in popularity.

Data Collection and Analysis

To gain insight into the relationship between everyday practices of gaming and VR videogames, I perform a detailed qualitative study. I argue that qualitative methodologies that have cultural, social, and political foci are desperately needed to

examine the experience of contemporary VR. VR is still chronically understudied by social scientists outside of psychology (Fox et al., 2009). The medium is swelling in popularity and affordability. VR will likely grow as an object of study and a methodological tool in many disciplines in the near future. The qualitative methodology used here is based upon participants playing a VR videogame as well as discussing the experience of VR. A total of 15 participants with varied levels of familiarity with VR were provided with the opportunity to play the VR videogame, *Land's End*.

Created by developer, ustwo games, *Land's End* can be described as a low-impact and comfortable experience for newcomers to VR. The game involves navigating a digital world while solving puzzles to advance through up to five levels. In terms of hardware, *Land's End* was played on the *Oculus Go* (OGO), an HMD released in June 2018. The OGO was an essential choice due to its affordability and portability. The *Land's End* play sessions on the OGO were followed by interviews to discuss the participants' experiences. Both the play sessions and interviews were video-recorded and transcribed for analysis. The goal in video recording and analyzing both playing sessions and interviews was to flesh out embodied experiences of VR videogame play and to produce thick textual reflections on the experience of VR. This kind of methodology is crucial in uncovering immersion as it occurs and is experienced through gameplay as well as understood in everyday discourses of gameplay. More specific details of my methodology and how I analyzed the data are outlined in Chapter 3.

Organization of the Thesis

This thesis is divided into 5 chapters. In Chapter 2, I outline my approach to VR and videogames by more thoroughly synthesizing together relevant key arguments from

human geographers and game studies scholars. I also inject different canonical readings that outline the potential of VR and its capacity to create immersion. Videogames have only just started to feature as a significant priority for geographers (Ash & Gallacher, 2011; Shaw & Warf, 2009). In the past, human geographers have written about VR (Crang et al., 1999; Hillis, 1999a; Unwin & Fisher, 2001), but these perspectives need updating to consider the wave of technological developments. This is important as ‘digital geographies’ continue to shape research priorities and approaches to the digital as an object of geographic study (Ash et al., 2018a).

Game studies, although still an expanding disciplinary identity, has a history of navigating and interrogating absent/present and virtual/actual discourses that are relevant to VR (Keogh, 2018b; Heineman, 2018; Murray J.H., 1997; Ryan, 2001). Engaging with these literatures, I outline my own performative conception of videogames and VR — that is, the spaces and experiences of immersion in VR are not technological essentialisms but contingent on social-cultural fields of practice and performance. I frame this as “immersivity” or immersion as an active performative practice. I intentionally frame my reading as broad. This is not an exhaustive project concerning VR as a medium. Instead, it is an attempt at igniting a politics of technology when thinking about VR. There is a need to keep developing a politics that struggles over and reworks norms specific to VR, norms that are emblematic of ongoing challenges in digital life. The resurgence of VR in recent years undoubtedly requires open-ended theorizations and experimentations that draw on multiple disciplines.

Chapter 3 is a charting of my methodology and the rationale behind it. This chapter explains the specific functional features of the data collection and analysis in

greater detail, especially with different challenges that need to be considered in using VR as a tool. Moreover, this chapter explains the value I place on using a qualitative methodology that prioritizes more subjective and generous conversation when studying VR videogames and immersion. This sets the stage for the data analysis in Chapter 4.

Chapter 4 focuses specifically on the performative dimensions of experiencing VR. Drawing on playing sessions and interviews, I look at what kinds of interactions, encounters, and performative acts may (re)produce a sense of immersion in VR. Although all participants played the same VR videogame, each often had different ways of actually engaging in the activity. Interviews elicited different or similar anxieties, fears, joys, or moments of confusion around the experience of playing the VR videogame. Moreover, participants recurrently connected their experiences in VR to previous experiences or objects in their everyday lives. The idea of immersion, or a sense of being there, was never neatly tied to VR as a technology. In short, here, I consider the idea that immersion in VR is in part socially constructed through our practices. Following Chapter 4, the main findings and broader significance of the thesis are summarized and presented in the conclusion (Chapter 5).

To be human is to be embodied. Language, our thoughts, and emotions are felt and experienced in and by bodies. VR requires embodied action to make seemingly new ways of perceiving, seeing, and experiencing come to be. By linking embodied action with VR as a technological system, we are reproducing and creating new capacities to act and changing how we understand the world around us. Immersion, or a sense of “being there,” has become a calcified canon in the discourses of VR and videogames more broadly. Immersion is shaping our bodies and the spatialities of being cyborgs, machines,

and organisms. Importantly, I take a performative lens to understand immersion in VR videogames. To summarize, this thesis adds context to understand immersion in VR as something learned, practiced, and embodied under certain constraints. The research here illustrates how these learned, practiced and embodied ways of immersion in VR are more than technological affordances. Instead, immersion is imbricated in the wider ways that we already engage with the technological, the digital, and the self. What I believe this ultimately shows is that performative, reiterative, and embodied practices are a lively bricolage for understanding what effects emerge from an engagement with digital technologies.

Chapter 2: Immersivity in the Digital Worlds of Virtual Reality

Introduction

Immersion, presence, or a sense of being inside of computer-generated contexts, such as virtual reality (VR) and videogames, have engendered a wealth of interdisciplinary research over the past few decades. This thesis has a specific focus: critically examining the experience and performative aspects of immersion in VR. I do so through an investigation of an even more specific context, immersion in videogames made for VR, hereafter referred to as “VR videogames.” When discussed separately, both VR and videogames are fundamentally portrayed as being immersive. Also central to VR and videogames are the spaces they produce. Principally, both VR and videogames generate constructed digital worlds designed for human interaction. VR videogames, then, syncope many different framings of immersion, presence, or feelings of being inside a computer-generated digital world as well as the spatial characteristics of these digital worlds. This chapter synthesizes different immersive perspectives relating to the contexts of VR and videogames.

The first major discussion in this chapter defines the “digital” as a central register for VR, videogames, and VR videogames. I define the digital by drawing on nascent field of digital geographies. In digital geographies, the digital is taken to be a primary object of study in geographical inquiry (Ash et al., 2018a, 2018b; Wilson, 2018). Immersion, I argue, is a geographical phenomenon as it is indexical across the spaces of bodies, technologies, and digital worlds. Digital geographies identify that the digital is material, embodied, and has deep consequences because of its connection to the physical or analog world, not despite it. I further describe this relationship as *mediated affordances*.

Mediated affordances act as a concept for keeping technology and bodies linked in the forthcoming analyses of immersion.

Following the former discussion of digital geographies, I widen out what exactly immersion, presence, or a sense of being there, are claimed to be in VR. Exhortations of VR's exceptional status when compared against all other previous media are historical, ongoing, and founded in exclusive understandings of immersion. I put forward some of the most dominant arguments in VR research that define its value and special status as an exceptional technology. I then connect critiques that question the rhetoric of VR.

Although much research lauds VR there are also persistent criticisms of its gravitas. I frame these two summaries as the promises and problematics of VR.

With the promises and problematics of VR in tow, the discussion switches to videogames by way of game studies. Game studies is an interdisciplinary field of study razor-focused on videogames. Game studies scholars have examined core aspects and resonances of videogames in everyday life: formal, technological, social, cultural, political, economic, philosophical (Dovey & Kennedy, 2006; Mayra, 2008; Murray S., 2016; Salen & Zimmerman, 2003; Wolf & Perron, 2014). Game studies scholars have proposed their own definitions of immersion in videogames. I review several of these immersive accounts from the game studies literature. My key argument is that VR and videogames have coinciding challenges when discussing immersion, yet research on VR or videogames are rarely in conversation.

Primarily, immersion has been cast in top-down modes. Immersion is seen as dependent on VR or videogames' exceptional status as unique media and their specific technological affordances. Furthermore, research on immersion across VR and

videogames tends not to rely on personal, subjective, affective, emotional, and embodied perspectives. These challenges carry over into VR videogames. Not all videogames are made for VR. Equally, not all VR is used to play videogames. However, VR videogames are for the first time a major commercial success. For example, Sony's PlayStation VR system is exclusively made for playing VR videogames and has sold 4.2 million units since its release in 2016 (Sony, 2019). I argue that studying immersion in VR videogames is incredibly useful as the term becomes further stretched across media contexts more broadly. Likewise, it is conceptually valuable to put game studies research in dialogue with VR research that does not focus on videogames.

To challenge current framings of immersion in VR and videogames, I conclude around the axis of performativity by refining immersion as "immersivity." Immersivity is a conceptual move that turns away from understanding immersion as a state bounded to particular technological features of VR or videogames. Immersivity, however, does not abandon the term immersion entirely. Immersion is a valuable frame of reference and apprehensible to different embodied subjects who engage with either VR or videogames. Instead, immersivity gesticulates immersion as a practice, where the technological and the human are imbricated to make immersion something always situated across bodies and technologies. In short, this chapter summarizes how embodied and performative practices are integral in sense of digital inhabitation.

Defining the Digital and Mediated Affordances

The "digital" can be a nebulous term in popular culture and academic literature. At a literal level, the digital describes the "transformation of tangible, visual, or audible analog material into a binary system of zeros and ones, which become 'on' or 'off'"

electrical impulses in a computer system” (Markham, 2017, p. 513). Programming languages or machine language systems and connection to the internet further transform these digital bits into contextualized information that is accessible across a multitude of users, computer systems, and geographical contexts. Practically, research of the digital is to study its “artifacts, environments, and interactions” (Vertesi & Ribes, 2019, p. ix). The meaning of digital thus extends beyond its practical definition through its consequences within existing relations: digital culture, digital media, digital identities, digital data, digital politics, and so on. The digital does not “stand alone as a topic of inquiry” but instead modifies the world by acting “metonymically to stand in for countless modes of interaction, types of information, platforms for interaction, and cultural formations” (Markham, 2017, p. 513). VR and videogames are just two such examples of the digital.

Geography, like many disciplines in the social sciences or humanities, has witnessed an “intensifying history” in relation to the digital (Ash et al., 2018a, p. 35). The response has been to mark out digital geographies as an array of scholarship where the digital is examined through existing and emerging geographic perspectives of space/spatiality, methods and methodologies, culture, economics, and politics (Ash et al., 2018b). Digital geographies have defined the digital as “ontics, aesthetics, logics, or discourse or an assemblage thereof” (Ash et al., 2018a, p. 35). Ontics retains the practical definition above. Fundamentally, all digital systems act as translators to and sensitizers of ones and zeros. Aesthetics and produced logics signal how our everyday experiences are already permeated and shaped by the various flows and feedbacks between bodies and machines (Ash et al., 2018b). Finally, discourses are pronouncements of the digital that are articulating, atomizing, securing, sustaining, accumulating, modulating, analyzing,

and administering the digital through power relations (Ash et al., 2018b, Elwood & Leszczynski, 2018). Simply put, the digital is emergent across time and space with deep consequences as it increasingly influences what is conceivable in the world (McPherson, 2014).

I take digital geographies as one suitable entryway into examining VR and videogames because of the geographical lexis that they so often deploy; the experience of being, acting, and perceiving within digital worlds. VR is not something unexamined by geographers, even prior to digital geographies. Towards the tail end of the dot-com era, geographers primarily used the terms cyberspace or virtual space (Adams, 1997; Crang et al., 1999; Fisher & Unwin, 2003; S. Graham, 1997, 1998; Hillis, 1999a, Kitchin, 1998). VR was discussed in speculative and abstract ways. For example, the edited volume *Virtual Reality in Geography* (Fisher & Unwin, 2003) only references a head mounted display (HMD) or headsets generally a few times in its entire 25 chapters. Instead, other technologies stood in for what was considered VR at that time, such as geographical information systems (GIS), three-dimensional modeling software, or two-dimensional screened digital interfaces. Given the renaissance of VR, there is a need for geographers to update and build out geographical perspectives vis-à-vis the latest iterations of VR.

Following Samuel Kinsley (2014), it is understandable earlier geographic accounts discussing VR were abstract as the technologies themselves were still emerging, imagined, or hard to access. Kinsley (2014) and Mark Graham (2013) have argued that notions of cyberspace or virtual space are still knotty concepts as they propagate separations of the virtual and actual. Ultimately, Kinsley and Graham have argued for a sustained shift away from these terms in geography and to instead build more nuanced

accounts of the materiality of the digital. For example, Adriana De Souza e Silva (2006) examined mobile devices as the link between the digital and physical creating a “hybrid space” or “the merging of borders between physical and digital spaces, because of the use of mobile technologies as social devices” (p. 265). Hybridity in this case is meant to blur the virtual/actual binary realizing that the digital is always connected to the material via mobility and location (de Souza e Silva, 2006; Gordon & de Souza e Silva, 2011; de Souza e Silva & Frith, 2012). Another example is code/space. Code/space is when software and spatiality are not just intertwined but “mutually constitutive” (Dodge and Kitchin, 2004, p. 198; Dodge and Kitchin 2011). Dodge and Kitchin (2004, 2011) discuss how when the code of code/space fails, ultimately the space ceases to exist. One example they use is the airport, since if the code fails in an airport the entire space is no longer capable of being serviceable as an airport (Dodge and Kitchin, 2011). The main argument is that code and by extension the digital has become essential to the production of space.

Geographers have only recently taken up videogames as an object of geographical analysis. Videogames have been said to represent spaces or landscapes and this connects with everyday understandings of the world and productions of space (Lammes, 2008; Longan, 2008). Geopolitics, conflict, and war as conveyed and rendered culturally potent through videogames has been another point of interest (Bos, 2018; Salter, 2010; Shaw I.G.R., 2010). A significant amount of videogames research in geography has examined the affective dimensions of videogames. Shaw and Warf (2009) focus on the affective capacities of videogames for shaping player engagement where the “sensory register is increasingly commodified and exploited” (p. 1341). This is to say that videogames “mobilize the affective” in particular ways for economic ends (Shaw & Sharp, 2013, p.

354). James Ash has surveyed the mobilization of affect in videogames at length to demonstrate the power of videogames in organizing perceptions of space and time to captivate users (Ash, 2009, 2010ab, 2013, 2015). Videogames at this point are ubiquitous in popular culture but only studied by a relatively small number of geographers. Accordingly, there is still an ongoing need to study videogames as a geographical phenomenon (Ash & Gallacher, 2011).

As geographers have shifted to thinking about the digital, so have VR, videogames, and immersion as diverse culturally resonating forces changed during this time. In short, VR and videogames fit within the ongoing remit of digital geographies. Gillian Rose (2016, 2018) accounts for how the digital has brought about a change in cultural geography, where cultural objects are no longer stable but defined by their mass production, mutability, and multimediality or many versions. This falls in conjunction with other new media perspectives such as Lev Manovich (2001) who defines new media by their modularity, variability, numerical representations, automations, and transcoded structure. For cultural geography specifically, Rose (2018) argues that these shifts in cultural objects have made some scholars move away from representation in digital geographic scholarship:

The result of these empirical changes in digital technology, in many areas of digital geographies scholarship, has been a preference for the concept of ‘mediation’ rather than ‘representation’ and for ‘affect’ rather than ‘meaning’ as its consequence (p. 169).

As Rose (2016) explains, “the contemporary task of the cultural scholar, then, must surely be not to read an object but to navigate that productive network in all its multiple generativity” (p. 347). This is resonant when trying to examine the myriad of

videogames that exist and the now growing range of VR systems and applications inclusive of specific VR videogames. VR and videogames are not stable cultural objects. Correspondingly, VR and videogames must be treated as deeply material, embodied, unstable digital objects. However, VR as a technology is no longer as abstract or speculative as it once was. VR and videogames can be considered embodied code/spaces where bodies and technologies are the co-constitutive elements for the activation, sustainment, or cessation of immersion as a felt spatiality or sense of being in a digital world. The digital geographies of VR and videogames are various but always situated in particular contexts or mottled combinations of unstable cultural objects and different embodied subjects who engage with them. Kinsley (2014) has pitched “technicity” as a major organizing plinth for digital geographies. For Kinsley, technicity broadly means technologies and humans are co-constitutive (Kinsley, 2014). The digital worlds and immersion of VR and videogames then are also rendered in this co-constitution.

I argue that what matters most in VR and videogame research is attending to this co-constitution by staying with both what technologies do and how we are embodied with them. I describe this relationship as *mediated affordances*. Jay Bolter and Richard Grusin’s (2000) concept of “remediation” has been a major source for critically analyzing new media. In short, what Bolter and Grusin (2000) argued is that so-called new media, such as VR or videogames, are always emergent “from within cultural contexts, and they refashion other media, which are embedded in the same or similar contexts” (p. 21). Bolter and Grusin (2000) write that VR is not just a remediating technology detached from the world, but VR can also be said to be remediating our understanding of our bodies and sense of self. If VR is a refashioning of other media and our sense of self, then

contemporary VR continues to remediate in the current cultural contexts of its resurgence. That is to say, VR now exists in the same spaces as social media, videogames' continued growth and popularity, and broadly speaking the vast array of media with which users are already engaging. As a consequence, immersion is also remediated in a continuing fashion.

What I mean by mediation going forward is a move beyond media as sets of things or discrete objects. Instead, mediation signals manifold processes in which media is entangled through the social, cultural, and biological (Kember & Zylinska, 2012). Why this is so important is that it does not exteriorize VR or videogames from situated perspectives. As Nicola Green puts it, “immersive virtual reality technologies cannot be understood as social artefacts without some consideration of the locales in which they are embedded and the consumption practices now which they draw” (2002, p. 169). Meanwhile, videogames have already become “powerful invocations of the lived world in playable form” that allow us to step into “the core fears, fantasises, hopes and anxieties of a given culture” (Murray S., 2016, p. 2). Affordances relates to objects of study in mediation, in this case VR, videogames, and users of these technologies. In general, I position affordances as relational properties that exist between objects and bodies, for example a VR HMD and a human user. This originates from Gibson's approach to visual perception (Gibson 2014 [1979]). Gibson (2014 [1979]) described affordances as a dichotomy:

But, actually, an affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance

points both ways, to the environment and to the observer
(p. 121).

Affordances then are both technological configurations and socially constructed relations (Nagy & Nef, 2015). They are also shaped and filled out by power configurations (Shaw A., 2017).

Affordances for this research is the co-operation of digital technologies (hardware and software) with users' engagement (embodied material interfacing). *Mediated affordances, then, are the dynamic processes of mediation between technology and bodies.* VR scholar Mel Slater has argued that “VR must be used as a medium in its own right, with its own conventions allowing people to realise experiences that can only be done in VR” (Slater, 2018, n.p.). While this may be true, VR does not *exist in its own right*. Mediated affordances refuse to stabilize or isolate VR from broader currents in media, technology, and society. Dan Golding writes that the “rhetoric of virtual reality has, over several generations of devices, always entered popular culture more easily than the technology itself” (Golding, 2017, p. 6). VR is now at a point where the technology is penetrating an already digitally inflected world in new ways and on larger scales. Perhaps the technology itself is catching up with the ubiquity of the metaphorical rhetoric. VR as a technology is situated and should be examined as such. In particular, I am interested in the collision between VR and videogames. In the next section, I respectively examine VR and videogames and how immersion is framed between the two.

VR Research and Game Studies

Promises and Problematics of VR

VR has long been a much-lauded medium. Yet, with the advent of new and lower costing VR technologies, the supposed promise of VR is changing. Certain scholars have not been shy about promoting the medium — in fact, they often promote the promise of VR methodologically. Jeremy Bailenson, director of the Stanford Human Virtual Interaction Lab, has recently described VR as “the most psychologically powerful medium in history” (Bailenson, 2018, p. 12). This kind of grand claim characterizes VR overall — “VR will change the world,” “VR will change scientific field X,” “VR is the best at Y,” “VR will make people do Z,” and so on and so forth. But the roots and ongoing promotion of VR’s promise are founded in particular understandings of human engagement with digital worlds. By surveying some of the existing and established VR literature, I aim to show how research has poised the definitional character of immersion, presence, or a sense of being within VR.

In the paper, “Virtual Reality: A Survival Guide for the Social Scientist,” VR research is broken-down categorically:

As a technology or medium in and of itself, wherein scientists pose questions about [the] nature of the virtual experience and its effects; as an application, in which VR is used to create a more effective or efficient treatment or training environment to be implemented in a real world setting; and finally, as a method for studying social scientific phenomena in a novel, more effective, or more controlled manner. (Fox et al., 2009, p. 95)

This framing presupposes that VR for the social scientist is inherently “more effective” at doing certain things, in this case treatment, training, and studying social scientific

phenomena. Following Wittmer and Signer (1998), this survival guide defined immersion as “losing oneself in the digital environment and shutting out cues from the physical world” (Fox et al., 2009, p. 96). The authors argue that VR is interactive and thus “perceptually realistic because it reacts to our natural behaviors” (p. 96). However, they claim that not all digital environments are alike and, in order for them to be “more immersive,” they use a head mounted display (HMD) (p. 97).

After defining immersion, the authors shift toward explaining “presence” or “the user’s feelings that the mediated environment is real and that the user’s sensations and actions are responsive to the mediated world as opposed to the real, physical one” (p. 98). Presence, like immersion, has been expounded in various ways. Steuer (1992) canonically defined presence as “the sense of being in an environment” where “sensory input impinges directly upon the organs of sense” (p. 75). Lombard and Ditton later extensively reviewed presence literature and ended up boiling presence down to “the perceptual illusion of nonmediation” (1997, n.p.). Kawn Lee (2004) defined presence as “a psychological state in which the virtuality of experience is unnoticed” (p. 32). Lee identifies presence via three overarching frames: *telepresence* (spatial as experiencing virtual objects and environments), *social* (the feeling that you are sharing the virtual environment with another being), and *self* (experiencing a sense of self or representation of one’s self in a virtual environment).

