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Narrative Transportation and Virtual Reality: Exploring the Immersive Qualities of Social Justice in the Digital World

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NARRATIVE TRANSPORTATION AND VIRTUAL REALITY: EXPLORING THE IMMERSIVE QUALITIES OF SOCIAL JUSTICE STORIES IN THE DIGITAL WORLD

by

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ABSTRACT

This dissertation explores the potential applications for virtual reality (VR) stories in support of social justice causes, examining whether digital games historically been successfully leveraged for social justice purposes, and determining which components of VR technology can most encourage narrative transportation of participants in VR stories.

The first chapter examines theories of simulation, virtual reality, narrative, and interactivity, as well as concepts of immersion from various disciplines and settles on narrative transportation, a theory from cognitive psychology, as the most useful in measuring the effect of VR stories on participants.

The second chapter examines ethnographic practices, activist games, and modes of reclaiming digital spaces as a way to encourage digital social justice and ensure traditionally marginalized communities have meaningful access to technology—or, the tools to use it, create with it, and critique it.

The third chapter presents the result of a play study conducted to measure participants' transporation in a recent VR narrative and finds VR interactive narratives to be more transportive and engaging than their two-dimensional counterparts.

The fourth chapter interrogates some of the fears of VR technology, namely that it will be used to further current societal injustices and as a potentially powerful propaganda tool.

The final chapter presents five recommendations for designers seeking to experiment in virtual reality narratives. The ultimate aim of this work is to encourage scholars, designers, and participants to make ethical decisions in the creation and use of virtual societies.

To my family and friends.

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Introduction: Why Don't We Tell Interactive Stories in Virtual Reality?

Story-driven games have, so far, been remarkably difficult to effectively create for virtual reality (VR) platforms. A Steam search as of February 2018 yielded only 17 results for games tagged as both "VR only" and "Story Rich," indicating that VR, as a new technology, has perhaps not had the chance to develop the types of narrative games we see in non-VR digital media. As the list of VR story rich games includes works ranging from an IKEA pancake making simulation to an immersive documentary, even a cursory glance at the list reveals that several items on it are either films rather than games, or are simulations containing no story-driven interaction. The description for *Archipelago: Navigable VR Comic*, for example, very prominently states that the work is not a game: "It is intended to be a family-friendly story world, suitable for all ages. It is NOT A GAME" (Steam Store, emphasis theirs). This situation has not changed much in the past year. With this lack of VR stories in mind, how can we explore the potential of VR games to tell diverse and exciting social justice focused stories? As I explored possible games in January 2017 for use in the play study described in Chapter Three of this dissertation, I was not entirely surprised at the lack of VR games with justice- or ethics-based themes; VR is, after all, a relatively new platform and, as I will explore below, the even the market for non-VR justice-based games is relatively small. I was, however, surprised at the lack of VR works that were both narrative-driven and involved enough interaction to be called "games." Following my search, I choose a game called *The Price of Freedom* for my study, which I will discuss later, but which remains as of this writing the only story rich VR game listed in Steam with justice themes. As

I searched, I wondered where this dearth came from, and identified several possibilities. First, new technology often enters the scene with a focus on procedure. We wish to explore what it can do, and to gain funding for new projects we often have to show innovation: why it is flashier and better than the technology that came before it? Procedure-driven games further lend themselves better to brief demonstrations at tradeshows and conferences, where the most popular new technologies attract long lines of interested designers and players and the time to get involved in an in-depth narrative is limited. Designers, perhaps, do not see narrative as the most exciting avenue for pushing the limits of technology and wowing audiences, because stories are an old form of entertainment that were important even prior to the development of written language. As Walter Ong states, "Behind proverbs and aphorisms and philosophical speculation and religious ritual lies the memory of human experience strung out in time and subject to narrative treatment" (137). The tradition of the Homeric poets shows that storytellers do not *need* any technology to weave an engaging narrative; the beauty and universality of narrative is such that a voice, or even written text, is a perfectly appropriate vehicle. Thus, designers have focused their first forays into the new technology on more procedural genres of entertainment: simulations, puzzle games, sandbox experiences, and immersive film and comics. Perhaps there is an industry belief that VR technology is not conducive to story creation, but it is more likely that the AAA game design business model does not leave much room for the development of narrative rich games on any platform, much less something as experimental and with as small a market share as VR. I predict we will need to rely on independent (indie) developers to experiment with the platform, as we have relied on them to expand the limits of non-VR gaming—and the fact *The Price of Freedom* is designed by the indie Construct Studios supports this prediction. First efforts by AAA studies, in contrast, must be relatively easy and quick to turn out, as well as able to be

shown off in brief sessions at conferences and festivals. Creating a narrative game within a developed story world becomes a passion project left to independent designers once the technology has become accessible to those beyond the highest levels of the industry.