My point here is simply to demonstrate how presence has never been understood via a clear consensus. Additionally, immersion or presence are intermittently used as interchangeable terms (Heim, 1998; Heeter, 1992; Lombard & Ditton, 1997; Oh & Bailenson 2017). What these recognised definitions generally do is pry apart the

supposed virtual and the actual. For example, a failure in presence is described as moments “when participants are reminded of the fact that they are physically in the real world while they are immersed in the virtual world” (Fox et al., 2009, p. 99). Recalling Steuer’s (1992) definition, our sense organs are directly impinged upon by VR. This is a strange way to put it as in everyday life our sense organs are always engaged. Is a sense of presence or being there as Steuer defined only applicable and relational to VR? This question is very rarely answered in presence research — that is, whether or not technology altogether is a non-negotiable component of theories of presence (Riva and Waterworth, 2014).

This problem of technology becomes systemic when considering what is described as non-immersive. Other media forms or technological systems that do not have the same interactive features of VR (for example, 3D graphics on 2D screens) are described as non-immersive in VR scholarship. Immersion is ultimately thought of as technological features that “deliver a surrounding and convincing environment with which the participant can interact” (Sanchez-Vives & Slater, 2005, p. 333). Consequently, the non-immersive is incredibly vague and reduced roughly to most digital interfaces that are simply not-VR. This has culminated into the vexing idea that VR researchers should refer to “participants” and not “users” because “VR is different from other forms of human–computer interface since the human participates in the virtual world rather than uses it” (Slater and Snachez-Vives, 2016, p. 3). It is nonsensical, however, to think that individuals engaging with all sorts of digital interfaces for many decades have supposedly not been participating in digital worlds until the advent of VR.

Compounding the complexity of immersion, non-immersion, and presence is an argument running through the literature that immersion and presence are separate characteristics, especially so in VR. This argument is largely supported through the work of Mel Slater (Slater & Wilbur, 1997; Slater 1999, 2003, 2009; Slater & Sanchez-Vives, 2005). In a keystone article, Slater and Sylvia Wilbur first proffered immersion as a technical feature. Immersion, for Slater and Wilbur,

describes the extent to which the computer displays are capable of delivering an inclusive, extensive, surrounding and vivid illusion of reality to the sense of a human participant (1997, p. 606).

Slater wrote a follow up article to clarify his own understanding of the terminology.

Slater (1999) characterized presence in a positivistic way, writing that research concerning presence was an “equation” where one side of the equation is filled by “components of system immersion” and the other side is the “presence response” (p. 4). In this case, immersion (technical systems) are a primary influence on presence (subjective response to a virtual world). Slater has continually advanced and refined this understanding writing that immersion is simply “what the technology delivers from an objective point of view” (2003, p. 1).

This framing of immersion inherently favours VR as its technological affordances are also argued to be more immersive or VR itself is portrayed as an “immersive technology” (Coyne, 1994, p. 65; Fox et al., 2009). For example, Cummings and Bailenson (2016) recently surveyed literature to discern “how immersive” VR really needs to be in order to achieve presence. They define immersion as “a technological quality of media” that is said to be measurable in order to find out its degree of correlation to presence as the “psychological experience of ‘being there’” (Cummings

and Bailenson, 2016, p. 273). This study ultimately concludes that immersion is important and that choosing the most immersive system is key, but more research is needed to discern how specific elements like motion tracking, quality of visuals, field of view, or audio effect presence (Cummings & Bailenson, 2016). For example, such technological characteristics do not linearly increase social presence. The context of what are considered social and individual differences matter a great deal as well (Oh et al., 2018). It is also not yet clear how important the technical components are when the goal of VR's use is primarily seeking to generate emotional responses (Baños et al., 2005; Riva et al., 2007).

Nevertheless, it is often taken as a given that “presence is a subjective psychological experience that is usually influenced by the objective level of immersion afforded by the VR system” (Oh & Bailenson, 2017, p. 4). Such a suggestion that immersion is an objective property of VR technology implies that VR technology can determine the subjective response of users. At the very least, such a framing puts the technology as the locus of shaping user response. The technology is persuasive. I am not denying that VR has specific qualities that can create affordances for some sort of human response. However, these discussions do not consider the agency of the user or how their previous knowledge can influence engagement with technology and digital worlds – how they to respond to and shape the affordances of digital technologies. Moreover, it has long been argued that technology is the materialization of power (Winner, 1980) so casting immersion as an objective feature that can be independently verified as separate from human subjectivity fails to account for the broader politics of the technologies’ design and use.

Immersion and presence are undoubtedly two key components at the heart of contemporary VR research. They tend to be used or characterized in multiple ways and “being there” is often a prominent shorthand for the general experience of VR. The common goal of VR is non-mediation or making the technology disappear to the user (Bailenson, 2018; Lombard & Ditton, 1997; Oh & Bailenson, 2017). Lanier stated in an interview that with VR “you don’t see the computer anymore — it’s gone” (Biocca & Lanier, 1992, p. 166). More recently it has been argued that VR is fundamentally “designed to make itself disappear” (Bailenson, 2018, p. 45). This is the paradox of VR — that the technical capabilities of the system are the key driver of the subjective experience of “being there” where its mediation is meant to not be noticeable to the user. It is precisely through its technological mediation that VR is supposed to appear as non-mediated. VR itself and the supposed ways in which its technological affordances are generative of unique perceptual states have not been taken up entirely uncritically. For example, Gordon Calleja (2014) has argued that the use of terms like presence or immersion are problematic because both reify a virtual/actual binary:

Both assume a unidirectional drive of human subjectivity into a containing vessel, a split between the physical “here” and the virtual “there” that is overcome temporarily when the phenomenon is experienced. (p. 222)

Calleja’s provocation is a useful pivot point towards more critical framings of VR.

VR was thoroughly critiqued in the late 1990s and early 2000s nearing the end of VR’s first wave of public excitement. Katherine Hayles is my starting point. Hayles (1994, 1997, 1999) is most well-known for challenging the assumptions of a non-material and disembodied cyberspace. In direct opposition to the transcendental view of VR as a means to escape our bodies, Hayles described VR as a “techno-bioapparatus” (1994, p.

464). Trying to “put bodies back into the picture,” Hayles argued that “far from being left behind when we enter cyberspace, our bodies are no less actively involved in the construction of virtuality than in the construction of real life” (1997, p. 1). Referencing VR specifically, Hayles pointed out that the “specificities of our embodiments” are of vital importance to VR as our bodies “remain in front of the screen rather than within it” (p. 1).

Hayles disrupts the primacy of the technology over bodies. The technological specifications of VR are thoroughly dependent on our own embodiment—embodiments that are “enmeshed within the specifics of place, time, physiology, and culture” (1999, p. 196). Technological features in VR could not exist without particular bodies to base/design them off of or to actually engage with them. This is an entanglement full of ambiguity as bodies and systems collide:

When a user enters a VR simulation, body boundaries become ambiguous. Body motions affect what happens in the simulation, so that one both is and is not present in the body and in the simulation. (1997, p. 13-14)

Hayles (1997, 1999) describes the construction of a supposed disembodied user in cyberspace as the output of entwined technological advances and discursive practices, where the material body and information are treated as discrete concepts. This echoes what is put forward in the preceding ideas on immersion and presence. The technological specifications (immersion as objective technical features) are held at a distance from embodied experience (presence as subjective response). However, Hayles’ figuration of the materiality of bodies and information as entwined frustrates this tidy separation. How can immersion as technical affordances be objectively measurable and independent of human experience when bodies are thoroughly part of VR’s design, production, and

subsequent use? Can immersion exist or be measurable without having a body to experience it? Is a VR system even immersive without an embodied subject? To measure immersion as an objective quality separate from social and cultural experiences only seems to reinforce a disembodied notion of the virtual. Technical specifications such as screen resolution, field of view size, or motion tracking are not immersive on their own. It is only once bodies and VR act together that immersion can be said to exist at all.

Like Hayles, Anne Balsamo describes immersion in VR as the “conceptual denial of the body accomplished through the material repression of the physical body” (1996, p. 123). Balsamo is arguing that the very design of VR, an HMD that hides or masks off the space around you, is an *attempt* to deny the existence of our bodies when using VR. Attempt is a critical word because no HMD perfectly masks off the world or our bodies in it. Additionally, this masking off is characterized as primarily visual. When wearing an HMD, you may not be able to see the world around you clearly, but other senses still prevail. For example, the ambient temperature of the room, the feeling of your feet on the ground, unanticipated nearby noises, or tiny glimpses of light that slip through an imperfectly fitting HMD. This is also true of the HMD itself, its weight and texture as it rests on one’s head is entirely felt. The HMD is not a hermetically sealed weightless sensory isolation chamber; rather, it is a technology we are still very much in front of. Putting it in more carnal terms, the techno-bioapparatus of VR is a literal pressing of flesh into technology.

The body does not disappear or become transported when you put on an HMD. Rather, it becomes oriented in a particular way where VR and our bodies co-operate to make a virtual space meaningful and full of embodied interactions. It is orientations that

“expose how life gets directed in some ways rather than others” (Ahmed, 2006, p. 21).

Neither the body nor the technology precedes the other in VR. It is the particular orientations that occur through engaging our bodies with VR that are generative of any sense of immersion, presence, or of being within a digital world. Importantly, VR is not neutral in its orientations both in how it orientates and what configurations of body/system are possible.

Balsamo (1996) recognizes that although VR may provide different stages for performance, subjectivities already ongoing will be reproduced in VR, and there is no guarantee that VR will somehow be used in liberating ways by virtue of its technological specifications alone. For Balsamo, VR will be most troubling as it will be used “primarily to tell old stories” (1996, p. 132). This wariness is attendant to what Melanie Chan (2015) has called “cyber totalism” or the privileging of VR as the ultimate way to expand understandings of “reality” itself. As Marie Laure-Ryan put it, VR has been coined as “not just the ultimate medium, it is the ultimate interface metaphor” for accessing reality (2001, p. 70).

VR as a primarily visual device has been one primary area of criticism in terms of cyber totalities. Michael Hiem wrote that VR was becoming “the model for a pervasive way of seeing things” (1998, p. 3). Richard Coyne argued that VR technology would likely not have been invented had “perception and representation not been conceived primarily in reductive terms of data input and correspondence” (1994, p. 71). Ken Hillis, in particular, was critical of VR as it privileges sight over all other senses:

VR presupposes and assumes specific ways of looking at reality that are then built in to, and finally inflected by, the technology itself as part of a recursive or iterative process established between it and users. (1999, p. 60)

Hillis summarizes VR as a “quasi merger of embodied perception and externally transmitted conception that happens at the level of sensation” (1999, p. 164). In this iterative process, users’ bodies are not “dispensed with” but rather they are integral yet being directed or oriented in particular ways (p. 166).

The integral work of bodies is not just related to more abstract theorizations of VR during the 1990s. Well known VR pioneers like Brenda Laurel and Char Davies in fact seemed to work against the grain of disembodied experiences in VR. Laurel and colleagues created an interactive VR art installation known as *Placeholder*. In essence, *Placeholder* involved wearing an HMD to explore digitally recreated nature environments. Users would inhabit different “critter” avatars during the experience with special attention paid to how different their perspectives can be (the crow, spider, fish, and snake for example) (Laurel et al., 1994, p. 122). The entire thrust behind *Placeholder*’s narrative and inhabiting different avatars was to make sure the body was not “taken for granted” (p. 121). Char Davies’ *Osmose*, another VR art installation, utilized an HMD and a specially designed vest in order to explore a constructed nature environment. The vest was responsive to the user’s diaphragm to control movement in the environment (e.g. breathing in to move upward or breathing out to move downward) (Davies, 1998). For Laurel and colleagues, they were not concerned with achieving sensory realism but a “sense of place” achieved through a variety of visual, auditory, and narrative elements (Laurel et al. 1994, p. 119). By using breath as movement, Char Davies’s *Osmose* was created with the intention of healing a mind/body dualism found persistently in Western cultures (Davies, 1998, p. 67). Both *Placeholder* and *Osmose* were rooted in achieving immersion, presence, or a sense of “being there” not through

quantifiable means or an explicit focus on the technology but through the carefully designed outputs of the technology—outputs that were attentive to the agency of users’ bodies and sense of embodiment in digital worlds.

Although *Placeholder* and *Osmose* were revolutionary for their time, they existed as stand-alone art installations and never reached the level of accessibility that contemporary VR has today. Certain situated perspectives also seem missing from the analysis of these two cases. For example, Melanie Chan had experienced *Osmose* in 1996 and commented on how the equipment was at best limiting and at most disruptive as she was acutely aware of the weight of the HMD and the vest (Chan, 2015, p. 136). At present, VR on the whole is more comfortable, lighter, has lower screen latency, better graphical realism, and accurate motion tracking. However, none of those technical specifications change the fundamental aspect that embodiment in VR is primarily singled through visuals. Experience in VR can still be said to exclude anything that cannot be made visible. That is to say, perhaps what appears to be the most psychologically powerful medium in history is more likely an ongoing “aesthetic and empirical directive about sensation and knowledge” (Bollmer, 2017, p. 72).

The actual experience of VR is “only achievable through specific bodily disciplines” where the systems “define what bodies can participate while encouraging the imaginary that everybody can consume equally” (Green, 2002, p. 165). Imagine an asthmatic trying to use breath as movement. Or having poor vision in an HMD that does not support the wearing of glasses. Albeit limited probes, these critical perspectives are rarely mentioned at all in VR literature. Rarely is any discussion focused on how VR might actually be limited by or create new limits on our bodies. Or, how our own

understanding and shaping of our bodies impacts VR engagements. This is why the seeming disinterest or ambivalence of certain VR literatures toward cultural and social perspectives on bodies and technology is problematic.

Ryan (2001) proposes an ideal future VR as an ecology, where every element of the system should intentionally extend the agency of the user rather than assume the technology itself will naturally do so. Ryan holds firm that VR should stand in contrast to the idea that space is a container and instead recognize that space is derived from our own bodies as well (2001, p. 71). By ethnographically considering her VR experience using the *Oculus Rift*, Sita Popat (2016) showed that VR is not disembodied but opens up embodiment in peculiar ways. Popat expands upon the ambiguity Hayles referenced earlier as the “not-not-realness” of VR:

The behavior of the virtual environment in relation to the body is not the same as that of the physical environment. However, the embodied subject experiences some of the same sensations and responses that it would do in the physical environment because, as a center of indeterminacy, it is embedded with the memories of a lifetime’s relationship with the physical world. (2016, p. 372)

Users of VR will draw on their previous experience and bodily knowledge. At the same time, VR is offering up seemingly new assemblages of space emerging from our bodies and the technology. Performance artists, for example, have undertaken “curiosity-based research” on current generation VR systems and the role of body movements (Else, 2018, p. 34). By starting with the understanding that bodies have always been part of and productive of space, they argue that VR is about the body interacting with novel spaces that are not exclusively virtual or actual (Else, 2018). VR can be said to amplify and suppress different sensory capacities, but this alone does not generate a sense of being

there without a personal engagement often rendered meaningful through movement or action.

Lisa Thomas and David Glowacki describe VR's capabilities as a "layering of a visual virtual environment onto the physical environment" where the physical environment does not disappear fully in VR but instead takes a back seat to the primarily visual aspect of VR (2018, p. 146). This layering keeps VR grounded literally in our understanding of bodies and spaces that exist *with* VR not *against* it. VR produces digital worlds that are not just nested separate spaces. They are always part of wider spatial relationships. Chan (2018) invites us to think of VR as an entwining process of embodiment and technology where the movement of the body in space is crucial to what kinds of ideas are communicated. In short, VR is about an ongoing dialogue between the materiality of bodies and technology. To speak about VR is to speak about a technology that asks us to orient our bodies with it and its affordances. Videogames also share many of these proclivities.

Game Studies Overview

Game studies has been an evolving discipline since the 1990s. However, defining the discipline can be difficult since game studies scholars themselves operate under a variety of communities of practice already existing in the humanities, social sciences, computer science, or game design programmes. The defining characteristics I broadcast here are specific and non-exhaustive features to preface how I draw on game studies in relation to immersion. Bonnie Ruberg summarizes game studies broadly in their guide for aspiring game studies scholars:

Game studies is the scholarly field dedicated to exploring digital games, analog games, and play. Though some of the early texts that have become foundational for game studies come from the early- and mid-twentieth century, game studies as an academic field got started in the 1990's. Over the past two decades, game studies scholars have produced a rich array of work that address questions like how to define games, why players play, and what cultural meaning is communicated through games (Ruberg, 2019, n.p.).

Ruberg goes on to mention specifically how game studies has only recently shifted its focus away from the formal aspects of games towards issues of culture and social justice. Formal here is referencing a focus on videogames in such a way that produces concepts, models, and theories that are stable or essential unique features exclusive to games through their form and function (for notable examples, see Aarseth, 1997, 2001; Eskelinen, 2001; Juul, 2001, 2005). So-called formal aspects are often the grounds for dictating the value of terminology such as interactivity, action, or immersion in videogames. These terms are swelling in game studies and videogame culture more broadly (Dovey & Kennedy 2006; Keogh, 2014, 2018ab; Salen & Zimmerman; Shaw A., 2010; Thon, 2008).

Formalist accounts of videogames were a dominant force in game studies' first decade as an emergent field. However, formalism has been critiqued as unsustainable and often disconnecting videogames from the meaningful social, cultural, and political contexts in which videogames are produced and consumed (Consalvo, 2009; Keogh 2014; Malaby, 2007). Overall, formalism is linked to the "ludology vs. narratology debate" in game studies. Trying to summarize this debate is complicated as it has been through many recounts and assessments (see Aarseth, 2004; Eskelinen, 2004; Frasca 2003; Murray J.H., 2005; Pearce, 2005). In essence, the debate appeared to be certain

game studies scholars differentiating themselves as “ludologists” against those whom they framed as “narratologists.” As Emma Vossen describes it:

the narratologists were scholars who were supposedly looking at games as narrative texts the same way they have previously looked at books and films whereas the ludologists were looking at the procedures and rules of the game and not as concerned with narrative or aesthetic trappings. (2018, p. 225).

In short, the ludology vs. narratology debate was mostly certain scholars attempting to prioritize some analyses over others. The so-called debate has largely been dismissed as “unhelpful posturing” (Phillips, 2018a, p. 120). Ultimately, any idea that gameplay rules or structure are somehow more important than players themselves is a “false dilemma” (Voorhees, 2013, p. 10). Because of this shift, several different refrains have arisen in order to think of videogames in broader, more irreducible, and dynamic ways.

Thomas Malaby describes videogames as processual precisely because they are rooted and formed by human practice where social processes are not fixed but are “dynamic, recursive, and always generating new practices and meanings” (Malaby, 2007, p. 104). But a processual understanding of videogames does not mean videogames and play are not marked by “regularities, patterns, recurrences and reproductions” (p. 109). Seth Giddings (2009), for example, wrote of videogame play itself as “events” which rise out of players and the technology of videogames. For Giddings, videogames were a merger of the “material and imaginary elements” such as the game’s rules, embodied knowledge in playing, images, characters, game world physics, etc. (p. 156). Videogames require “all sorts of bodies” both human and non-human in the material event of play (p. 156).

Similarly, T.L. Taylor (2009) views videogames as assemblages in that they are defined by their “infinite categorical interrelations” (p. 332). Taylor’s main argument is that assemblage approaches to videogames take into account wider scopes of the human, non-human, and the social (Taylor, 2009). Steinkeihler (2009) describes videogames as a “mangle” with horizons of agency occurring across designers and videogame players where their co-existence creates meaning. In short order, Ian Bogost (2009) called videogames a “mess” or “imbroglio” where, ontologically, there is not necessarily a need to clean up the mess but to embrace it. In essence, Bogost and others are arguing that it is no longer very useful building typologies of what videogames are in very strict terms (Bogost, 2009).

Keogh (2014) poignantly summarizes formalism as a major problematic in that it attempts to shroud videogames in a veil of purity somehow externalized from other media and culture more broadly. Keogh (2014) argues that such an adherence to videogames’ purity in form is impossible to maintain as the medium is now so diverse that a top-down approach is unlikely to ever hold true. Instead, there is a need for a “bottom-up, descriptive analysis that pays close attention to the central relationship between the player’s body and the videogame’s technological hardware and audiovisual representations” (p. 18). Darshana Jayemanne (2017) also writes that game studies must continue to be wary of so-called natural elements of videogames and instead produce concepts and types of analysis that are interdisciplinary from the outset. This is indicative of how videogames produce “semiotic, affective, tactical, and cultural effects which are just as important objects for scholarly analysis as game technology” (p. 3).

There are now several examples of the shift toward the cultural, social, and political contexts of videogames. Examples of the shift can be found in recent game studies research that focuses on critical game design (Anthropy, 2012; Flanagan, 2012), race, gender, and sexuality (Gray, 2014; Malkowski & Russworm 2017; Murray S., 2016; Reuberg & Shaw, 2017; Vossen, 2018), Indigenous videogames and self-determination (Lapensée, 2018), militarism, violence, and empire in videogames (Dyer-Witherford & De Peuter 2009; Payne, 2016; Phillips, 2018a;), and social justice (Phillips, 2018b, Gray & Leonard, 2018). Many of these themes are, of course, overlapping. Importantly, this is a broader coming together of approaches that provide analyses of both “gaming’s pleasures and politics” (Nakumara, 2017, p. 249). Instead of videogame or player, respectively, being pushed to the background, they are emergent together. Ultimately, I view game studies very broadly as intersections between the study of games and the study of players. With this brief description of what game studies is, I now turn to important accounts of immersion and player engagement in videogames.

Immersion in Game Studies

Janet Murray’s (1997) *Hamlet on the Holodeck* is considered a marquee text for game studies and an entire chapter is devoted to the concept of immersion in digital worlds. Murray describes immersion as the pleasurable experience of “being transported to a simulated place” (p. 99). However, immersion for Murray is not being passively absorbed into media such as videogames but actively constructing belief:

When we enter a fictional world, we do not merely ‘suspend’ a critical faculty we also exercise a creative faculty. We do not suspend disbelief so much as we actively create belief. Because of our desire to experience immersion, we focus our attention on the enveloping world

and we use our intelligence to reinforce rather than to question the reality of the experience (Murray, 1997, p. 107).

What Murray emphasizes is that this practice has existed long before other so-called new media. The digital in this case provides “new opportunities to practice this creation of belief” (p. 108). Republishing the book in 2016, Murray has provided brief updates to each chapter. Murray maintains that although the technologies and immersive experiences have changed, this still does not mean immersion can be reduced entirely to technologically induced “sensory intensity” (p. 120). This relates to Murray’s recent work on digital design where she emphasizes that computers are “*the defining difference not the novelty*” (Murray, 2012, p. 8, italics original). Murray’s take on immersion is optimistic as a user’s agency is foregrounded as vital in generating immersion.

In *Rules of Play: Game Design Fundamentals*, Katie Salen and Eric Zimmerman (2003) take a critical stance on immersion in videogames. They describe the “immersive fallacy” or fallacious idea “that the pleasure of media experience lies in its ability to sensually transport the participant into an illusory, simulated reality” (p. 31). Salen and Zimmerman argue that immersion is a symptom of “technological fetishism” that places new technology over actual game design principles and practices (p. 32). This is seen as a contradiction, as in videogames the technology is also supposedly meant to make itself “invisible so that all frames around the experience fall away and disappear” (p. 32). Salen and Zimmerman (2003) argue that players are always aware they are playing videogames and this transparency is what actually allows players to embrace the immersive qualities of playing in the first place. Salen and Zimmerman are describing videogames directly, not VR. It is through their critique of the immersive fallacy that a clear convergence

between VR and videogames appears, in that they operate under similar refrains of praise and promise through the effect of the technology being deployed.

Jon Dovey and Helen Kennedy (2006) argue that immersion in videogames is not the same as VR. They differentiated that videogame immersion is more about “intense concentration” which related to videogame players having to master “control systems, figuring out gameplay, puzzle solving, enemy slaying and strategic planning” (p. 8). Dovey and Kennedy also emphasized how immersion is often understood in contradictory ways. On the one hand, immersion is fundamental to videogame enjoyment but, on the other hand, being too immersed is seen as negative. Jennet et al. (2008), for example, position immersion in videogames as moments of losing track of time, no longer being aware of the real world, as well as sense of being there. Overall, these authors argue that immersion in videogames is not just a positive experience but can also be a negative one if the conditions of a videogame produce unwanted senses of anxiety or stress (Jennet et al., 2008).

Other scholars have tried to produce typologies of immersion relating to videogames. One such example defines immersion through a hierarchy: *engagement* (the basic effort put into playing a videogame), *engrossment* (where players are directing the bulk of their attention), and *total immersion* (complete involvement in which players feel like they are ‘in the game’) (Cairns et al., 2014, p. 3). These types of immersion do not always occur when playing. Total immersion, for example, may require a significant amount of time playing or the right playing environment to be achieved. Cairns et al. (2014) do not consider total immersion or the sense of being within a videogame as spatial. In fact, they acutely dismiss the spatial writing that “being ‘in the game’ is about

what the mind is thinking about not where it thinks it is” (p. 27). While this framework is described as merely a starting point, it is troubling that the proposed hierarchy of immersion impresses a mind/body dualism where players’ bodies are entirely absent from the analysis. Immersion is reduced to a “focused state of mind” only (p. 28).

Jan-Neol Thon (2008) also surveys the framing of immersion in videogames. Thon writes that immersion in videogames is primarily about a “shift of attention” (p. 30). Thon then distills this idea into four categories where attention can be shifted in videogames to produce immersion. Shifts are directed towards videogame spaces (spatial), challenges or objectives (ludic), furthering the story (narrative), and other players or relationships with them (social). Thon argues that some specificity is needed for “appropriate descriptions” to be made about immersion in videogames (p. 40). However, players’ bodies are not mentioned in these supposed shifts of attention which reduces attention to an entirely disembodied mental phenomenon. Put another way, shifting attention does not seem to require a shifting of one’s body.

Gordon Calleja’s (2011, 2014) concept of “incorporation” offers a comprehensive critique and alternative to immersion in videogames. Incorporation has two clear conditions: digital worlds being incorporated into our conscious mind and incorporated through embodiment. Incorporation is achieved through various kinaesthetic, spatial, shared, narrative, affective, and ludic involvements (Calleja, 2011). However, Calleja (2011) writes that the kinaesthetic (movement in digital worlds) and spatial (habitable domains) are non-negotiable components of incorporation. Similarly, Bell et al. (2018) have argued that spatial-temporal aspects are the base for experiencing immersion. That

is to say, the feeling of being able to move through space and time in a digital world must occur before any other type of immersion can occur (Bell et al., 2018).

Calleja also emphasizes that incorporation does not require sensory stimuli to be only derived from digital worlds themselves. Instead, incorporation is about “absorption into the immediate surroundings, rather than a dive into another space,” and there is “not need to view the game environment as a special, other space that requires protection from ‘real world’ intrusion” (Calleja, 2011, p. 172). For example, playing a game with friends might require communication happening outside of the game in order to play together effectively. Incorporation does not place videogames and the digital worlds they present as totalizing framed-off spaces. The significance of incorporation, then, is that “the player’s role in shaping the experience is essential” and occurring across space not just the digital game world (p. 222).

Situating the actual/digital as integral to immersion and not as oppositional is arguably the most recent approach to probing immersion in videogames. For example, Keogh (2014) argues the meaning and experiences of videogames “arise in how hardware, player, and audiovisual representation come together in the moment of play” (p. 2). This is what Keogh has described as the “cybernetic circuit crossing both actual and virtual worlds, and reducible to neither” (p. 4). This is to say, embodiment in the world is “*intercorporeal*” or “continuously mediated by our ongoing interactions with other human and nonhuman bodies” (Keogh, 2018a, p. 26, italics original). As such, immersion is not a pure technological capacity but a “perceptual strategy performed by an actual player’s engagement with input devices, screen imagery, and digital sounds” (p. 33). Moreover, immersion always comes from “actual, situated bodies viewing from

somewhere and relies on formal framing strategies that direct and shape such seeing” (p.34). Keogh constructs immersion as a performative act but also one that is inclusive of mediated affordances – all the bodies and technologies that go into constituting immersion:

A sense of immersion in a virtual world is thus a desired, deliberate act of perception performed by a videogame player that is dependent not on the virtual world being autonomous from the actual but on the reflexive splicing of actual and virtual worlds. (Keogh, 2018a, p. 39)

Ash (2010, 2013a, 2015) also favours a more distributional and relational approach. As Ash argues, videogames do not produce entirely parked or deadened bodies but generate “complex *potentials* for movement and action in the contingent space between user and game” (Ash, 2013a, p. 32, italics original). While the “user’s body is still corporeally ‘present,’ located and placed in front of the screen, the user’s sense of perception of presence is spread and distributed into the environment on screen” (Ash, 2010b, p. 427). Ash produces an understanding of videogames as digital interfaces, which yield irreducible encounters with different objects that make up an interface itself (Ash, 2015). Ash contends that the way these objects are organized produce different temporalities and perceptions of space in videogames that in turn shape the directedness of a user in order to “cultivate particular skills, habits, affects, actions, and engagement from players” (p. 139). Immersion can be framed as a complex potential achieved through an encounter with digital interfaces and users. However, this is a “fragile achievement” (Ash, 2010a, p. 655). That is to say, immersion is never easily achieved or always the end result of engaging with videogames.

Keogh (2018a) and Ash (2015) outline more irreducible frameworks inclusive of cultural, biological, and technical features to examine what videogames actually *feel* like when playing and what consequences arise out of said *feeling*. For example, immersion might include the couch I'm sitting on, a game pad I'm familiar with, the landscape of a particular game, the voice acting of a digital character, the coded range movements available to my virtual avatar, my longstanding skill built up over many hours of play, the weight of an HMD, my mood that day while playing, how hot it is in the room, or a fan in the next room all at once. Immersion is not a simple flick of a switch to a totalizing state but ephemeral as it arises out of the moments of engagement in VR or videogames and various meditated affordances unfolding.

There are many different scholarly insights into immersion in videogames, and the refrains I have described here are multifarious. Many of these accounts of immersion in videogames can readily be applied to VR as well. Several accounts attempt to strip away more technologically deterministic accounts of being immersed in a digital world. Importantly, players and the integration of videogames into everyday spaces of play are not sidelined; at the same time, the technologies of videogames are not taken for granted either. However, some key challenges remain. For the most part, specific reference to what players' bodies are doing when they are supposedly immersed is absent. This remains a very important issue. There is a need to stop speaking about immersion as a purely mental phenomena or rendering immersion through discussions of the medium itself outside of any conjoining analyses of those embodied subjects experiencing said immersion.

Immersion also still tends to be a spectacular phenomenon. This is true of scholarship on both videogames and VR. There is a need to put more value on when immersion might be seen as mundane, unnoticeable or undesirable, not particularly interesting, or even when it fails. Breaks in immersion or non-immersive moments are often poised as negative experiences or some kind of less desirable state produced by outmoded technologies. Rather than seeing non-immersion as less valuable, I argue instead that it is important to also witness it as exceeding technology and part of the performance of digital engagement. Non-immersion can be a valuable way to understand the social conditions of digital worlds. Articulations of the non-immersive are not apolitical or inconsequential decisions.

All of these accounts of immersion trend toward the medium specificity of videogames. That is to say, they argue that immersion must be understood in medium-specific contexts. While medium specificity is important, it cannot become a black box. Take VR videogames. Can there be a medium specificity of an object of study that arises as both VR and videogames? These are two supposedly specific mediums now folding in on one another in new ways. At the same time, over several decades now, VR and videogames have always existed in similar spaces and discourses. That is to say, VR and videogames have both been considered immersive in scientific terms and in popular culture. It is an utter mess trying to disentangle them. I am opposed to trying to make immersion add up to a singular overarching definition or having separate medium-specific typologies. Instead, what matters is accounting for the mediated affordances on their own terms. Immersion is an overlapping yet unstable territory of experience with all

media. It is not about medium specificity per se but actionable analyses for how mediated affordances of one object of study, say VR, arise amidst many others.

I argue that it is risky to discuss immersion as a spectacular phenomenon apart from those actually experiencing it and as black boxed through different typologies of medium specificity. This only seems to replicate the same problems found in VR research where medium specificity might become technical formalisms of immersion and abstractions of bodies lead to missing social and cultural contexts. The next section acts as a provisional redress to this challenge. I conclude with my overview of immersivity as a performative frame for immersion in VR videogames. Immersivity is meant to work from a bottom-up understanding of immersion applicable to VR and videogames.

Immersivity

Utilizing the concept of immersion is a difficult task. It is doubtful that anyone could work with and include all of the many encompassing definitions, typologies, or reworkings. At some point, a stance needs to be taken on how immersion relates to a specific analysis and how to integrate human and non-human elements. The culmination of the literature surveyed in this chapter leads towards conceptualizing immersion not as static or stable but transitory, active, and situated. It is not a de facto state in VR or videogames. It is not something purely defined by technological characteristics. Nor is it entirely a positive or necessary phenomenon in order to carve out meaning in VR or videogames. Instead, immersion is something actively being produced through embodied subjects engaging with the peculiarities of VR or videogame audio-visualities. Rather than abandon or take an abolitionist stance toward the term itself, I propose here “immersivity” as a refusal to fix immersion but also recognizing that the sheer abundance

and weight of terms like immersion cannot be ignored or undone when analyzing VR or videogames. Immersivity can be provisionally defined as the conditions, strategies and tactics, consequences, and meanings that arise from practicing immersion within a digital world.

Immersion, in problematic fashion, has become the verbiage with which VR or videogames can be said to do anything at all in the world. Circling back to mediated affordances, immersivity ultimately seeks to understand VR and videogames through the dynamic processes of mediation between technology and bodies. This is a broad scope but in no way is immersivity meant to be monolithic. Unlike the various modes of ubiquity or fixity of immersion, presence, or a sense of being there, I have put forth immersivity as decidedly provisional. It is a way to grapple with the complexities resulting from my research participants and I encountering VR videogames' mediated affordances.

To clarify what the provisional architecture of immersivity is, I draw on performativity theory broadly as a bottom up approach. As a way to understand the grooves and ruptures of meaning and world-making processes, performativity theory opens up immersivity as simultaneously trending toward socio-cultural norms but also as a site of pleasurable agency in VR and videogames. Immersivity, then, is a focus on mediated affordances as they compel or break from certain ways of engaging with VR and videogames, the co-operative pushing and pulling of bodies and technology all at once.

From Performativity to Immersivity in VR Videogames

Judith Butler's work is my base for engaging with theories of performativity. Butler's conceptualization of performativity was first outlined in a 1988 journal article melding concepts from speech act theory, phenomenology, and feminist theory. Butler, at this time, first explicated that gender was "performative which means, quite simply, that it is real only to the extent that it is performed" (Butler, 1988, p. 527). At first it may seem strange to start with Butler's performative theory of gender when talking about VR and videogames. However, translating the core of Butler's ideas, I argue that they produce a vibrant account of immersion beyond the firm technological drive in which it is currently casted. In point of fact, I argue that immersion, quite simply, is only a real thing because it is performed in an ongoing way through technologies and bodies.

Butler defines performativity as the "reiterative and citational practice by which discourse produces the effects that it names" (Butler, 1993, p. 2). Language, for Butler, is an enacting practice but importantly it is also a bodily act (Butler, 1997). Butler writes that the social contours of bodies are interpolated or that it is "within the terms of language that a certain social existence of the body becomes possible" (p. 11). Put another way, Butler is arguing that "bodies compose or order themselves in this performative process" (Loxely, 2007, p. 119). Language, then, is a doing that consists of both what we do as performative actions but crucially the effects or consequences that these performances have (Butler, 1997). Performative practices are not apolitical, they are the very sustainment of particular social norms across space and time. In *Gender Trouble*, Butler describes this as a "regulatory frame":

Gender is the repeated stylization of the body, a set of repeated acts within a highly rigid regulatory frame that

congeal over time to produce the appearance of substance, of a natural sort of being. A political genealogy of gender ontologies, if it is successful, will deconstruct the substantive appearance of gender into its constitutive acts and locate and account for those acts within the compulsory frames set by the various forces that police the social appearance of gender. (Butler, 1990, p. 25)

What this means is our performances are co-extensive with ongoing configurations and relations of power. As Vicki Bell (2007) surmises, “there is only ever a working with and even along the lines of the various dispositifs within which one is situated and constituted” (p. 28). In short, we work within the regulatory frames in which we are situated.

Butler’s performative theory of gender develops out an understanding of subjectivity within a poststructuralist framework. Youngblood-Jackson (2004) summarizes this positioning of subjectivity more broadly:

Poststructural theories of power relations and discourse illustrate that the construction of subjectivity is a constant, ongoing practice that is never complete. We can never be outside power relations and discourses that constitute us, even though we can disrupt what discourses produce and refashion alternative ways of being that revise accepted, common-sense truths. (p. 686)

Butler thus characterizes gender as “a practice of improvisation within a scene of constraint” (p. 2). Terminology such as male or female are “never settled once and for all but are constantly in the process of being remade” (p. 10). This never settled status is of great political import to Butler. Performativity opens up resistances to domination within the regulatory frames. Although not explicitly concerned with technology per se, Butler does describe technology as a “site of power in which the human is produced and reproduced” and that our lives are so thoroughly dependent on technology today that we

must think “within the frame of the cyborg as we call into question the status of the human and that of the liveable life” (Butler, 2004, p. 11, 13). The overall remit of performativity is one that considers “everything in a performance, people and objects alike” and where sedimentations and breakages in performances and subjectivities occur (Law & Singleton, 2000, p. 771).

Following Gregson and Rose (2000), I am “taking Butler elsewhere” in order to interrogate immersion. Turning back to Butler’s original article outlining her performative theory of gender, I translate the core idea of performativity onto immersion. The following quote from Butler is unchanged with the exception of swapping the term gender for immersion noted by square brackets:

[Immersion] is not passively scripted on our bodies and minds. [Immersion] is what is put on, under constraint, with anxiety and pleasure, but if this continuous act is mistaken for a natural or linguistic given, power is relinquished to expand the cultural field bodily through subversive performances of various kinds. (Butler, 1998, p. 531)

Such a play with Butler’s ideas opens up the thorough critique of gender onto the specific understandings of immersion I outlined earlier. It speaks to how terms like immersion, presence, or even the idea of “being there” are in fact socio-material assemblages that are performative in shaping our bodies in the world (Barad, 2003). This is inclusive with the contemporary everydayness of the digital. Or as Ulrike Schultze (2014) puts it, performativity does not operate with assumed distinctions between the physical and digital but rather views bodies as situated, social, and material configurations that are always ongoing. The boundedness of bodies that is expressed via immersion, presence, or a sense of being there in digital worlds is then an “accomplishment of both the individual and the technology” (Schultze, 2010, p. 443). These boundaries are performed, and, as

such, immersion does not exist as a natural state. It is not some pure biological threshold achieved by an equally pure technological specificity. Immersion only exists within the mire of its own congealment or mediations over space and time through discourses, technologies, and embodied subjectivities that are simultaneously wrapped up in its effect. Immersion, like gender, is never settled but works through processes of stabilization and rupture. It has its own regulatory understanding (i.e. the perspective that immersion is the objective technical specifications which create presence or subjective responses to digital worlds). Frames of immersion are both compelling and delimiting what immersion can be said to be and what kinds of performances are available therein.

I consider immersion in VR and videogames as performative because it is a construction of the spatio-temporal through dynamic processes mediated between bodies and technology. As others have argued, the way digital worlds perceptually disclose space and time are of vital significance to how they shape sense and meaning (Ash, 2015; Bell et al., 2018; Calleja, 2011, 2014). My framing of immersion is one where VR and videogames are not only seen as “technologies, as objects, or as tools but as sites of practice, and of interfacing as a performative corporeal event” (Verhoeff, 2012, p. 168-169). Performative acts (re)produce immersion in VR and videogames. Immersivity describes this iterative, ongoing, and never settled process of making or unmaking the spatio-temporal – the sense of “being there” in digital worlds. Immersivity is an orientation that prioritizes agency and conscious reflection as crucial in making sense of various digital inhabitations.

Butler asks, “what does gender want?” (Butler, 2004, p. 3). When thinking about mediated affordances of VR and videogames, I am to a certain point asking what does

immersion want or expect of us? Also, what is compelling or repulsing about immersion in VR and videogames? Expressed differently, it is a question of how “human bodies and technological apparatuses enter instead into a relation of performativity,” why is this happening, and what are the consequences (Lecker et al., 2017, p. 11)? In asking what immersion wants, immersion instead becomes immersivity. What immersion wants, or the relations of bodies and technologies, is highly configurative or irreducible as Ash (2015) and Keogh (2018a) position perception with videogames. Immersivity is irreducible. Immersivity as a performative force explores how mediated affordances of VR and videogames become rendered between being accessible or inaccessible, desired or disavowed, and accomplished or failed. Immersivity takes immersion from a rigid technological annunciation to a level of continuous ongoing mediated affordances. Immersivity gives a political impetus to be attentive to the interpolative power of VR and videogames but also to understand the disruption of its normative potential.

Conclusion

In this chapter, I have put together a swath of perspectives to consider immersion in VR and videogames. Firstly, I briefly surveyed digital geographies as one pathway to defining the digital. The digital has become a ubiquitous term and it is self-evident to say that it impacts everyday life on a planetary scale. However, a common concern is shared. As the digital continues to intersect with all aspects of society, its exigencies continue to mount. With digital geographies, the digital is inflected throughout the everyday productions of space. VR and videogames are yet another code/space where immersion stands out as a felt or perceived spatiality. The “being there” and “doing there” qualities of immersion in VR and videogames is of broader geographical importance as they

continue to expand the parameters of geographical knowledge and practice. If VR is a talisman of spatial computing, then its reawakening warrants geographical interventions. The late Doreen Massey once said the fantasies of virtual worlds appear as a desire “to transcend our Earth-boundedness” in a moment where the Earth is facing new crises’ like climate change (2006, n.p.). Massey describes such withdrawal from the world as negligent, but it remains an important question to ask: if and how can VR productively deal with the discomforts and crises of reality as opposed to retreating from them?

I then turned toward prominent VR research that define how a sense of immersion, presence, or “being there” is an inherent yet unique effect of the technology. In response, I have taken a critical stance against VR research that continues to advance technological deterministic accounts. This is a resistance to how the shorthand grammars of immersion make it possible to “conceal all the necessary social and technological interventions and delimitations that go into producing digital media” (Dyson, 2009, p. 6). In particular, I am especially concerned with how bodies in space are expressed as captured by VR in ways that do not include the agency of users themselves. VR scholarship remains ambitious and hopeful. For Slater and Sanchez-Vives (2016), the ultimate goal of VR is to “create moments that enhance the lives of people and maybe help secure the future of the planet” (p. 38). But without recognizing established and ongoing critiques, I question how these moments are going to be achieved, especially in future research. I summarized these tensions as the promises and problematics of VR.

Shifting into game studies, I found great purchase in the wide range of research that attempts to unpack and build out immersion as a vital concept, yet something still inadequately understood. For game studies, immersion matters because it shapes what

meanings are communicated and who gets to communicate them. In game studies, like VR, there are many different competing definitions and taxonomies of immersion. There is a clear convergence between the promises and problematics found in game studies and with VR research. That is to say that technological determinisms, false or overwrought binaries, and wide-ranging struggles over the value of terms like immersion exist across VR and game studies scholarship. I remain critical of sharply defined typologies of immersion.

Instead, I turned to the more irreducible, relational, and integrative parsing of videogames from Ash (2013, 2015) and Keogh (2014, 2018a). Keogh turns the analysis of games toward the material and embodied efforts of videogaming:

Videogames require bodies. Hands wrapped around plastic gamepads, feet tapping at illuminated dancemats, fingers smearing grease across a glass touchscreen, and ears and eyes attuned to speakers and screens. (Keogh, 2018b, p. 3)

Similarly, Ash argues that videogames create an “opening of the body’s capacity for sense” where the body is pushed/pulled, extended/restricted, and embodiment is a complex interplay of bodily capabilities and cognitive processes simultaneously producing game and player (Ash, 2013a, p. 46). What Ash and Keogh both achieve, and I commend them for, is creating a wider base of analyses for games’ spatiality, temporalities, and embodied practice. Immersion can be situated within these frames of player-game as co-extensive. Overall, game studies’ recent shift away from the strictly formal, and digital geographies recognition of the digital as inflected every day, put important pressure on what immersion is and how it is achieved in VR and videogames.

I concluded this chapter by describing my own conceptual move when discussing immersion. Instead of immersion, which implies a finished, complete, stable,

or totalizing state, I described immersivity as a term that draws out or emphasizes the performative enacting of immersion. Earlier on, I defined mediated affordances as dynamic processes of mediation between technology and bodies. This understanding is not particularly novel but a term for saying that what bodies and technology *do together matters* across the digital/actual, social, cultural, and biological. As we touch and grasp technologies, they reach out back at us. This iterates how we come to know the world. Immersion as one leading axiom of this experience requires sustained intervention that goes beyond just technological impingement of our senses. Immersivity in its own reiterative and (re)mediating way is an attempt at making mediated affordances undergirded by performativity. In order to understand mediated affordances of VR and videogames, there is a need to consider the shifting grooves and ruptures of practice and feeling of immersion within their digital worlds. I ask where does immersion actually take us and to what end?

In Chapters 3 and 4, I put immersivity to the test. I focus on hybrid playing interviews previously introduced in Chapter 1. Chapter 3 outlines the specifics of my methodology, inclusive of its practicality and limitations. Chapter 4 brings the analysis of the hybrid playing interviews analysis to bear on the VR gaming experience. Through my participants, I focus on the felt experience of a particular VR system and VR videogame. My goal is to dig inward on the material and discursive effort of immersivity and VR more generally. The goal of Chapters 3 and 4 is to move beyond my own abstractions of VR, immersion, and immersivity set out here and to push headlong into some practical empirical contexts.

Chapter 3: A Virtual Reality Methodological Toolkit

In Chapter 2, I outlined the complexity of VR and videogames as irreducible unfolding encounters between bodies and technology. Simply stated, VR and videogames offer up fascinating and complex ways to experience digital worlds. VR videogames can be said to catalyze a myriad of components, including the setting one plays in, the characteristics of the technological system being used, the particular videogame world, its interfaces and interactions available, and the players' socio-cultural engagement. The intricacies of VR videogames, like all media, can generate different feelings and sensations during play. As Chapter 2 laid bare, the experience of VR and videogames to date has gelled around, although sometimes debated, taxonomized framings of immersion, presence, or a sense of being within a digital world. Building off of ongoing critiques of VR and videogames, I parsed immersivity as a reframing of immersion to draw attention to the performative enactment of immersion.

In order to apprehend immersivity, I have used a qualitative approach. In total, 15 participants undertook an exercise in VR videogame play (basic characteristics of participants in Appendix 1). I call these *hybrid playing interviews*, for which two major components exist. First, a gameplaying session where participants have the opportunity to play through part of a specific VR videogame. Secondly, a semi-structured interview immediately after the gameplaying session (see interview questions in Appendix 2). Methodologically, this process entails an emphasis on the subjective and personal engagement of participants as the major data being gathered for analysis. In other words, my methodology was dedicated to witnessing the experiences of engaging with a VR

videogame in situ while also providing an opportunity for deeper reflection on these experiences and their meaning.

Several geographers have used similar methodological practices of observing gameplay and/or interviewing players about their practices, often using specific videogames (Ash, 2010; Bos, 2018; Jones & Osborne, 2018; Paivia, 2015). In game studies, various qualitative methods have been deployed in examining videogames unto themselves or player practices (Boellstorff et al., 2011, Consalvo & Dutton, 2006; Lankoski & Björk, 2015). In the remainder of this chapter, I briefly outline my methodological toolkit or how I operationalized my methodology to study VR videogame playing. I review the features of the VR system I used, the game I chose, how I treated the data, and some challenges interlaced throughout the process. This chapter serves to foreground the results of my data collection and analysis, to emphasize the methodological praxis behind immersivity as a theoretical idea and a heuristic concept for analysis.

The VR System and Its Use

For the purposes of this research I utilized the *Oculus Go* VR system (OGO). First and foremost, the OGO is more affordable than most VR systems, priced at \$269 CDN. For example, two of the most popular systems, the *HTC Vive* and *Oculus Rift*, cost over \$500 CDN. The latter two headsets also require a high-end laptop or desktop computer to drive the system. This adds an additional cost of at least \$800 CDN. By contrast, the OGO is an all-in-one unit and does not require a separate computer, externally mounted tracking cameras, or any attached data cables to play VR videogames. The OGO does not deliver as high-fidelity graphics or the same external tracking options as high end

systems but, as a major trade-off, it is portable. When using VR for research, it is important to ensure there is dedicated space available that meets the room size requirements for using a VR system safely. Essentially, participants need to be able to move freely and without risk of hitting objects in the room. Again, returning to the *HTC Vive* and *Oculus Rift* as examples, they require their tracking cameras to be calibrated to a specific room. Each time these systems are setup in a new space, they need to be re-calibrated before they can be used. Thus, it is preferable for these systems to be setup in a permanent location rather than being moved around frequently. This is common among many VR systems available today.

It was an ongoing challenge to access adequate space and at the same time coordinate with participants' availability for hybrid playing interviews. Having dedicated space for VR is preferable but this is something I found difficult as room space is a sought-after resource, at least on the University of Victoria (UVic) campus. Using the OGO sidestepped certain aspects of this issue since the OGO requires very little setup and can be used in almost any space provided it is large enough. With the OGO, I had more options to ensure a private and safe space on campus to carry out the hybrid playing interviews. In my case, I strung together the use of different classrooms normally reserved for my home department's use. On occasion, I used private office space in the university library that was lent to me by UVic's Digital Scholarship Commons.

Physically, the OGO uses an elasticized cloth harness system that is worn over the head in order to hold the head mounted display (HMD) in-front of the user's face. Before participants started using the OGO, I provided an orientation of how to wear the HMD and what kind of adjustments in terms of fit were available. The two crucial adjustments

are: (1) how tight the headset fits to one's head, and (2) the angle of the headset on the wearer's face. Teaching participants how to manipulate these adjustments is crucial. Adjusting the device on one's head has significant impacts on how clear the image appears and how comfortable it will feel when wearing it. For example, unlike a standard computer monitor that is viewable from many angles, an HMD requires your eyes to be centered with the two stereoscopic screens for image clarity. If the headset is strapped on too tight or the angle is too sharp, pressure can build on the face which causes discomfort, or the image may appear out of focus. Besides the HMD itself, the OGO system includes a single handheld controller. I also instructed participants how the controller functioned and the basics of what each button on the controller would be used for in this study (namely navigating the OGO's primary menu interface). Figure 4 shows the OGO system and a sample of what it looks like when it is worn.

None of the participants had any substantial trouble initially putting on the OGO. However, every participant spent at least a few minutes adjusting the fit so that the stereoscopic screens were properly aligned with their eyes such that the image was clear and visible. Also, having different face shapes and head sizes meant each participant needed to find the right fit so that the HMD was held securely but not too tight as to be uncomfortable. Several challenges repeated themselves across interviews. In particular, participants with longer hair (shoulder length or longer) struggled to have the headset stay on properly as their hair would cause the harness to slip and move more freely. Also, most participants noticed gaps in the OGO's fit where room lighting would leak into their field of view. A few participants shared with me that they were annoyed at how the headset did not fit perfectly or when it became uncomfortable after sustained use.



Figure 4: The *Oculus Go* System.

Participants were instructed to remain seated throughout their time playing. They used a swivelling office chair in order to turn their body in 360 degrees. Crucially, I gave some instructions on what to do if participants started to feel motion sick, a possible incidence when using VR. I explained to participants that motion sickness, sometimes referred to as cybersickness, should be treated as a point of no return. I told participants if they feel like they are getting motion sick they need to stop, remove the headset, and try to hold their vision on a pre-determined point in the room for a few minutes. Three

participants experienced motion sickness and had to stop using the OGO. In two of the cases, motion sickness was triggered rapidly by some form of movement in the VR videogame that was unsettling to them. In the third case, the participant described motion sickness differently; for this participant it was more a result of fatigue in wearing the HMD for an extended period of time. In all three cases, participants stopped well before any significant negative impacts occurred and carried on with the interview process afterward.

I do not consider motion sickness or participants' frustrations with how the headset was fitting moments of failure in the methodology. Motion sickness is a part of the mediated affordances of VR. Motion sickness, as a bodily response, influences how one can continue to perform using VR. It is an explicit consequence of bodies and technologies acting in amalgam. Similarly, the fit and feel of the headset is a direct interaction between the technology and a user's body. Motion sickness or the imperfect fit of the OGO opened up an opportunity to discuss the technology directly with participants. I did everything in my power to make sure participants were aware of potential motion sickness and planned for what to do if they experienced motion sickness. Of course, I had no desire for anyone to experience motion sickness. Similarly, I always attempted to ensure the headset was as comfortable and as properly fitting as possible. Participants were free to stop whenever they saw fit. These moments of dissatisfaction or discomfort with the technology were part of the data and provide interesting context to the overall analysis.

I have eschewed any mention of technical specifications of the OGO such as screen resolution, tracking and degrees of freedom, headset weight, etc. This is first and

foremost an issue of brevity. More importantly, the technical specifications are not the object of study. Rather, I am interested in what it is like to use contemporary VR systems regardless of their specifications. My goal here is not to debate which of the latest consumer HMDs is the *most useful* methodologically. Such a task would require significant research using multiple HMDs over an extended period of time. All VR systems are supposedly capable of delivering immersive experiences, that is the key argument of the technology. That being said, specifications and capabilities of HMDs are something any researcher should consider early on and carefully if they plan on using VR in a qualitative research project or otherwise.

I chose the OGO primarily for economic reasons and because it did not require a dedicated space where the system had to be setup permanently. Before I ever solidified this choice, I tested a limited number of VR systems myself. I also asked family, friends, or colleagues to act as pilot testers to see what kinds of issues might arise. Some technical difficulties are bound to occur—at best these can be frustrating and at worst they are anxiety-inducing when they impair the research process. Overall, the OGO was useful in my research process but I would again stress caution, especially regarding the advanced knowledge researchers may require in troubleshooting technical problems.

One such example of technical difficulties is crucial to this methodology: the ability to watch what users are doing inside the OGO. Unlike non-VR videogames viewed on a screen, I could not simply watch what a user is doing inside an enclosed HMD. The OGO requires a further mediation, the video streaming of the OGO's content to a mobile device. The OGO has a built-in software feature that allows the stereoscopic display and audio to be streamed to a mobile device (tablet or smartphone). Streaming

occurs over WiFi. This feature did not work with the UVic campus WiFi due to the networks' restrictive security protocols. This led to a period of troubleshooting, researching, and eventually developing a workaround. In short, the workaround involved accessing the "developer mode" of the OGO and installing a different screen sharing application onto the OGO. Then, by creating a local WiFi hotspot over a cellular connection, I could screen share the OGO to my mobile phone.

Even this solution had its problems. It sometimes had substantial latency between what a participant was doing and what I was seeing on my mobile device. Other times it just did not work outright, and I failed to diagnose why. In 4 of the 15 interviews, I could not see what my users were doing in-game. I was still able to hear what players were doing because of the OGO's built-in speakers. I relied on my own knowledge of the game and particular in-game sounds to estimate, often quite accurately, where their progress was in the game. Methodologically, this is noteworthy in demonstrating the unfolding mediated affordances of the VR system used. Understanding and preparing for the potential technological challenges a researcher might face is crucial, especially if it may negatively impact the ability to obtain rigor in the methodology or answer particular research questions.

In my research process, I was fortunate that the nascency of VR in qualitative social science research and the theoretical ideas I put forth are grounded in seeking out contingencies of technologies and bodies. In sum, the main advantages I found using the OGO were its affordability, portability, and the ability for the facemask to be disassembled easily for cleaning and sanitation after each use. Ultimately, the HMD should be chosen based on the research questions, goals, and scope of the study. Again, I am not interested

in determining *how immersive* a VR system should be for adequate research (Cummings & Bailenson, 2016). Rather, I am interested in the situated character of technology use, in this case a particular VR system and a particular VR videogame.

The VR Videogame and Gameplay

Just as with choosing a VR system, choosing a videogame for a case study should be done with the research questions and goals in mind (Arnott, 2017; Jones and Osborne, 2018). I chose the VR videogame *Land's End* (LE) for several reasons. In broad strokes, LE has a slower pace and does not make use of jarring or fast movements. It can be played seated, which was a major factor for ethical and safety considerations. The game primarily uses head-positional tracking. What this means is only head movements (yaw, pitch, roll) and orientation (which direction you are facing) are needed to play. If head movement is a challenge, the OGO VR controller can be subbed in where clicking a button simulates moving your head in the game.

However, LE does not require or even encourage the use of the controller. The experience is described as “hands free” in the videogame’s opening menu interface. Many participants had never tried VR before, and none had previously used the OGO. Typically, VR systems without hand tracking or even full body tracking are seen as less immersive, so using LE adds an interesting layer to the study’s overall objective: interrogating just how immersion comes to be and what it means. In short, the content of the game is suitable when considering what is canonically described as immersive. Overall, the game is a comfortable experience for first-time VR videogame players. Beyond this, I want to outline several of the key gameplay features, the videogame world,

and narrative of LE. This is to add context to the participants' experiences as they feature in the forthcoming data analysis.

The gameplay of LE is driven by progressing through a series of 5 discrete levels or chapters. Each chapter involves the player moving across a fixed set of points in space and solving various puzzles along the way in order to advance toward the end of each chapter. What I mean by "fixed points in space" is that the game does not let you move freely around the digital world. Instead, you can only move backwards and forwards between specific set geographical markers in the landscape. This is colloquially referred to as a videogame "on rails." Like a passenger in a railcar, I cannot change where the tracks go, or where the exchange stations are. Instead, I can only move along and stop at predetermined routes in LE's environment. Much of the contingency or action of the game, then, is centered on the puzzles and especially where the player chooses to *look* in the environment as they are moving on the predetermined pathways.

Puzzles generally consist of moving stone-like objects and connecting sets of markers to form pathways. When completed, the puzzles usually remove an obstacle or open a new previously hidden pathway for the player to progress in the level. They act as obstructions or gates on the rails. The puzzles get more complicated with each proceeding chapter; essentially, they require more steps to solve them. Most participants in the case study completed chapters 1 to 3 before they stopped playing, and they did so in the span of approximately 20-30 minutes. This may not seem like a long time. However, Bailenson (2018) recommends starting out new users of VR with around 20-minute increments to reduce the chance of motion sickness or general eye fatigue. There is very

little known about the consequences of extended durations using VR, and this requires more research before any conclusions can be drawn (Metzinger, 2018).

Users themselves are testing the upper limits of long-term VR use outside of scientific studies. For example, the YouTube channel “Disrupt” features a video diary of an individual spending a whole week in VR using multiple headsets, even during sleeping and eating (Disrupt, 2019). The same channel later featured another individual spending 24 hours specifically in the videogame world of *Minecraft* (Disrupt, 2019). Ultimately, for the sake of obtaining a useable and manageable dataset and not overwhelming participants, I decided that 20-30 minutes range would be a desirable starting point. A few participants went past level 3 in LE and one participant chose to complete the entire 5 chapters. I never put a fixed limit on how much participants could play and decided flexibility was valuable, especially not to rush participants through the experience. By verbally checking in with participants and asking them how they felt at the end of each chapter, I was able to verify if they felt motion sick or wanted to stop or keep playing.

Figure 5 provides examples of the kind of environment the game displays through the visual aesthetics. A 2D screenshot does not come close to replicating what LE’s virtual world feels, looks, or sounds like when actually playing on the OGO. However, these images represent the basic visual characteristics of the game. Navigation in the game is achieved by having the player move their head orientation. For example, turning your head to the left, right, or looking up or looking down. This allows the player in-game to focus on various visual indicators that mark the fixed points in space to which you can travel. These indications are placed throughout the chapters (Figure 6). By physically aiming one’s head, the viewpoint of the player in-game correspondingly

moves and can focus on these indicators. After a few seconds of focusing on the indicators, the player's viewpoint starts moving toward the position of the indicator, as if walking in that direction.



Figure 5: Sample landscapes in *Land's End*.

As well as orienting their head, the player can also change the direction they are facing by turning their body in 360 degrees, which correspondingly changes the direction they are facing in-game. Puzzles are also solved using player head orientation. Like the

fixed navigational points, players can connect puzzle pathways or lift and move in-game objects using their head orientation (Figures 7 and 8). These are the basic mechanics of LE: moving to fixed points set out in the chapters, drawing lines with puzzles, picking up and moving puzzle objects, and using head and body orientation to view the digital world. The player does not have a visible avatar and is not represented by any kind of body in-game.



Figure 6: Fixed travel point indicator in *Land's End*.

Audio in the game consists of ambient background music and different environmental noises such as waterfalls, birds, ocean waves, dripping water in caves, etc. Moreover, many actions you complete in the game have noise cues, such as a specific

sound occurring when you solve a puzzle. There is no dialogue in game. At the end of each chapter, the player activates similar looking stones which release several ghost-like figures (Figure 9). These are the only “characters” in the game. It is difficult to say there is a clear narrative in the game, however some participants commented on a narrative they felt existed. Like my participants, any attempt for me to explain the narrative is my own interpretive moment and deeply individualistic. The general sense I got from the game was that you as the player were releasing these shadowy figures and allowing them to return to some sort of spacecraft. Without dialogue or a clear story element, much of the narrative is intuited through the environment, the sounds, and visuals instead of any verbal or written elements.

Compared to the “triple-A” videogame titles created for popular gaming consoles or personal computers, many would consider LE a short game with not very detailed aesthetics and limited game mechanics. That being said, my brief description here shows how even a seemingly simple VR videogame like LE has a lot of complexity in style, gameplay mechanics, and narrative elements when considering how these elements are interacted with across a range of users. Practically, LE was an important choice as it was a comfortable experience for those new to VR and was not time-intensive. In general, I found LE’s aesthetics, game mechanics, and thinly-threaded narrative to result in interesting elements of conversation around the idea of what it means to be immersed and play VR videogames.

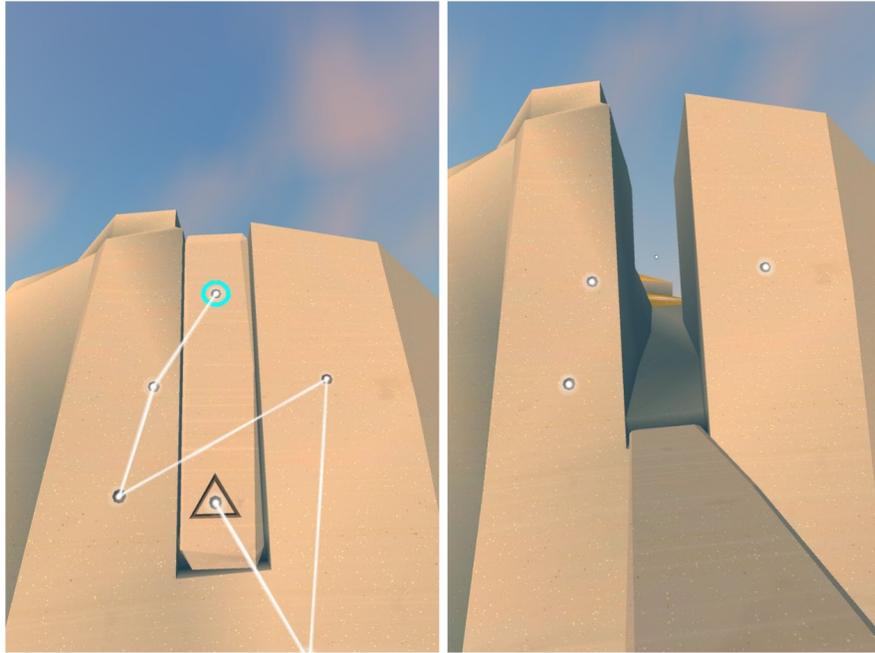


Figure 7: Connecting line puzzle in *Land's End*.



Figure 8: Moving a puzzle block in *Land's End*.

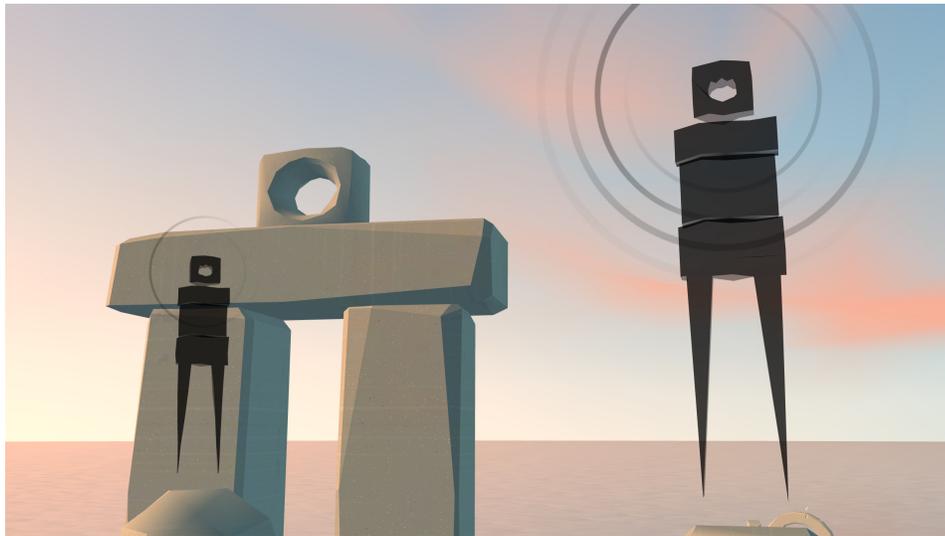


Figure 9: Ghost-like characters in *Land's End*.

Data Collection and Analysis

Recruitment of participants and data collection was done through convenient sampling and snowball sampling between September 2018 to June 2019. At first, I placed posters around the UVic campus advertising the study (see sample poster in Appendix 3). There were no monetary or other incentives for participants to take part. I also sent out various calls for participation on different university email lists. Finally, I visited different classes to advertise directly to students. A total of 7 participants were currently enrolled students at UVic, and the remaining 8 participants came from the community at large. The latter were not current students but knew someone at UVic and had the study info passed along to them. Pseudonyms were given for each participant for anonymity (for more demographic information on participants, see Appendix 1).

If someone contacted me with interest to participate, I sent them a scripted or form email with more information regarding what participation would entail and with options to schedule a time to participate. After a participant finished taking part in the

study, I asked them if they would share the study with anyone they thought might also be interested. Although consumer VR is growing substantively, I felt there was a need to provide VR to participants rather than try and find regular consumers of VR in my region. In no way am I making the claim that this sample is somehow representative of any particular segment of the population.

Playing sessions and interviews were video recorded. I used the *GoPro Hero 2018* action camera. Action cameras have a wide field of view which was ideal for capturing VR game playing in the different rooms I had access to during the data collection process. A wide field of view meant I was always able to capture participants' movements during gameplaying without risk of something being out of the frame. Using VR means a participant's body could be facing in many different directions. Oftentimes, participants were not facing the camera and its microphone directly, which occasionally made understanding their speech during playing difficult to hear. This was never an enormous problem in my research practice; I only struggled to hear the odd word or phrase in some interviews. However, it may be worth considering using multiple recording devices to ensure you capture all audio during game playing. Figure 10 shows a sample of a participant being filmed while playing LE on the OGO.

I chose video recording for several reasons. First, video can “capture small gestures, expressions and moments which remind us of something intangible” (Garrett, 2011, p. 526). As a method, video recording enables what Seth Giddings (2009) describes as “microethnography.” Microethnography is attentive to “events” of play that are often small, short, and hard to notice or of a “transitory and momentary nature” (p. 149). Video can be useful for pulling out both “reflexively thick (textual) descriptions of events” and

in recalling “specific sensations, affects and connections” (Patterson & Glass, 2018, p. 6). In part, I was keen to understand how participants’ senses guided their “orientation in space; to their awareness of spatial relationships; and to the appreciation of the qualities of particular micro- and macro-spatial environments” in using VR (Urry, 2012, p. 347). Video recording provided me the opportunity to review both what participants were saying and doing in the context of VR videogame play and their personal reflections on said play in the semi-structured interview.



Figure 10: Participant playing *Land’s End* on the *Oculus Go*.

Video does not somehow natively capture affective or non-verbal pre-conscious moments. Instead, video enables a particular mode of analysis and reflection on affective moments (Simpson, 2011). Video also requires triangulation, it is not a perfect or complete record of account (Garrett, 2011). Alongside video recording I took notes during both playing sessions and interviews. The notes highlighted important moments or happenings during the research that I wanted to return to later in transcription and

analysis. The notes proved invaluable in recalling specific events that were hard to locate in video footage afterwards, especially if something was unspoken.

VR also presents a technical challenge in video recording gameplay specifically. In all VR systems, the stereoscopic screens are internal to the HMD and exclusive to one user. Because of this, most VR content, videogames or otherwise, are designed as single user experiences. Recall earlier that I used a screen sharing application to view what my participants were seeing when using the OGO. However useful this was, I was never viewing *exactly* what the participant was experiencing. I was viewing a flattened 2D representation of the stereoscopic 3D images a participant sees (see Figure 11 as an example). Rarely discussed in VR scholarship is the relation of the researcher to what participants are doing in VR. In my case, I oscillated between watching participants' body movements, conversing with them, observing their in-game actions via the screen sharing device, and taking notes. The mediations in and of VR research itself, which shape data that available to collect and analyze, are often not a topic of inquiry.



Figure 11: Screen sharing from the *Oculus Go* to a mobile device.

In previous work by Ash (2010), two cameras were used, one pointed at the players and one pointed at the screen on which they were playing videogames. This method was not possible in my scenario. The mobile screen used for screen sharing was too small to adequately capture usable footage. Screen sharing itself has latency which meant I could never guarantee an accurate sync between gameplay footage on the mobile phone and footage of the user's playing. Instead of using a camera to capture in-game footage, I tried using software to record directly on the OGO or the mobile phone. This method ended up creating a performance bottleneck where either the OGO or the mobile phone crashed if I tried both recording in-game footage and screen sharing at the same time. Quickly, I learned to not prioritize in-game footage as data. Instead, I relied on my notes for recording significant events during gameplay and made sure to follow up in the interviews. Having played through the entirety of LE several times also helped me situate my own understanding of the game vis-à-vis my participants. The video recording during gameplay became a focus on recalling what participants' bodies were doing in relation to the headset. Additionally, participants would often talk with me while playing or sometimes talk to themselves. Ultimately, the methodology itself was mediated by using VR. This shaped what phenomena were possible to collect data from and analyze.

Following each hybrid playing interview, I transcribed both the playing sessions and semi-structured interview components. Transcription of the playing sessions varied depending on how much a participant talked to me during playing. Sometimes participants and I had full conversations during gameplaying. Other times participants played in silence. I tried not to initiate conversation beyond checking in verbally to see how participants were feeling at the end of each chapter they completed in LE.

Reviewing gameplay footage in conjunction with my notes, I also transcribed specific moments of interest, often related to something a participant did with their body (gestures or movements) or sounds they made that were not conversation (e.g. gasps, talking to themselves, or mumbling). Transcriptions of the semi-structured interviews were focused primarily on our conversations about the gameplaying experience. However, video enabled me to capture physical gestures or expressions that occur in conversation as well.

After transcription I coded the interviews. I opted to code by hand instead of using computer-assisted qualitative data analysis. In short, this involved examining printed copies of each transcript and using different writing materials to manually highlight or mark codes. Codes are constructed themes, categories, patterns or differences that the researcher is interested in (Cope, 2017). I first reviewed all my notes for each interview again, which helped me build some of my initial codes. From this point, I started reviewing each interview—occasionally using the codes I initially derived from reviewing my notes but also creating new codes as needed. This is a process of *open coding* or a freer flowing and unrestricted practice of building out codes (Strauss, 1987, p. 28; Cope, 2010, p. 445). Once I made my way through coding each interview, I revised these themes and categories and started to look for coherences and incoherence's in the codes and their content. These points of comparison became *axial codes* or a way of testing to see the way my codes overlap, connect, or possibly go deeper than just a primary theme or pattern. It was especially interesting how codes may intersect across both the gameplaying sessions and semi-structured interviews. Once I finished coding all of the hybrid playing interviews, I spent time revisiting them repeatedly. It is in this process that I began to set aside certain interactions and encounters that participants had

with the VR system broadly and playing LE. These snapshots are the key data I used in considering immersivity.

Conclusion

In the next chapter, I draw on the data from the hybrid playing interviews as a way to situate the experience of VR videogame playing. I frame these as interactions and encounters intentionally. Interactions and encounters suggest a relation between player and VR, the way the two engage with each other in a simultaneous way. Overall, my methodology and methods required an attention to what Annette Markham (2017) describes as “flow.” Flow is “both what we study and how we move when we study” (p. 454). Markham argues that paying attention to flow is vital as “sensemaking is always on the move, shifting from moment to moment as we try to stop time to make sense of what happened even as it is no longer happening” (p. 454). Knowledge and research practice are always partial and situated (Harraway 1991; Rose 1997). That is to say, I can only ever “see the world from specific locations, embodied and particular, and never innocent” (Rose, 1997, p. 308).

The flow of this research, then, is staying with the shifting particular and peculiar mediated affordances of my methodological toolkit in action. I am also moving with my participants in data collection. Although I was not directly participating in gameplay, my bearing in the physical world as it connects to the digital world that participants are navigating in VR impacts the potential outcomes. A simple example would be when participants start talking to me during moments of play, asking me questions when they get stuck on how to solve a puzzle or asking where they were supposed to go next in a chapter. Participants often behaved in unpredictable ways, such as experimenting with

the physics of the gameplay or trying to test their own capacity for motion sickness. Moreover, the VR system also seemed lively and unpredictable and at times it too was shaping the condition of research. In this study, I am not espousing a general character of VR videogames or players. I am also not seeking any sort of causal linkage between VR and immersion. Rather, I am organizing meaningful snapshots in very selective contexts produced in the hybrid playing interviews. This is a modest and limited critical inquiry into immersivity's irreducible potential. In the broadest sense, it is through a discussion of the interactions and encounters that follow in the next chapter that I hope to show how we act upon the experience of VR and how it acts upon us.

Chapter 4: Interactions and Encounters with VR Videogames

Introduction

One of the first OGO promotional advertisements is simply titled “Open Your Eyes.” The video begins with close up footage of human faces opening their eyes. A narrator then speaks softly, telling those watching to “open your eyes.” The video goes on to feature a series of short first-person vignettes. These range from diving into the ocean, holding a newborn baby, and sitting next to an Indigenous man singing and drumming to being front row at a concert. The video finishes by showing a young-looking woman taking off the OGO headset with an expression of elation and wonder, suggesting that the former vignettes are all reachable via the OGO (see Figure 12). The narrator concludes with a pithy upbeat suggestion that “when you learn to love a life different from your own, the world becomes a little closer” (Oculus, 2018). VR itself is never mentioned in the video, nor is the headset featured for more than a few seconds. Instead, it is the potential experiences and inferred expansion of one’s worldview that takes up the bulk of the advertisement. Bombarded by these vibrant moments, lasting mere seconds each, the OGO advertisement tells its audience to do something with their bodies and VR to experience the world in a new way. This video is a stirring provocation as to how contemporary VR is both framed and expected to change how its users will come to know and experience the world.

The current chapter combines the preceding discussions of immersivity and my methodological toolkit to unpack the use of contemporary VR. By presenting the findings of 15 hybrid playing interviews, I consider how participants’ encounters and performances shape engagement with VR. Put differently, I examine the conditions,

strategies, consequences, and meanings that arise from participants engaging with a particular VR videogame and HMD. This is a non-exhaustive but critical take on human engagement with the digital in and of VR. VR continues to energetically enter the public consciousness, not as a metaphor of future or not yet existing techniques/devices but instead as a real everyday technology. Instead of composing yet another grading of immersion, I instead emphasize how immersivity is composed by its irreducible encounters.

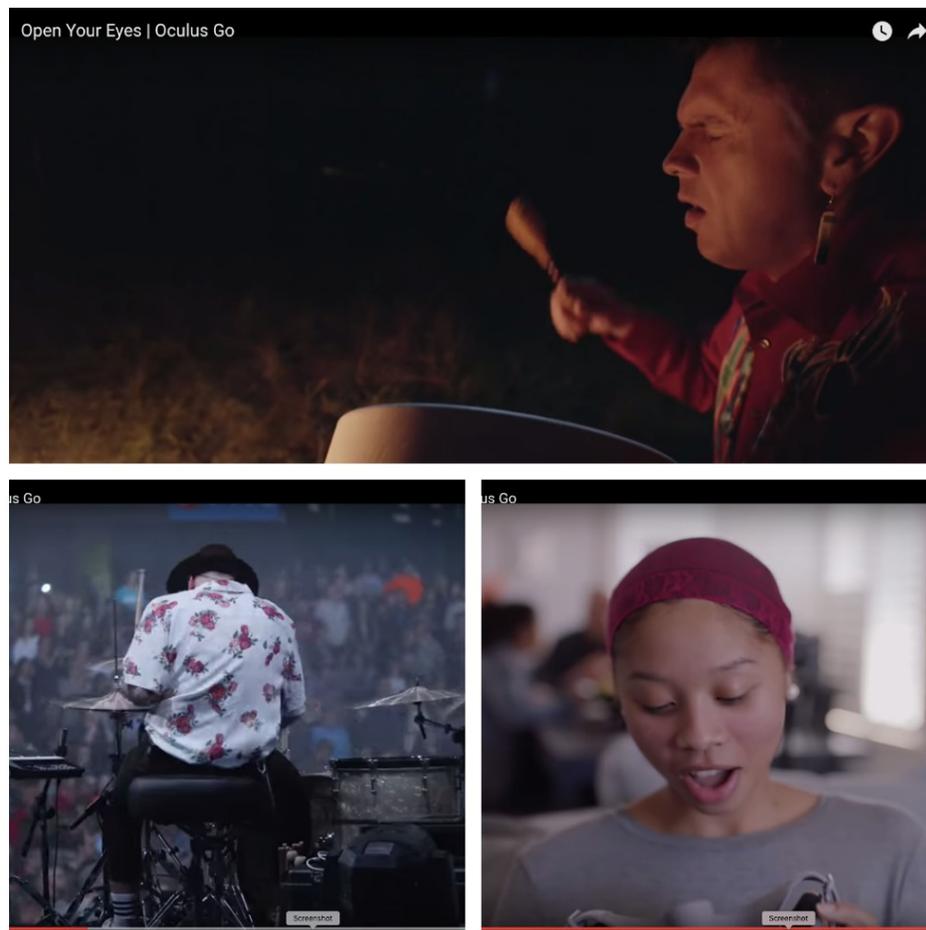


Figure 12: Screenshots of the Oculus advertisement “Open Your Eyes” (Oculus, 2018)

The interactions and encounters I put forward here oscillate between moments occurring during gameplay and the reflective post-VR discussion in the semi-structured interviews. These encounters and interactions are transposed across technology, digital worlds, and human bodies. Lea (2009) writes that “experience does not just occur within the body, confirming our boundaries and corporeality, but is a creative force distrusted across bodies and worlds” and that “objects, events, places, spaces – matter here, having performative and constitutive force” (p. 374). However, I maintain that technologies or any object for that matter can never fully determine what we do. Rather, they “set up spaces of possibilities that enable and constrain certain actions and perceptions, but the room for maneuver within these spaces is what constitutes human freedom” (Aagaard 2017, p. 527). Still, technologies of all kinds “offer a mirror to the wider terrain of struggle over the forces that govern our lives” (Benjamin, 2019, p. 77). As such, much of my analysis here is focused more in a more humanistic frame, instead of observing specifically how technologies like VR can have an “autonomous existence outside of the ways they appear to or are used by humans” (Ash and Simpson, 2016, p. 49; see also Ash 2013b).

Immersion, presence, or a sense of being within a digital world are thoroughly affective phenomena. I agree with Hong (2015a) in that although “affect hits us pre-reflectively, we develop conventional ways to make sense of those affects at a social level” (n.p.). Hong describes this process specifically with presence in mind:

Presence describes the feeling of being-there and being-with; the affects of connectivity, intimacy and belonging. It operates at the level of phenomenological intuition — the pre-reflective impressions and responses to one’s environment which habituate into conventional patterns of feeling and perceiving. (2015a, n.p.)

For Hong (2015b) “discourse constitutes one of the media by which we seek to articulate our affects, and in doing so, make them available to knowing, ordering, and sharing” (p. 203). This was definitively the case when examining participants engagements both during VR videogame playing and the semi-structured interviews. For example, at times it was difficult to discern affective moments before a participant made sense of something by parsing it out, discussing it with me, or commenting aloud. Words, utterances, and conversations during the VR experience became objects of affect turning them into “transmitters, amplifiers, interpreters of affect” (Hong, 2015b). The analysis here is weighted heavily on what was “spoken” and said to be “felt” by participants as part of their embodied sense making.

Anderson (2014) has positioned affect as a “sensitising device; a way of disclosing life that orientates inquiry to how multiple forms of mediation come together in encounters” (p. 79). For Anderson (2014) affect is always already mediated and “reflects and expresses the agecenment of encounters with other times and spaces” (p. 82). In other words, “encounters are made through repetitions” and agecements are how the “past persists in an encounter, any encounter contains reference to past encounters, and encounters are made through accumulated relations, dispositions and habits” (p. 82). The often-used basis of affect as “capacities to affect and be affected” (Deleuze, 1988, p. 125) then is not “pre-discursive, in the sense of existing outside of signifying forces” but “mediated through processes of agecement that involve but exceed the discursive” (Anderson, 2014, p. 85). In examining the hybrid playing sessions, I am trying not to overemphasize either the constructedness or livedness of experiencing VR videogame playing. Instead, I am looking for what Waterton (2018) describes as “discursive and

affective entanglements” that are occurring because of the myriad of moving mediated affordances (p. 223).

For the remainder of this chapter, I explore several far-reaching themes that span the data collected. These are gameplay moments and conversations during play, discussions of immersion, being there, realism, and authenticity in VR, accounts of emotions or how VR feels, and speculations of the moral and ethical considerations of VR. Several of these themes relate closely to the specific questions asked in the interview phase. Overall, I frequently use large and occasionally expansive interview quotes to construct a theory of immersivity.

Immersivity serves as a method for asking how the feeling of being inside a digital VR world is constituted and made sense of? What values are placed on these effects? Immersivity operates as a way of interrogating effects or the performative force of immersion. My particular rubric starts with recognizing that immersion, presence, or being there are experiences that already exist in the world and are full of meaning prior to any engagement with VR. These keywords signal understandings of inhabitation or occupying a space, be it digital space or otherwise. Immersivity works against the taken-for-granted or assumed understandings of what digital inhabitation means and what supports it. Highlighting my participants’ understandings is a way to thoroughly contextualize experiencing VR and digital inhabitation. Not every theme or interesting data point is included here. I prioritized participants’ sense making of VR and their own ideas and experiential truths of immersion or the feeling of being within a digital world.

Conversations in Play

How participants might respond and act *during gameplay* was a key part of the analysis. From the outset, I was curious how participants might treat the situation knowing that they are being observed. Moreover, I questioned if immersion can only exist if participants are so engrossed in the VR experience that they forget they are part of a research study. Or for example, whether or not participants had to forget I was in the room with them to be immersed. A significant amount of work often goes into maintaining VR experiments' efficacy. For example, one study used two "experimental minders" as individuals whose primary role was to watch and observe participants wearing HMD's (Garau, 2008). As I have argued earlier, all manner of objects and bodies are involved in shaping the experience of a digital world. Thus, interactions and encounters during VR use extend beyond the digital world itself in more comprehensive contexts.

Participants' verbalized observations and conversations with me amidst VR game playing were remarkable components of the hybrid playing interviews. Participants often chose to talk with me during their time playing LE on the OGO. However, this did not clearly "break immersion" or impair the significance of the experience. Moreover, talk did not interrupt play as if to break away momentarily from the digital world to converse; talk and play occurred at the same time. Conversations during play folded into and shaped the entire experience of using VR and playing LE. For example, Tammy expressed excitement upon completing a puzzle in the game. Tammy was aware that I was unable to see what she was doing in-game but shared her success with me:

Tammy: Oh! I wish you saw that! That was pretty good.

Tyler: [laughs].

Tammy: Like that didn't seem that hard but I actually think was actually like really cool.

Tyler: Moving something?

Tammy: Yeah. I moved something but I moved it very fast, but it stayed where I wanted it to stay.

Robert held complex conversations while playing and even apologized for talking so much for fear of spoiling the later interview. Several times during play Robert explained the rationale behind his gameplay choices. For example, he commented on how his recent experience of replaying *Doom 3*, a classic first-person shooter videogame, was shaping his current experience in LE:

Robert: Ah! I can't crush myself with the block. It's a very friendly game. [Robert was trying to drop a puzzle block on top of himself in-game]

Robert: Recently I've been going back and playing *Doom 3*.

Tyler: Ok yeah.

Robert: So, I yeah, I do expect that a room was going to open up behind me and some zombie was going to come flying out.

Tyler: [laughs] Jump scare?

Robert: Yeah. Exactly.

Narrating his experience further while playing, Robert also reflected on why he was approaching LE in such a particular way:

Robert: But yeah and then there's like, ah, like in that last scenario there's kind of a couple blocks and I find myself playing with how the blocks interact with each other as you tip them and seeing if you can get friction on the ground to tip them when it doesn't seem designed to do that easily. Stuff like that.

Tyler: Hmmm. So like experimenting?

Robert: Experimenting yeah. I guess that's another kind of completionist [sic] kind of, almost a game tester thing. You try every weird little thing.

Tyler: Yeah. To see what the limit is.

Robert: Yeah. To see where the boundaries are if they've missed something if it's yeah.

Like Robert, Brad described how he was “making sense” of the game and his choices while playing LE:

Brad: It's like if you land on an alien planet and there's this series of puzzles to test you with your general problem-solving skills but also inadvertently testing your teamwork and compassion. It's just like they're testing you out to see if you're safe to interact with.

Tyler: [laughs].

Brad: That's kind of the narrative I'm following here [laughs].

Tyler: Hmmm. Cool.

Brad: Yeah [laughs]. Gotta make sense of this somehow.

Besides these sorts of reflections, it was quite common for participants to ask me for assistance in completing some of the puzzles or an explanation of how the game mechanics work. Sam expressed this in a brief moment during playing, questioning how player movement functions:

Sam: [laughing] When you're? That's how it moves right? When you like lean back and up? Or am I just being an idiot? Can you move it a different way?

Tyler: It's mostly just how you tilt your head or aim your head.

Sam: Ok. Yeah.

In a similar moment, Chris had been stuck on a puzzle for a few minutes. Eventually, he asked for my assistance where I attempted to explain moving a few of the puzzle objects in a different way:

Chris: Am I right up to this point?

Tyler: I, do what your gonna do and then I will give you a hint if it doesn't work out after this. Because there are multiple ways to do it. Believe it or not. From my experience.

Chris: Alright. That's in the hole! I can see it!

Tyler: Do you like puzzles?

Chris: I do, this is just ah!

Tyler: I think, how do I say this? Where those two moveable pillars are isn't necessarily where they have to be on left or right side. Do you know what I mean?

Chris: Oh! Yeah yeah. That's what I thought. I couldn't get it over top.

Tyler: Yeah there you go.

Chris: Oh, it does go over top! Ah! Ok! Game changer right there.

Conversations flowed naturally while participants were playing. I told participants they were free to completely ignore me or talk during gameplay but was uncertain how this might occur in each interview. Excerpts of Tammy, Robert, Brad, Sam, and Chris's conversations exemplify how my presence as a researcher became part of the VR experience. LE is not a multiplayer experience yet to my participants it often seemed like I too was playing with them despite not directly being part of the digital world. Participants readily "incorporated" me into the experience to use Calleja's (2011, 2014) term. The sociality between researcher and participant was never a clear obstacle or

limitation to the experience. Instead, our conversations modified the relationship to the digital world and drew out the significance of specific aspects or moments such as making sense of the games narrative (Brad), how the game mechanics work (Sam and Chris), sharing in the satisfaction of play (Tammy), or explaining how one's personality and recent media consumption shapes choices in-game (Robert). Conversations during play were instructive of subjectivities. They demonstrated that the digital world and the player's avatar are not the only spaces and bodies of concern in VR, even if they seem like or are couched as the primary location of one's senses while using an HMD.

Authenticity and Realism

One of the most generative questions in the interview phase was asking participants how "realistic" and "authentic" they found the experience. My goal in this question was to enable an open-ended discussion of both VR itself and the specifics of the VR videogame. Rather than explicitly asking if participants felt "immersed," I aimed for subjective recounting of realism and authenticity that might reveal how participants understood the experience to be immersive or not in their terms. To be clear, I never used the word immersion, presence, or phrase "being there" until a participant used those terms themselves or described "being there" in a general way. I anticipated phrases such as immersion would appear without my prompting. I expected to reveal that participants brought previously held understandings or experiences of the terms themselves. Responses were varied demonstrating a range of personal reflections on what meaning authenticity and realism had to individual participants.

For instance, Amy commented that the experience was liberating through knowing limitations to realism:

Amy: Looking down and realizing I'm not gonna fall. Because it was that realism, the realism of 'oh I'm standing on a cliff' and if you can't step off or fall because you're in a chair.

Tyler: So, it's sort of ah, like, it's empowering to know you can't hurt yourself?

Amy: Yes! And when you're like travelling over [referring to flying moments in the game] because you're sitting you feel like you're, you feel like you're just kind of on a carpet flying. Like Aladdin does. You kind of feel like you're just in it and you're magically teleporting. It's great.

Frequently, VR is represented by its startling effect in persuading users that the digitally mediated environment is real and has real consequences. For example, one of the most famous techniques is digitally simulating a potentially dangerous height users might fall from (Meehan et al., 2002). Amy describes how sitting in the chair shaped her experience in a helpful way. Instead of generating an unpleasant fear response, Amy is reassured that she cannot step off the cliff or fall and this is, in fact, a desirable feeling. Amy described her experience with enthusiasm and as feeling like "you're just in it." For Amy, being within the virtual environment was positively shaped by specific limitations to realism, not by convincing her that the digital world was perfectly real and had consequences to her safety. This kind of moment stands in direct contrast to the desire for a "perfect VR" as one where you cannot tell the difference between the digital world and the physical one.

Robert described in great length his sense of realism and authenticity in VR. At first, Robert described the experience as "clearly not real visually." However, he goes on to say that "you could really feel like you were in an alternative place where things just looked different than they do here." Questioning Robert further, I asked him again about authenticity and he went on to explain his sense of presence:

Robert: And so, you know did I feel like I was really somewhere else? No, I didn't at any point feel like I was really somewhere else. But I did feel like I was having a sensory experience from somewhere else.

Tyler: Ok. Hmmm.

Robert: Yeah. Hmm. At no point did I feel like my body was actually there and it's an interesting, combination of sensations and the closest I came to it being an authentic genuine experience in the sense of feeling like I was really present in that world was at one point I decided ok well I'm going to just try and ignore my body and think of myself as a being with no body who has telekinesis.

Tyler: Ok. So, you got into the role?

Robert: So, I got into the role. Yeah and you know it's helpful then if you think of yourself as being a different kind of being than you have been your entire life and just imagine yourself as being incorporeal and telekinetic.

In this scenario, Robert is explicit that his actions and imagination are substantial in generating presence in a digital world. Robert describes a process of choosing to embody and think of himself through the characteristics and the affordances of his in-game avatar, a bodiless being with telekinetic powers. Brad, like Robert, describes how the overall feeling of the game resonates as real or authentic in a complicated way:

Tyler: How realistic or authentic would you say that experience that you did today is?

Brad: I guess not very. Umm. It's very real in the sense that it quickly invoked an imaginative kind of narrative for me.

T: Mmhmm.

Brad: It was very much part of my everyday experience in that sense and it's actually something I've been craving is that creative element of being immersed in a landscape. Like I love Salvador Dali and the big landscape painting you know like those tall elephants with the skinny legs. As soon as you see those paintings and the depth in the scope in which distance is covered. It's just kind of a nice

meditative feeling of seeing that you're in a big space. And I'm kind of claustrophobic.

Tyler: Ok.

Brad: Like I can be in an enclosed room no problem, an elevator is just fine. If someone were to like press my head against a wall and I felt like I couldn't move, I would flip out.

Tyler: Ok.

Brad: So that kind of meditative open space is really quite relaxing for me.

Tyler: Hmmm.

Brad: So, in that sense, it felt very real because it's a very real feeling that I'm desiring. In terms of like narrative not very real but again it's kind of the sci-fi stuff I'd like to surround myself with. Hmm, so I guess I'm equating real with routine or things that I've experienced before.

Brad describes the experience as real based on his desire for creative and meditative space as well as sci-fi content. For Brad, it's not necessarily real as in perfectly simulating reality, but it is real in the affective response it generates through desire and intimacy with space. Later in the interview, Brad clarifies this point telling me that these kinds of spaces, whether they be paintings or VR, are "giving you a reminder of a place you've been before so it can take you back in other words." Brad quite clearly articulates what Anderson (2014) describes as "geo-historicity" or the way past encounters with spaces, objects, and bodies have shaped his current affective engagement with VR.

Overall, participants were not adamant in describing their entire experience of LE and using the OGO as "realistic" or "authentic." Instead of prioritizing a causal model for immersion or presence, the subjective responses to recounting realism and authenticity

demonstrate that reflection on the experience of VR left users with mixed feelings. They began to describe how their performances and previous experiences shaped any potential moments of realism or authenticity. Realism and authenticity appear to have a fixity to certain moments and feelings over others, rather than the entire time using VR as stepping into another reality. Rarely did participants speak of the technology specifically as generating said realism or authenticity but primarily through their interpretation of the digital world and actions available therein.

My use of realism and authenticity are not meant as proxies for immersion or presence. Instead, realism and authenticity are a kind of reflective sensemaking of a particular digital world and moments in time. They act as more irreducible contexts than the lexicon of immersion, presence, or being there that dominate VR scholarship. Realism and authenticity support the idea of immersivity in not assuming what fundamentals are required to enact digital inhabitation. They are prompts for the participant to blueprint their own meanings for what it feels like to be part of a digital world.

Describing Immersion, Presence, or Being There

Avoiding initially using the term immersion when speaking with participants yielded different results than I anticipated. I had expected many if not all participants to use the term clearly. However, only 9 participants did use the term and very rarely was it used to directly describe their experience playing LE or using the OGO. Instead the term stood in for forms of engagement across different media or other prior experiences. Participants often described something more slippery and uncertain when invoking immersion. Consider previously when Brad mentioned “being immersed in a landscape.”

Brad is not speaking to immersion specifically in relation to VR or even videogames.

Brad is describing a personalized interpretation of the term covering both his previous experiences of places, desire to be immersed, and the VR experience he just had.

Running proximate to realism and authenticity, I want to highlight when participants recalled moments of immersion, presence, or being there in some form. The crux of immersivity is that digital inhabitation is supported by, understood through, and made meaningful across different past experiences and the way they disclose themselves to the current situation one finds themselves in. Brad and others tease this out by reflecting on the experience of LE.

While playing LE, Ainsley commented to me about how she frequently “gets lost” in videogames:

Ainsley: I feel like I already get so lost in games.

Tyler: What do you mean lost?

Ainsley: Hmm. Like, it’s already so easy for me to just like get consumed by the world or whatever I’m playing. Hmm. So, I really like open-world games like *Breath of the Wild* or games where there’s a lot of places to explore. Different things like *Mass Effect*, *Dragon Age*.

Tyler: There’s like a predisposition to that kind of thing? Yeah?

Ainsley: Yeah. So, I guess like RPGs [Role Playing Games].

Ainsley then clarified this idea later in the interview phase:

Ainsley: And I think that’s because I dunno I have a very active imagination. So, if somebody’s created a world where there’s a lot to explore and my brain is just ooh like I wanna discover all the details and all the things. So. Yeah. On one hand, VR would be really great for that because there would, in theory, be a richer fuller experience to that

exploration. But then there's also part of me that feels like I, it might be harder to pull away when the time for that exploring and this not real world is done.

Although Ainsley did not directly invoke immersion, she grappled with how VR presents digital worlds she's already familiar with in other videogames. Rather than some unique phenomena, Ainsley used her previous experience and relationship with videogames and "getting lost" to think through the affordances of VR. For Ainsley being engrossed in a digital world never stood out as something particular to VR but as a broader category of engagement defined by different affordances. Tammy also had a similar experience to Ainsley. At one point, Tammy compared her built up knowledge of the videogame *The Sims* to the VR experience. In particular, Tammy started to outline the differences of control in *The Sims* versus the VR experience of LE:

Tammy: And that's like I'm trying to compare it to. When I play that [*The Sims*] you try to, a lot of the time for me and a lot of other Simmers [sic] we try to be as realistic as you can in the game. Unless you're doing like a challenge. So, and that can be even tricky, but this was way closer to realism than that. In that world I can completely control.

Tyler: Ok. So, there's like a different levels of control in say?

Tammy: Yeah.

In describing VR, Tammy later said, "I felt like I was in it." After hearing about Tammy's investment in *The Sims* and being "in it" I asked Tammy if she felt immersed in *The Sims* also:

Tyler: But you would say you get immersed or you know how you said, "you were in it"? You get in it with *The Sims*, too right?

Tammy: I do get in it. But you can step out of that you pause it. You can reform it. You can literally scratch it all

whereas with this it's more like, you control certain aspects of it because you don't have control of the entire landscape. You're really there instead of just being just being I don't like that I can change that. Instead, it's like oh shoot there's a cliff, have to get passed it!

Tammy, like Ainsley, directly compared the affordances of a videogame with which she was familiar with to the VR experience of the OGO and LE. In this case, Tammy focused on the level of perceived control she had across the two different games. VR appeared to elicit less control because of certain game features (e.g. no ability to modify the game space or to pause the game). However, the lack of a pause function or ability to change the landscape are not features specifically limited because it's a VR videogame. Interestingly, Tammy did not specifically reference the VR system itself as the limiting factor, whereas Ainsley described taking off the VR headset as a "nice conclusory" way to end the experience.

Grant described the limitations of the technology, again by drawing on previous experience with videogames in shaping his understanding of immersion:

Grant: But it's still just with a gaming background you still understand the limitations of the technology. It's not like playing in an open-world game like *Red Dead* [referring to the videogame *Red Dead Redemption 2*] or anything.

Tyler: Yeah.

Grant: You're very much in a virtual world.

Tyler: Very much in a virtual world.

Grant: Yeah.

Tyler: So, like how, when you say. Can you think of an example, you said *Red Dead* is that like an example of expansive as well? But a different kind of expansive then?

Grant: Yeah. Like if I was to, like obviously we don't have the technology for that but if you could play a game like

Red Dead and its quality in a VR experience where you're literally a part of a very detailed world and everything, I think your concepts of reality could change a little bit. Whereas with this. I knew all the time that it was very much a VR experience.

Grant then tried to explain how there may be different kinds of immersion:

Grant: So, once I was in the world. I think level 2 is when I really noticed it. Where I was facing in the room was totally, I was totally lost.

Tyler: Yeah.

Grant: So, it was extremely immersive in that perspective.

Tyler: You started to lose the sense of like where you were, like you knew your body was in this room, but you don't know where you're orientated?

Grant: Exactly. Yeah. So, in that sense very immersive right whereas it's very different from a handheld game looking at a screen where you might mentally you know if that makes any sense. I'm mentally more immersed but I'm still very much sitting in a room looking at a screen.

Using his "gaming background" as a reference point, Grant explained that he perceived immersion in multiple ways. VR provided a variant of immersion through the "expansive" environment and by losing his orientation in the physical world. Grant also described how a different game, *Red Dead Redemption 2*, or looking at non-VR videogames, in general, are also immersive "mentally." Grant did not articulate that either was more immersive just that they afforded different opportunities or kinds of immersion.

In certain instances, participants reflected on the strategies they used into maintaining coherence with the digital world. This is best exemplified by Franklin, who used his hands and feet to maintain a connection across the physical and digital world. During his interview, Franklin would lightly touch a nearby wall with his hands and tap

the chair legs with his feet. I asked Franklin afterward if he could explain these moments to me:

Tyler: What made you think to like touch the wall? Or obviously, the chair made sense because it was there? I guess the way you kicked the chair, it's almost like you knew that's how I sense an object. Like I have to gingerly sort of like I dunno tap. I was curious about how that came about?

Franklin: Hmm.

Tyler: If you can reflect on it at all.

Franklin: I think as I was so entranced by the novelty of kind of being split between the real world and the virtual world that I didn't want to, I didn't want to upset the illusion by like ahh! Like really kicking the chair and really harshly or hardly reminding myself of where I am.

Tyler: Ok.

Franklin: Like I felt. Hmm. I felt as if I had to do work to kind of maintain the illusion in a sense.

Franklin is expressed an awareness of a “split” between the physical world he is part of, and the digital world provided through the OGO and LE. Rather than describing his awareness and use of the physical world as a break Franklin explained that his awareness of their co-extensions was a necessary labour to maintain the illusion of being across the physical and digital world. Lightly touching the wall and chair helped maintain the illusion of the digital world. The physical world still served an important purpose in Franklin's recollection of the illusion.

These varied examples are an attempt at showing the slipperiness and uncertainty users have towards the feeling of being inside a digital environment. Rather than recalling some sort of innate physiological response, participants gravitated toward describing how their previous experiences shaped the sense of being within a virtual environment. Also,

the desire and ability to feel present, immersed or inside of a digital environment required some sort of effort or interpretation on their part. Feeling as though one is inside a digital world was more about ebbs and flows than a linear progression or a threshold of engagement. These responses also bring into relief the trouble with non-immersion. Participants did not clearly describe moments where they were jarringly not immersed but rather how they oscillated their attention practically. Considering Franklin's comments above, non-immersion in that situation cannot be defined by noticing the physical world over the digital; rather, they actively supported each other in Franklin's explanation. Similarly, in Grant's description he feels immersed in contexts that are decidedly not immersive according to the VR research discussed previously in Chapter 2. If immersion is understood in an iterative way, then what counts as not immersive is as equally complex as immersion itself. Non-immersion is also not reducible to the technology.

Again, these are not totalities or representative of every VR user or VR system. However, they do show how immersion can be understood subjectively in context as more than technological affordances alone or even beyond one term. Conscious reflection on the corporeal engagement of VR and the digital world presented led participants towards parsing immersion, presence, or being there as adjacent to other objects, encounters, and something not fully formed.

Accounting for Emotions and Feel

Emotional resonances or how VR felt were also part of the contiguous reflections of participants' VR experience. I asked participants if they could identify any emotions they felt while playing and if anything, in particular, stood out as generating stronger

emotions. These reflective moments act as a kind of naming or parsing out the affective or emotional moments. My intention here is not to firmly delimit differences between emotion and affect but instead recognize that “human affect and emotion are simultaneously integral and unsettling to our contemporary experience of digital technologies” (Stark, 2018, p. 117). As Waterton (2018) emphasizes, the two terms are productive in working together. Emotions are “more than simply a bridge between physiological and psychological responses to stimuli: they also engage thinking, and by extension purposeful action, in tandem with somatic or instinctual responses” (Stark, 2019, p. 120). In this particular scenario, I am again drawing on participants’ responses to the question of identifying emotions. I thus take their responses from the start as credible reflective naming and parsing processes of their own awareness of emotion.

Playing LE was often described as calming, meditative, or peaceful across all the interviews. Amy, for instance, described the experience as “calming and relaxing” which was antithetical to her expectations:

Amy: It was calm. It was calming and relaxing. Definitely not what I was expecting to walk into. I was like oh this going to be like gaming. But it was just like relaxing. And I thought oh I am gonna be hooked up to all these wires.

Tyler: Yeah totally.

Amy: I went in thinking, I came in with the preconceived notion that ‘ooh everything is going to be on this game’ but you only have a certain space you can move.

Although participants knew they would be playing a VR videogame, they did not know which VR videogame they would be playing nor which VR system they would use. Amy, being one of three participants that had tried VR previously, highlighted how her expectations were changed upon using both the OGO and playing LE. LE also was

contrasted to what Amy thinks of as “gaming.” Moreover, Amy suggested the movement through space was not what she expected. Lastly, Amy briefly commented on how she expected to be connected to an HMD with wires (based on her experience with other VR systems she has tried). Amy’s response to the question of emotion as calming and relaxing is not just a direct engagement with the VR system and VR videogame but also a shifting of expectations from her “preconceived notions” of both gaming and VR. The affordances were mediated before as well as after putting on the HMD and playing LE.

Robert, on the other hand, described a range of emotions yet concluded by saying it was “nothing overwhelming”:

Robert: Yeah so. You have a sense of accomplishment when you finish a puzzle. Sense of curiosity certainly in certain environment where you’re thrown into a new environment. Some aspects of it are familiar and some are new. So, you look around and you see there’s seagulls, and there’s mountains, and there’s ocean, so there are some familiar elements. So, the moment your brain goes click ok down, up, water, gravity, you know there’s enough familiar elements to feel like sort of oriented or comfortable enough there right. And then oh ok I can look at things and if they have a certain symbol on them, I can move them by looking at that point and so on. So that’s not something that normally occurred for me in life [laughs].

Tyler: Yeah [laughs]. Darn.

Robert: Ah too bad too. So, there’s a little sense of I guess, yeah curiosity, wonder, empowerment, yeah. Nothing overwhelming.

Robert’s reflection on emotions he felt centers again around the contrast of familiar objects in the game yet the unfamiliar affordances of his avatar having telekinesis. Despite naming curiosity, wonder, and empowerment as keywords Robert still describes it as “not overwhelming” as if to say those keywords themselves have a familiarity to

them or themselves could have had stronger resonances. Grant, on the other hand, focused on a particular emotion as an example, frustration. Once again depicts his emotions from his subjectivity as a “gamer”:

Grant: Umm. I guess [laughing] from a gamer’s perspective frustrations.

Tyler: Yeah. Ok.

Grant: Cause’ especially with like trying to work with the gravity in the game and I wanted to let go of the objects at a certain point and then I’d move my head to try and activate on the beacons and your like still locked onto an object. So, it was still like pull you a little bit. So, I’m like no let go! And I couldn’t, I didn’t play with the controller or anything to see if there was a thing to just let go.

Grant, like Robert, focused on the actions and physics of the game but instead described frustration as a key emotion. The game and the VR system itself did not meet Grant’s expectation for how the objects should behave. This suggests again that Grant’s previous encounters with videogames shaped his expectations overall. Moe and Franklin, in particular, described more than one emotional resonance or how there were shifts in feeling. At first, Moe described the game as relaxed but denotes a moment that created a sense of fear or concern:

Moe: Yeah, I was like pretty curious ahh pretty relaxed and there was a couple times too where I felt like a little bit startled just by something. Like there was one of the puzzles like caused a rock to fall towards me.

Tyler: Yeah yeah.

Moe: And that point I remember feeling like, move back [laughs].

Tyler: [laughs].

Moe: Because it felt like was gonna land on my head and yeah like I just felt like...

Tyler: What do I do with this?

Moe: Yeah exactly.

Tyler: Because you know it's not going to kill you hopefully.

Moe: Yeah. I think if anything that was the only time I thought of like a character and being like I shouldn't, I should try and preserve this experience or body.

Tyler: Ok. That's interesting.

Moe: But yeah. It was like pretty peaceful, pretty peaceful experience definitely enjoyed the sounds and the music kind of at the end felt. It was like pretty, I dunno how I would describe that it felt like it was some kind of spaceship.

Although overall Moe characterized the experience as peaceful his recollection of a particular moment of concern shows the dynamic way emotions might arise out of the experience. That one moment may have an emotional resonance but doesn't necessarily describe the entire experience. Franklin described what he called the "trajectory" of his emotions as a sort of rough timeline:

Franklin: Sure. Hmm. So initially it was the sense of joy and novelty and experiencing a new thing. As I'm sure the video will reflect. Hmm. Then there were distinct senses of fear, as I mentioned earlier coming up to a cliff edge, flying over these waters. So, a sense of fear and sense of precariousness. Hmm and then I guess maybe not so much an emotion but a sense of wonder as well. But then calmness and contentedness kind of by the end of the third chapter.

Tyler: Mhmm.

Franklin: I kind of accepted the world around me and was just feeling not overjoyed but just content I guess is a feeling. That's the label I would apply to it.

Franklin's trajectory of emotions again used specific examples but leans toward an overall characterization of the experience. As Franklin explained, this has to do with "accepting the world around" himself. Franklin's reflections suggest an emotional tonality oscillating as he experiences the digital world over time.

The reflections on emotions here are subjective and partial. Emotions are characterized by participants in ways that may be described as moods or tonalities. They are atmospheric in that they function like "affective propositions, unfinished lures to feeling a situation, site, person, or thing in a particular way" (Ash & Anderson, 2015, p. 48). VR and the digital world of LE created capacities for emotions to be felt, recalled, described and named afterward. Emotions and affect were "moments of recruitment, articulation or enlistment" occurring between the complicated flows of "bodies, subjectivities, relations, histories" that arrange an "affective moment, episode, or atmosphere with its particular possible classifications" (Wetherell et al., 2015, p. 160). Immersion, presence, or a sense of being inside a digital world was never tightly linked to emotion. That is to say, in describing emotions participants weren't specifically commenting on how being immersed was somehow indicative of the emotional responses they had. Instead, the game design or the digital world of LE, in general, was often spoken of as what afforded emotion.

Moral and Ethical Speculations

Near the end of the interview phase, I asked participants whether or not they felt there may be any moral or ethical concerns with VR. Because only 3 participants had tried VR previously, I was eager to hear how participants might interpret potential moral and ethical issues with VR. Only one participant said there were no moral or ethical

concerns they had. Overall, participants connected moral and ethical concerns to already often discussed and debated issues around videogames and violent content more broadly, despite the fact that LE was not a violent VR videogame. Chris, for example, invoked the differences between the videogame series *Call of Duty* and hypothetical VR content involving shooting:

Chris: Hmmm. I guess it depends on your personality and who you are. Sitting on a couch playing *Call of Duty* your very aware you're just, you're just shooting pixels it doesn't exist. It's just fake. We use it for fun or stress relief or whatever. This [*Land's End*] you definitely feel like you're way more, engaged, I think. And you're aware you're looking around. A person could pop out of nowhere and startle you and you have to react [Chris makes a motion simulating holding a rifle and aiming]. I think this definitely has the potential to as the technology gets better and more realistic you could definitely come across people who would get not traumatized but you're or they are very aware of what they are doing and they'd maybe take it a lot more serious. It feels interactive and you're actually shooting someone.

Tammy too expressed concerns about the potential content of VR:

Tammy: [sighs deeply] I guess it just really depends on the game. But I don't think the actual console [referring to VR].

Tyler: Ok.

Tammy: I really don't think it's the console.

Tyler: So, the content really?

Tammy: It's just the content. I mean.

Tyler: Like what would be like would be something you would consider; you would want to think morally or ethically before consuming it? Before doing it in a VR experience.

Tammy: Hmmm. Anything that falls under the realm of like rated R content. So like porn, gore, murder.

Tyler: Ok.

Tammy: Because anything that makes it more realistic, especially VR someone's gonna I don't want to use the word triggered but someone's not going to feel ok about it. Religions probably somewhere up there. So, like you know. If you can go into a place like *Grand Theft Auto* and shoot up a church and you can do that in VR where it feels more realistic and you can feel more in it, I think that's where the moral dilemma creeps up.

Tammy brought in already existing debates and challenges around videogames and violence. Technology in this case reproduces already existing issues with media that Tammy identifies but with the potential for it to be “more realistic.” Alternatively, Moe specifically commented on VR having a greater sensory intensity:

Moe: So yeah, I think there is you know a potential, there's just more information for our nervous system to think like oh this is like a real thing more than just like a flat-screen or something as behind that screen. So, I think it, the potential ramifications of like overstimulation are probably more serious.

Tyler: For sure yeah.

Moe: And I think it could also be a really addictive experience too.

Tyler: Mmhmm.

More: Umm like yeah. I could see like a person, this is sweet. I feel like getting closer to an hour of VR use and I like wanna stop.

Tyler: I find it tiring to be honest.

Moe: Yeah. It's like your eyes are always kind of focusing slightly and you are. It definitely can be a draining thing but I dunno I think. That's like the main things I can think of. Just being too real and messing with someone, causing like a traumatic response or something like that.

Moe is openly concerned with how the technology might offer new challenges in being overstimulating and addicting. There are many more examples of this kind of conversation throughout the interviews. For example, Franklin specifically expressed concerns of VR being more “intimate” and thus could be more “exploitive” when exploring certain ideas or themes, such as “dark tourism” or tourism of places of suffering, violence, and tragedy. Grant and Ainsley both suggested that VR might afford new ways of engaging with violence. Grant returned to his earlier comparison of 2D screened games:

Grant: That’s basically my only concern with it is. You just wonder what it would do to people’s minds if you were immersed in it?

Tyler: For too long or maybe the types of content?

Grant: Exactly yeah. Just, you wonder how your brain, you know what I mean? If I can be so immersed in a handheld game looking at a TV screen how much more than would that be if I’m in a world where all my senses are in in-tune with that world.

Ainsley suggested that perhaps VR has more consequences to one’s body in playing:

Ainsley: So. Yeah, I guess I would just be interested to see like if something happens in a videogame like a really good videogame with a good story and good characters will wreck you. So, if you have that emotional experience but it’s more, I guess physically immersive or like more brain and your body’s more convinced that it’s actually happening in front of you. I guess that would be interesting to see like if there were any negative consequences.

Ainsley and Grant expressed a certain speculative concern around VR and whether or not it may have expanded consequences, consequences they perceive to already exist around their understanding of videogames. Thinking beyond videogames and media, Robert suggested that VR brings up new implications in the law:

Robert: It does open up those questions. Like how far do, you know, do the laws apply, is that an assault, you know because it's a non-consensual virtual touching? Where are the boundaries, do they exist just on our body? You know, if it turns out that the player of the virtual presence which is clearly adult was actually a child now is it child sexual assault? It's these issues that are, we're going to have to grapple with morally and legally and everything.

The question of moral and ethical implications generated some of the most confident answers that VR was different enough from other media to warrant critical attention. The suggestions by participants were speculations of potential moral and ethical issues with VR, not necessarily drawing on any specific experiences they had with VR to date. I argue what this demonstrates is a more complex interchange between participants' understanding of a particular technology and the wider social, cultural, and political milieus in which they find themselves. The moral and ethical speculations put forth by participants are linked to videogames and media writ large. Well before participants experienced VR, they had concerns around videogames and media that became reinscribed in discussing VR. Their perspectives are important in rebuffing any claims that VR should be treated in its own right. Instead, it is important to think of VR both in how it is distinctive but also situated within broader contexts and histories of technologies and media.

Immersivity

In my review of the hybrid playing interviews, I have attempted to focus on subjectivity (rather than objectivity), description (more than analysis), interpretation (as opposed to measurement) and agency (against structure). The perceptions, meanings, attitudes, beliefs, feelings, and emotions of my participants were the key to witnessing VR beyond claims of what it supposedly offers and does. If immersion is so often seen as

a taxonomy or objective technological consequence of VR, then immersivity, by contrast, is the reflexive and performative engagement between the researcher, participants, VR and being in contact with digital worlds and their technological facilitators. The meanings of immersion or being within a digital world are constituted through the experience of playing LE on the OGO and the interpretation of that experience.

Participants' capacities to respond to, and be affected by, the digital worlds of VR materialized from previous interactions and encounters, ones not-especially related to VR per se but other media most certainly. Not all VR users will or even can operate with or open up to the same encounters. However, differences and similarities in subjectivities, bodies, and geo-historicities matter as already existing and ongoing mappings or encoded understandings of engagement with digital worlds and technologies that enable them. For this reason, immersion or a sense of being within a digital world is far from some innate feature or reducible to an objective property of VR. It is not just what the technology produces. Immersion is as much felt as it is practiced, learned, and made sense of through what is brought to VR as well as what is simultaneously being encountered.

The hybrid playing interviews destabilized the *sine qua non* of VR research that has been established well before VR's current resurgence. Rather than seeking out ecological validity (the extent that the research findings might be generalizable to real-life settings), I took the whole process to be a real-life setting, a witnessing of VR and digital world through irreducible interactions and encounters. Rather than presupposing that VR is a unique media, I operated with an understanding that its affordances were already being mediated. Conversations in play, for example, did not disrupt meaning-making or engagement with the digital world. If anything, participants using VR and

conversing with myself as a researcher seemed at times expected, normal, even banal.

This observation leads me to ask what is the value of “being there” in a digital world, as defined by much of the contemporary VR research, if it must constantly work to negate what is outside of the HMD?

Authenticity and realism, as described by participants, acted as a useful filter for recognizing that meaning not only arises beyond the digital world one is currently engaged with, but it is also entirely dependent on previous experiences and what exists outside of the HMD. VR is not creating a new language or archetype of computing. Rather it is orienting different senses, social, cultural, and technological resources in particular ways. Participants tied together other media, desires, feelings, spaces, and understandings of corporeal engagement to define what may or may not have been felt as authentic or real. It was surprising how fleeting participants’ descriptions of “immersion” or “being there” were. After all, commentators such as Alfie Brown (2018) suggest videogames have never had any issue being immersive. No one clearly said, “I am immersed” or “that was an immersive experience.” When participants did veer closer to describing immersion or being there it was slippery and infirm in what they meant by it. It was not located in or through the technology itself. It is challenging if not impossible to demarcate immersion and non-immersion into clear units of time or effects. Instead, they are ongoing irreducible relations to the digital world that shift back and forth. Immersivity acknowledges the immersive and non-immersive as non-discrete.

In speaking to and recalling emotions, participants described tonalities, hints, or shifting moments of emotion rather than firm assertions. These namings of emotions were opportunities to conventionally make sense of affects. Finally, moral and ethical

speculations put forward by participants demonstrated the already mediated understanding of technologies, ethics, and our own moral questions existing across media use. When faced with this question, participants expressed confidence that there were potential concerns with the future of VR not just because it was a new thing itself but because the newness of VR is sure to reproduce already existing issues.

The larger idea, for which I have tried to expose here, is that there are in fact multiple realities and multiple immersions. This is because immersion, presence, or feelings of being inside computer-generated contexts rely on reiterations of social relations within which performative agency operates (Butler, 2010). This was demonstrated across gameplaying and interviews, that the effects of VR cannot somehow stand apart from one's previous experiences and especially from other adjacent experiences like videogames. There are still ongoing and significant attempts to grapple with the terminology of immersion, presence, or being there in digital worlds. As Brandt and Messeri (2019) have demonstrated, VR research should examine "social relations that VR articulates" instead of just the gadgetry itself (p. 7).

Presciently, Haraway (1991) writes that tools are compelling new social relations and that technologies and their scientific discourses are "frozen moments" of the social forces articulating them (p. 164). More recently, Sherry Turkle (2017) has written that VR "by definition, takes the body as a problem it can solve" (p. 25). Likewise, in *Race After Technology*, Ruha Benjamin (2019) has written that VR is now being seen as yet another "technical fix for deep-seated divisions that continue to rip the social fabric" (p. 172). Older and more recent research has explicated concerns throughout VR and what future it enunciates both as gadget and myth. I want to conclude with a few final

provocations as to why accounts such as immersivity are desperately needed against the techno-oriented principles.

Consider the OGO advertisement at the beginning of this chapter, a minor part of VR's total discourse but one that signals the proposed affective potential of VR – that is, to make the world feel closer. In a recent research methods article, Yaremych and Persky (2019) favourably write that “VR affords the ability to measure behavior of the user in a very fine-grained manner,” especially by “tracing of physical indexes of attention and engagement” in “real time” (p. 2, 5-6). This is the “powerful paradigm for experimentation” VR offers (Riva, 2014, p. 215). The Canadian Institute for Advanced Research (CIFAR) recently held a roundtable discussing the future of VR and neuroscience research. Members of the roundtable included academics and industry professionals alike. In a summary of the roundtable's key findings, the same principles were reiterated, emphasizing VR's research power:

VR makes it easier for researchers to study ‘real-life’ scenarios by creating a more immersive and naturalistic experience than traditional lab techniques, while still allowing researchers to maintain a degree of control.
(CIFAR 2019, n.p.)

VR is said to provide “better tools for reading and capturing thoughts” which will “raise questions about privacy and data ownership that will need to be tackled by interdisciplinary dialogue among neuroscientists, technology developers, ethicists, social scientists, legal scholars and more” (CIFAR, 2019, n.p.). Bearing this in mind, only a scant few discussions exist detailing VR ethics and privacy challenges (see Bailenson 2018; Behr et al. 2005; Madary & Metzinger 2016; Persky & Outlaw 2019). These are suggestions being made to an already rolled-out technology after the fact. These recent

ethical and privacy sentiments seem grossly understated given the technology has existed for the past 50 years.

The current digital moment is a time when discussion of what constitutes ethics and its relation to new technologies is on the rise. This is in part due to the disjunctions or uneven application and understanding of research ethics between fields such as computer science, mathematics, human computer interaction versus the social sciences more broadly (Metcalf & Crawford, 2016). In VR, for example, Casey et al. (2019) were able to hack two popular consumer headsets, the *HTC VIVE* and the *Oculus Rift*, demonstrating the ability to disorient users, place digital overlays into the user's field of view, and change the digital environment in such a way that it might lead users into hitting physical objects around them. Given VR's lauded potential for research, the ethical and privacy issues remain alarming.

The ongoing suggestion that VR as a research tool will provide better opportunities to study behavior is also a major concern, namely for the way behavior is seen as something to be collected or captured as data. VR has also been proposed as a tool capable of modifying behavior. To name but one example, it has been argued that VR specific methodologies can reduce implicit racial bias (Banakou et al. 2016; Peck et al. 2013). In a more popular context, Chris Milk, a now well-known video producer who utilizes VR, famously described VR as "the ultimate empathy machine" (Milk, 2015). The framing of VR as an empathy machine has already been critiqued (see Bolmer, 2017; Tarnoff, 2017; Turkle, 2017). Less often mentioned is how Milk described VR as a being a "humanity platform" that it will be "the last medium" and that "VR makes anywhere and anyone feel local" (Milk, 2016, n.p.). As Sam Heft-Luthy (2019) writes, the empathy

machine is just the “latest development in the modern history of feeling better about capitalism” (n.p.).

The empathy machine and VR’s supposed stunning ability to capture behavior and modify it is part of a wider present. It is the capitalisation of affect or VR’s “potential to arouse the body beyond rationality and activate us as subjects” (Karppi, 2016, p. 2). Very rarely is the discussion of dual-use considered when it comes to VR. For example, if VR can be used to create empathy, can it also be used to dismantle it? VR is quickly becoming a vortex of scientific and cultural discourses that justify, in spite of ethical concerns, the technological means to remediate affect, behavior, attention, and emotion. Immersion, presence, or being there are seen as key elements of said justifications – that immersion can only ever be a good thing. It is alarming that VR’s supposed immersive capability is so crucial to what can be considered powerful paradigms of control or domination over human life.

A recent literature review surveys (yet again) different terminologies of immersion, presence, and being there (Skarbez et al., 2017). The authors suggest also using a new term, *coherence*. Seemingly admitting to or perhaps conceiving the idea that previous experience matters in digital worlds, *coherence* is an understanding that any virtual environment “assumes some prior knowledge and set of experience on the part of its users” (p. 7). What is deeply troubling about this statement is what these assumptions are and who is doing the assuming. The authors write that “coherence depends on the internal logical and behavioral consistency of the virtual experience” or, in other words, users can and should be primed for what to expect in a virtual world. Their example is the library. The library should in fact function like a library – people should be quiet (not

yelling) and when you turn your head to change your field of view you should see more bookshelves (not some space that is now unrepresentative of a library).

While on the whole this example may seem benign, it is deeply flawed. It fails to ask, who is making the assumptions of what is going to be “coherent” for users. Likewise, it fails to outline or theorize how “coherence” is even formed socially and culturally in users prior to their VR experience. How is it that the socio-spatial understanding of a library is defined by bookshelves and quietness? The supposed coherence that needs to be achieved in VR operates through the already existing “culturally constructed categories” and the “diverse mechanisms of that construction” (Butler, 2010, p. 147). But beyond libraries, VR has many metaphysical assumptions concerning the subjectivities and bodies of those who engage with VR.

VR as it stands is excellent at pulling reality or elements of our reality out of context and repackaging that context into a delimited digital world. It is for this reason that I argue conceptualizing immersion, presence, or being there in fewer rigid terms is needed. There is a great need to keep bringing back context and agency to the discussion of what it is like to engage with digital worlds and specific technological and non-technological apparatuses that enable or constrain their use. Immersivity, or saying there is no singular immersion, is not to say that the entirety of VR research no longer has hold of its hallmark object of study. Instead, I am arguing, through my own interpretive reinscription, that VR research itself is consequential in affirming and defining what VR is and what is taken to be true regarding VR. This should not be taken lightly.

Immersivity stands in opposition, at least provisionally, to the tool of VR becoming frozen around a fundamental objective ability of the technology to capture and

modify human behavior because it generates immersion, presence, or a sense of being there. Making immersion, presence, or a sense of being within a digital world part of irreducible interactions and encounters is an attempt to inject agency back into the system. Many immersions and realities are desirable. VR does not need to be the last medium, perfect at fooling the user they are in a real place, mechanize empathy, or even be immersive in the canonical sense.

Conclusion

In reviewing the hybrid playing interviews, I have shown how concepts like immersion, presence, and the so-called elation of “being there” can be understood quite differently in a qualitative exploration of VR videogame play. Various non-static conditions for interaction were setup across the participants and the assemblage of VR videogame. Participants adopted different strategies to make sense of the digital world and how it was felt. Although some participants tended to describe similar feelings and interrelations, the consequences and meanings generated through engaging with VR were multivalent. Affordances, broadly conceived as perceptual possibilities for action, are mediated. This is true whether speaking of the gadgets involved, the embodied subject, or the digital world being engaged with. VR is no exception to co-extensive affordances or numerous machines and bodies acting at once.

Frequently, whether during play or reflection afterward, VR videogame play was linked, made sense of, or interpreted through adjacent encounters. In the data collected, I noted numerous times when participants employed other non-VR videogames, spaces, and other objects as ways to compare or juxtapose the experience of VR. Participants recurrently described in detail how they had some sort of capacity or at least an

understanding of their own role in shaping the feeling of *being* inside of a digital world. Immersion, presence, or being there may want or expect us to engage with VR in a particular mechanized way, but through our own performative agency the performative force of technologies and bodies is shaped in not so direct ways. By prioritizing how subjects give accounts of their own engagement with a technology and its affordances, the digital remains in context and full of agency against a more delimited range of capacities that VR supposedly enables.

VR is both *material and perceptual*, both of which are as much socially constructed for the VR user as they are technologically organised. There is no doubt that the particularities and peculiarities of VR enable or constrain different possibilities for action, sensing, or feeling a digital world. However, the dominant lexicon of VR and its continued use must grapple with how VR's possibilities are subsumed by the embodied subjects who engage with VR. Especially as they too are caught up in dynamic performative contexts of an already digitally saturated world. In the final chapter to follow, I bring this idea and the rest of my analysis to its conclusion: VR and being with digital worlds is performative not just because of VR's technological affordances but by how we approach such artifacts with all that we are.

Chapter 5: Conclusion

Technology is the active human interface with the material world. But the word is consistently misused to mean only the enormously complex and specialised technologies of the past few decades, supported by massive exploitation both of natural and human resources. This is not an acceptable use of the word. “Technology” and “hi tech” are not synonymous, and a technology that isn’t “hi,” isn’t necessarily “low” in any meaningful sense. We have been so desensitized by a hundred and fifty years of ceaselessly expanding technical prowess that we think nothing less complex and showy than a computer or a jet bomber deserves to be called “technology” at all. As if linen were the same thing as flax — as if paper, ink, wheels, knives, clocks, chairs, aspirin pills, were natural objects, born with us like our teeth and fingers — as if steel saucepans with copper bottoms and fleece vests spun from recycled glass grew on trees, and we just picked them when they were ripe (Le Guin, 2004)

Ursula Le Guin’s “rant about technology” was drafted as a response to critics questioning the lack of techiness in her science fiction writing. Le Guin’s framing of technology is far-sighted. For myself, it helps set out some core questions when thinking about what counts as technology. Precisely who is creating and defining technology? Where are they doing it and what are their motivations (as they see them)? What natural and social resources are consumed in technologies production? What does technology mean epistemologically (what can be known/how we can know it) and ontologically (what can be said to exist). Technology does things in the world, is a product of many other relations, and (re)produces complex relations between the human and non-human.

In this thesis, I focused on the interconnecting social, cultural, and technical phenomena of VR and videogames. Moreover, I explored a central curiosity: the worlds these assemblages compel and the sense of being within such worlds. VR, videogames, and VR videogames are primarily witnessed through their results, not their production.

They are exactly the proliferation of “hi tech” Le Guin is warning us of. That is to say, they are exemplary of a penchant for the “complex and showy” in establishing their proclaimed benefits and use. In this thesis especially, I have questioned how the terminologies of digital inhabitation (such as immersion, presence, and being there) constantly exceeded their techno-centric origins. There is a thickness to their worldlings that goes beyond the technology itself.

While perhaps a lesser-known paper in the space of VR research, Jeremy Bailenson, Nick Yee, Alice Kim, and Jaireh Tecarro discuss how cyberpunk, as a genre of literature, was influential to the foundations of VR research that exists today. They proposed that “many of the questions that were raised in cyberpunk novels about two decades ago are the research questions that current virtual reality researchers are trying to answer” (Bailenson et al., 2007, p. 2). Emphasizing texts like *Neuromancer* by William Gibson and *Snow Crash* by Neal Stephenson, these authors suggest cyberpunk literature to be defined by three key areas:

a) a dark vision of the future dominated by corporate culture, b) fortified humans whose representations include not just flesh and blood but digital, narcotic, or robotic augmentations, and c) economies driven more by digital information than by physical material. (p. 3)

For myself at least (although I suspect a great many others) it is uncomfortable to think of VR’s relations to knowing and being harnessing such a limited number of literary works in the cyberpunk genre. For example, Nicola Nixon (1992) composed a scathing critique of William Gibson’s work:

In Gibson’s fiction, there is therefore absolutely no critique of corporate power, no possibility that it will be shaken or assaulted by heroes who are entirely part of the system and who profit by their mastery within it, regardless of their

ostensible marginalization and their posturings about constituting some form of counterculture.

Drawing on Nixon's work, Cameron Kunzelman (2018) suggests that cyberpunk had very little radical politics to begin with. Instead, cyberpunk often feigns autonomy and liberation through its aesthetics but overall lacks an imagination of hope for large structural change. If anything, suggesting VR as a form of "science punk" (Bailenson et al., 2007) feels eerily similar in this regard – that the cotemporary VR scientist is, in fact, a master within the system, not against it. It is not just researchers employing cultural products to define VR's importance. "Science punk" serves as a salient reminder of Bolter and Grusin's (2000) argument that mediums, such as VR, do not operate in a cultural vacuum. Or that the "cultural work of defining a new medium may go on during and in a sense even before the invention of the device itself" (p. 99). VR is still moving through different moments of definition and redefinition. It is not yet finished, and neither are its effects.

In late November 2019, a story surrounding the supposed use of VR headsets for cattle in Russia began trending on various news outlets (Vincent, 2019; Webber, 2019). Featuring an image of a cow wearing a VR headset (see figure 13), a translated press release from the Ministry of Agriculture and Food of the Moscow Region (MAFMR) describes the research motivation:

In addition to physical needs, researchers began to pay more attention to the emotional state of animals. Examples of dairy farms from different countries show that in a calm atmosphere, the quantity, and sometimes the quality, of milk increases markedly (2019, n.p.)

The core idea being expressed is that simulating the right environment using VR might enhance dairy production. Regardless of the project's viability, the moment shows the

hubris and magnitude of VR's ultimate goal—that is, to modify human and now apparently non-human capacities through technological and spatialized means. There is still crucial work to be done in attending to VR and its formation as it exists in cultural, social, and political contexts. I have aimed to not let the political stakes go unspoken. Certain worlds and geographical imaginations are being advanced at the expense of others during VR's ongoing resurgence and execution.



Figure 13: Cow wearing a VR headset (MAFMR, 2019).

Reflecting on Contributions, Limitations, and Future Possibilities

The core chapters in this thesis offered partial perspectives. Chapter 1 started to sketch what I perceived to be the common discourse when speaking of VR. VR is understood by many to be a technological system that produces some novel ways of perceiving digital spaces. Immersion, in particular, stood out as a dominant term in the lexicon of VR's novelty. I also began to identify the gap or lack of bringing together VR and videogames as two overlapping objects of study. I maintain that to study VR, videogames, and VR videogames, varied literature and more open-ended theorizing are required.

Writing invariably contains theorists one intends to use as well as those one does not. I aimed to gesticulate immersion as an ongoing performative force, not a final achievement but obtaining power through reiteration and connection to other social, cultural, and technical formations across space and time. I argued that immersion or terms like it required work to produce their described effect. In short, I hoped to think through language and language practice caught up in VR and videogames as not just describing reality but also part of making it. Butler's performativity and Haraway's cyborg shaped how I understood using VR. We are amalgamations of many things, and VR is not simply producing immersion in an altogether apolitical or purely technical fashion. The sense of being inside a digital world is reality contextualized, delimited, transformed through the technology and users acting across various mediated affordances.

Chapter 2 first worked through VR and videogames not as stand-alone objects of inquiry but as interconnecting objects of study that sit within the current digital moment. The digital is material and it is already mediated in an ongoing way. I positioned this as mediated affordances or that affordances are always relative to and shaped by agents. Digital worlds are highly constructed spaces, but they cannot be isolated from the viscid contexts of relationality. Digital worlds are relational. They are both the output of human capabilities and key fields of human experience. The rhetoric of VR and videogames, like many discussions of the virtual, cyberspace, digital, etc., often fails to recognize relationality, spatiality, and this dialectical entanglement. Digital worlds, as with all space, are "always partial, necessarily contingent, purposive (if not purposeful),

unbounded, and never separated from [their] concrete, material, historical circumstances” (Kobayashi, 1989, p. 170).

Following my theoretical overview of the digital, I emphasized that VR and videogames have common challenges. This is because they both foreground immersion, presence, or being there through taxonomies and by using medium-specific definitions. Moreover, immersion tends to be positioned as something of the mind – rarely have human subjects using their bodies with objects in spaces been accounted for in creating immersion. Even rarer has a preference been given to the personal voice of those human subjects who engage with so-called immersive technologies in research settings. To counter these assertions, I suggested other relational and irreducible contexts of videogaming that were also applicable to VR. In short, bodies are lively, and subjectivities engaged in videogames and VR.

I suggested the term *immersivity* as a way of not abandoning terms such as immersion completely since they exist as forces in the world, but instead rethinking their relations as irreducible to their various social, cultural, and technical collisions. Rather than immersion fitting to a narrow subset of technological specifications, *immersivity* suggests that all sorts of various configurations matter. The space one plays in, who one plays with, the types of gaming devices, the design of a digital world, past experiences all matter in enabling or constraining engagement in digital worlds. I do not believe one study can do justice to all of these matters. *Immersivity* is just one way of trying to hold all these elements in tension. I see *immersivity* as a provisional or speculative architecture of digital inhabitation. It is something to strive towards. It is a hope for analyses that do not take for granted the social, cultural, and technical labours in being

within digital worlds. The norms of being there in digital worlds are quixotic. Reworking and reimagining what immersion can be is important to change and direct VR towards more just, applicable, and practical outputs in research or otherwise.

Chapter 3 was both an outline of the methods (as tools and procedures used) and a commentary on the methodology (the rationale behind these configurations). I employed methods that attempted to centre the play and experience of VR users with a contemporary HMD and VR videogame that is not restricted to a university laboratory but already accessible to mass audiences. Chapter 3 serves as a foray into imagining the future of VR research. As new devices become available, more researchers will employ them as tools beyond the narrow set of frameworks and disciplines that have dominated VR research for the better part of 25 years. Throughout Chapter 3, I explored some of the deep technical challenges and offered a few considerations for the newcomer to VR to consider if they plan to use it as a research tool. In short, I suggested proceeding with caution, to test devices often and before carrying out any research, and to employ an iterative/flexible methodology when possible.

Alongside the hybrid playing interviews, I hoped to develop a drop-in VR session hosted in a public space to collect additional data. The logistics, safety, and privacy concerns became insurmountable for one solitary researcher to manage in a small 6-8-month timeframe. I also anticipated more participants to take part in the hybrid playing interviews because (naively I realize now) I thought VR was exciting and interesting. My expectations were shattered when a student told me that they have access to dozens of research projects they can participate in. These projects give kickbacks for students (such

as in-class credit or gift cards for retailers such as Amazon or Starbucks). My study offered no such reward, so VR was not necessarily a strong pull to participate.

Overall, I felt I took a balance between new and old styles in trying to deploy my methods. I used a play itself, albeit in a controlled setting, to let interested participants engage with a VR videogame. Each hybrid playing interview was genuinely deep and reflective, participants were eager to use VR and to talk about it. If I were to expand this methodology, I would focus on using a media diary format. As one example, with additional funding and research assistants to help administrate and train participants, it would be exciting to provide VR head mounted displays to participants to use over an extended period while keeping a diary of their experiences.

Chapter 4 represents the culmination of immersivity and the methodology through the analysis of the hybrid playing interviews. Chronicling the spaces and reflections of VR videogame play, Chapter 4 is a dive into some of the irreducible encounters and interactions my participants and I had. I showed how conversations themselves occurred during play, which charted the in-situ sense-making that incorporates not just the digital world but other elements – myself as a researcher undoubtedly. I argue that this does not break immersion because incorporation is expected if not valued in immersing oneself in a digital world (e.g., helping participants with navigating the play space or learning game mechanics).

Chapter 4 also exposed how immersion was something far less rigidly understood as one term but through many different articulations and geo-historicities of participants. Participants had complex ways of explaining how they inhabit a digital world that were much less static or in on/off binaries than terms like immersion, presence, or being there

suggest. “Being there” exceeds the digital world itself because it relies on past experiences and its connection to the analog body in the world. Emotions too were less obvious. What participants counted as emotions certainly do not suggest that one can suddenly and readily be emotionally charged in VR more than any other kind of media. Finally, the moral and ethical speculations that participants suggested showed how they connected their prior understanding of videogames to VR. VR cannot escape decades of experience with digital worlds built up well before any individual has tried VR specifically. The significance is in asking what we bring with us to VR and how does this (re)mediate its effects and how we encounter its affordances.

The thrust of Chapter 4 has been to make apparent how VR and the inhabitation of digital worlds are connected to previous experience. My principal goal has not been to develop immersive ubiquity, which is so often the praise VR as a technical system, but instead, the unsystematic and unfinished ways in which feeling part of digital worlds is achieved. Immersion or any of its synonymic counterparts are fragile achievements. These are also far from the only meaning VR might engender. What might happen when we deprioritize immersion as the being and knowing bases of VR? Anna Anthropy (2012) has critiqued videogame design for ignoring experiences beyond the traditional white male gamer, repeatedly using similar aesthetic and design choices, and prioritizing unreasonably technically demanding development over simpler game design accessible to different skill levels. Many, if not all, of Anthropy’s critiques will need to be thought of going forward as VR development continues to grow. Tackling immersion is at the heart of this, what it means, what it does, and what its ongoing value is (or not), will be crucial for the medium.

Contributions and Limitations

There several limitations to this whole project. As I expressed earlier, it would have only strengthened the analysis to have more participants and to possibly have a secondary point of data collection (a different setting for engaging with VR than the hybrid playing interviews). These are partial and limited perspectives, which I have emphasized. In the coming years, it will be interesting to see how readily VR is adopted and if it will become as ubiquitous as other technologies like gaming consoles or smartphones. My early investigations serve as a small foreground to a still uncertain future of VR. If my argument that immersion is an ongoing reiterative process is correct, then staying with what it does and means will be challenging. This thesis only covers modest ground with respect to the total discourse of VR and how it clings to terms like immersion. Interviewing VR developers, artists, enthusiasts, other creators, hobbyists, live streamers, etc. will also be crucial to understanding the value of VR and engagement with it. Overall, I argue this thesis is important in adding a concentrated qualitative and non-grandiose focus. This is vital at a time when VR is once again being lauded as the ultimate medium.

On a more abstract level, a limitation I recognize is the theoretical medley I have deployed. This is both a strength and a weakness. I approached this topic in a wide-reaching way. I was trying not to operate solely within my home discipline (geography) when thinking about what is “digital,” “videogames,” and “VR.” By reading heavily in game studies, new media, communications, geography, VR research, and various critical social and cultural theory works, I do feel some concern over whom I am aiming to speak to. Who is the audience of this thesis (beyond my generous committee members)? This is

an exasperating question but one that I think will tease itself out by turning some of this work into publications or conference presentations (or at least trying to). The audience, for me in broad strokes, is whoever wants to read about VR from a critical social science perspective. The spatiality of VR is inflected throughout my writing, especially through the prioritization of more relational assemblages of bodies in worlds. As VR continues to make its comeback, geographers specifically will need to work on the edge of the discipline to discuss the diversity of ways that VR is being deployed. This is a great liminal space to operate in when discussing technology and media.

This thesis provides a few contributions and ongoing provocations. Firstly, I see this thesis as an important methodological exercise. Scholars broadly invested in the study of media need to take on the challenge of using VR in research projects beyond repeating what already existing VR research labs are doing and without using their preferred methods (questionnaires, surveys, biometrics, etc.). Some of the work I draw on throughout this thesis has already begun this work. Additionally, other scholars are undoubtedly in the thick of research or writing up results at the time of my writing. Putting yet to be published perspectives aside, as the VR industry continues to expand so should non-industry funded research of VR be supported. Scholars should be skeptical about the use of VR as a tool and how it is deployed in research methodologies. This thesis provides, albeit partial, one such example of using the medium to test its limits and provide avenues for study beyond the established paradigms of VR research. In short, scholars critically studying media have vibrant contributions to make in future VR research in developing novel methodologies and refining ethical frameworks for study.

Secondly, geographers and game studies scholars have just scratched the surface in engaging with VR and videogames. Ash and Gallacher (2011) wrote of a “need to carry out further, detailed investigations into the materiality of the different interface devices that allow users to engage with particular videogames and videogaming platforms” (p. 362-3). This thesis is one example of trying to meet this suggestion. As Jones and Osborne (2018) put it, virtual landscapes of all kinds matter “because they have a material impact of what we think and do” beyond the confines of their intended design (p. 18). Digital geographies concern with “collective understandings” produced by engagement with the digital is compatible with a broad set of scholars adjacent to geography. Both game studies and digital geographies are wide interdisciplinary research pools and I suspect their collaborations are only in their infancy. This thesis was my attempt at reading into and applying a different reach on the topic of VR and videogames.

I see immersivity as an attempt at thinking through how both players and games are co-extensive. Immersivity might also mean how we play with digital inhabitation itself and what that means. Videogames and their interfaces are organized to try and generate particular outcomes, activities, and forms of attention (Ash, 2015). Moreover, videogames are not easily suspended into a discrete virtual or actual binary but full of irreducible contexts and sometimes contradictions arising in player’s situated and embodied engagements across various bodies and worlds (Keogh, 2018a). Immersivity or thinking of the performative force that digital worlds have is of the utmost importance as these worlds have become a regular part of everyday life for many. We should play with immersion too as if it were any other feature in a videogame or VR experience.

Future Research Directions

My modest contributions flow into what I see as a few productive future research directions. Methodologically speaking VR has potential. Geographers and game studies scholars, in particular, have a lot to contribute to thinking about engagement with digital worlds in VR and developing ethical guidelines for its use both within research contexts and beyond. VR presents itself as a spatial device that is capable of generating powerful somatic responses and conscious reflection. As communities of practice, geography and game studies should capitalize on this and combine existing and nascent spatial and player-centric approaches to all kinds of playable medias.

More research might examine how VR and other adjacent technologies methodologically create “wicked tensions” in what kind of data is collected and how it is interpreted (for example, VR eye tracking and gaze data) (Leszczynski, 2017). VR might also relate to ongoing considerations of digital-visual methodologies where VR’s visualities are either the object of study or used as a technique for collecting, exploring, analyzing, or even sharing research results in new ways (Leszczynski, 2018). For example, at the 2019 American Association of Geographers’ annual meeting, VR was used during a field trip to juxtapose a visited landscape with a digital rendition of that space in VR. In short, VR is a potential tool and may present itself as a methodologically productive way of exploring spatial phenomena.

Another future area will be examining the spaces of social VR. To date, Social VR is dreadfully understudied yet social VR applications like *VR Chat* or *AltSpace VR* are incredibly popular amongst VR users. Oculus (Facebook) recently announced its own social VR application *Horizons*. *Horizons* is described as the “ever-expanding world of

connection and exploration where anything becomes possible” (Oculus, 2019, n.p.). Rachel Brydolf-Horwitz (2018) has already demonstrated how cyberbullying and online harassment generate “embodied harms” and unsettle previous understandings of geographic proximity and violence. The Anti-Defamation League (ADL) also produced a white paper on “hate in social VR” which indicates already existing issues and paints a cautionary tale of social VR’s future potential (ADL, 2018). Paying special attention to power dynamics and potential harm in social VR will be of paramount importance. VR offers different affordances for sociality in multiplayer settings. A wealth of already existing research of online communities might be applied to social VR to examine potential differences and similarities.

Finally, contemporary VR is being advanced in conjunction with what has been called platform capitalism. Nick Srnicek (2017) describes platforms as various instruments that extract user data by offering infrastructures that not only curate interaction between groups in some way but “monitor and extract all the interactions between these groups” (p. 254-55). Jathan Sadowski (2019) has argued that data is a form of capital—that is we are seeing an evolution toward a “new kind of capital and new methods of accumulation” via big data (p. 9). Alister Fraser (2019) remarks that in everyday digital life many of us have become the curators of data for these increasingly monolithic platforms. VR uses particular gestures and bodily movement as central parts of its interface, which allows for new forms of potential data to be extracted. Future research must reckon with VR in the age of the platform and data capitalism. If VR is transfixed on being a tool for generating empathy or having enhanced embodied engagement with media, then critiquing how platforms leverage VR as a way to collect

data and turn it into something of value is warranted. It will also be important to ask whether or not technologies like VR have been successful because of their integration with platforms.

Concluding Remarks: Taking off the Head Mounted Display

My sustained argument in this thesis has been that obsessing over the typological and techno-centric differences between immersion, presence, and senses of being there are pointless unless these categories describe material things, practices, and foreground the agency of those engaging with specific technological configurations. What counts as immersion, presence, or being there should not hinge on predetermined technical forms. Instead, it should orient technical forms toward desired cultural, social, and political outcomes. VR exists within the digital dispositif: the “discursive and material practices that interact in relational, contingent and contextual ways to shape the design, deployment, normalization and use of digital technologies in ways that serve and sustain particular kinds of interests” (Ash et al. 2018a, p. 37).

It is not necessarily that VR is inherently good or ultimately bad but how it is a product of these relations and practices. VR has been set loose unto the world and it provides yet another technological platform for which to make sense of being in the world in varying ways. As Benjamin (2018) puts it, “the lenses are no longer metaphorical” (p. 171). My own experience of mainstream VR has been marked by different feelings of excitement and discomfort. For example, many HMDs are uncomfortable as they put pressure on my prescription eyeglasses or suggest not using glasses at all (which is a non-starter if you have diminished vision). At certain points during the research I have confided in others, telling them that the longer I use VR the

more I want to escape from it. Alternatively, I have found VR applications like *Nature Treks VR*, which provides a simulated nature space meant for meditation or reflection, quite enthralling and even soothing.

Throughout this thesis, I have kept a journal storying some of my interactions and encounters with VR. In my first journal entry for the aforementioned *Nature Treks VR*, I described different states of how I felt immersion either during interacting within the space or simply closing my eyes altogether and focusing purely on the sound. This is what immersivity is meant to do: provide a different way to examine experiences in digital worlds that focuses on effects not as additions or subtractions of rigidly defined technologies/mechanics/features but as ongoing affordances across a wide set of subjectivities engaging in them. To say digital inhabitation is “performatively constituted” calls into question the grooves being formed in the digital dispositif – being there is “not intact prior to the expressions and activities” *we take to be* immersive expressions and activities (Butler, 2010, p 147).

This thesis has called attention to the performativity of being inside digital worlds. I have attempted to call into doubt presumptions of technologically induced immersion, clean splits between the digital and the actual, the separation of VR and videogames forms, and the stability or foundational nature of “being there” when using VR as a kind of guarantee. I am indebted to many different authors for trying to tease out this idea. VR is consistently being framed as a tool for both capturing and modifying life. This remains the most pressing issue not just for VR but the larger picture of our digital lives. VR is not the last medium, it does not stand alone from the wider social moment, and it is not the only formation of digital space today. It is one digital space among many.

I have one final hope and provocation – that many different communities continue to challenge, assess, poke and prod the vastly taken-for-granted power of feeling as if one is inside or meaningfully part of a digital world. I hope numerous communities continue to speculate, articulate, and create new digital worlds, and in that process reimagine what it means to be part of digital worlds for a more liveable digital present.

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Appendix

Appendix 1: Participant Information

Pseudonym	Gender	Approximate Age	Used VR Prior to Study	General Info
Ainsley	Female	Mid 20's	No	Young professional
Amy	Female	Mid 20's	Yes	Young Professional
Andrew	Male	Mid 20's	No	Student
Brad	Male	Late 20's – Early 30's	No	Young Professional
Chris	Male	Late 20's – Early 30's	No	Young professional
Franklin	Male	Late 20's – Early 30's	No	Student
Grant	Male	Late 20's – Early 30's	No	Young Professional
Janet	Female	Early 20's	Yes	Student
Jasmine	Female	Mid 20's	No	Young Professional
Josiah	Male	Late 20's – Early 30's	No	Young Professional
Moe	Male	Late 20's – Early 30's	Yes	Student
Robert	Male	Mid 30's	No	Young Professional
Sam	Male	Early 20's	No	Student
Sara	Female	Mid 50's	No	Retired
Tamy	Female	Mid 20's	No	Student

Appendix 2: Interview Guide

VR Background and Experience

- (1) Have you ever experienced or used VR before today?
- (2) If Yes When did you first experience VR? Do you own any VR devices? Have you ever visited a VR arcade? What are your preferred VR experiences?
- (3) Do you think virtual reality is becoming more popular in your day to day life? Why or why not?

VR Session and Content

- (1) What do you think of the headset? How did it feel to wear it and use it?
- (2) What do you think of controller and how it is used in the VR experience you had today?
- (3) Were there any challenges in the VR experience you had today?
- (4) How would you describe the landscape or setting in VR experience you had today?
- (5) How 'realistic' or 'authentic' did you find the VR experience you had today?
- (6) When thinking about realism and authenticity how does the VR experience you had today compare to other forms of media you engage with?
- (7) Can you describe any emotions you felt while playing today?
- (8) Are there certain experiences or elements you felt while playing today led you towards stronger emotions or more engagement with the game?
- (9) What did you find most enjoyable about the VR experience you had today?
- (10) What did you find the most unenjoyable about the VR experience you had today?
- (11) Would you consider using VR again after your experience today?
- (12) Did you feel that there were moral or ethical considerations in the VR experience you had today?
- (13) Do you think there should be more moral and ethical considerations in VR in general?

Appendix 3: Sample Poster for Advertising Study



Interested in Virtual Reality?

We are looking for participants interested in playing a VR video game and being part of interviews. This research is focused on popular culture and experiencing virtual worlds. Use the contact information below to let us know if you want to take part! *You must be the age of majority in British Columbia to participate (age 19).

Contact

[Redacted contact information]



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