Certainly, story rich justice-themed games can and will be made for virtual reality. As we have seen from the myriad interactive two-dimensional narratives, like the natural language game *Façade*, the text-based *With Those We Love Alive*, and the refugee story *Darfur is Dying*, designers create experiences that players find moving but over which they also feel they have some amount of control in the development of the storyline (though, as noted later, justice-based games often foreground the removal of participant control as a theme). For example, the creators of *Façade*, a game in which a simple dinner party can have a multitude of outcomes depending on the player's input, write in their vision statement, "In addition to the very local, in-the-moment agency of games, we want the player to experience global agency, that is, real influence on the overall story arc, over which topics get brought up, how the characters feel about the player over time, and how the story ends." However, creating the type of interactive narrative described by the *Façade* creators requires a convergence of procedure and storytelling so far un-witnessed in the virtual reality space.

With the current lack of experimentation in the realm of virtual reality games supporting social justice causes in mind, this dissertation explores the potential applications of VR narrative games for social justice, examining whether digital games have historically been successfully leveraged for social justice purposes, and determining via a VR play study which components of VR technology can most encourage narrative transportation of participants in VR stories. This is accomplished though the examination of the following research questions:

1. What defines a work as a virtual reality narrative game, and how might we understand VR narratives through the lenses of simulation, games, and immersion or transportation? How do current works in VR fit within or fall short of this definition?

2. How have non-VR digital games been utilized in the past in support of social justice causes, and are the current models transferrable to VR?

3. Are VR games more transportive than their non-VR counterparts, and does that transportation encourage belief change within participants that might be leveraged in support of causes?

4. The fears and dangers associated with VR—which include getting lost in the virtual world, and perpetuating socio-economic inequalities in the virtual world—have been explored in fictional works. Are these dangers unavoidable given the transportiveness of the VR medium?

5. How might designers use what we know about virtual reality and its transportive qualities to make ethical design choices in support of social justice causes?

As part of delving into these research questions, I will first explore what constitutes a virtual reality narrative game in our current understanding of the medium and will later take a futuristic view of the potential possibilities and hazards of creating immersive content within VR. Ultimately, using the results of a play study centered around a VR narrative, I argue for five design considerations that will aid in creating virtual reality narrative games that can aid social justice causes. To begin this discussion, I will examine, in this first chapter, theories of simulation, virtual reality, and interactive narrative, settling on definitions for these terms that will be useful in the further analysis of and recommendations for VR games: virtual reality narrative games are dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story and transport the participant. I will then explore

concepts of immersion from various scholarly disciplines to ultimately argue that narrative transportation, a theory from cognitive psychology, with its focus on how stories encourage emotion free from distraction, is the most useful in measuring the effectiveness of interactive narrative virtual reality games on participants. Finally, I survey the current landscape of VR story-driven works and games to argue that the unrealized potential to create narrative-driven games in VR that are also meaningfully interactive relies on a framework for agile and immersive narratives that include an emphasis on justice-based stories that are supported by the procedural rhetoric of gameplay. The goal of defining and outlining this framework will be to inform discussions in later chapters on the ethics and challenges of creating such narrative experiences, given their proven potential to effectively transport participants. That said, some brief mention of how these ethics and challenges are approached in the literature is offered here as an introduction to the issues.

How the Ludology and Narratology Binary Affects the VR Conversation

My definition of virtual reality narrative games—as dramatic interactive simulations—relies on the successful combination of narrative and procedural elements, and it may therefore be beneficial to situate myself and this definition within one of the primary debates in game studies, ludology versus narratology. My argument that story-driven games can be leveraged for social justice causes may remind readers of the early games studies debates over where games fit within disciplinary academic boundaries; given that I draw upon literature from multiple disciplines in my research and play study methodology, it is important to consider where this argument first began, and what it means for arriving at a salient definition of VR narrative games that can be useful for both designers and scholars interested in pursuing work in the medium. In his early game studies text, “Genre Trouble,”

Espen Aarseth lays the foundation for the critical narratology/ludology debate about the purpose of games. On one side of the debate, narratologists claim that computer games are another form of media for delivering stories, like film and printed literature before them, and can thus be studied like texts. On the other side of the debate, ludologists claim that games and stories are distinct cultural genre, with games being driven by the procedural technology that creates them. According to Aarseth, the academic treatment of games as narratives stems from an attempt to make them into “high” art. Rather, he argues games are simulations at their core, and even those that combine narrative and play (like adventure games), use simulation as a bottom-up strategy. He states, "It is time to recognize simulation and the need to simulate as a major new hermeneutic discourse mode, coinciding with the rise of computer technology, and with roots in games and playing” (“Genre Trouble”). Aarseth concludes with a call to action for games scholars to create their own academic space, rather than allow games to be subsumed into other disciplines like literary textual analysis and film studies.

Aarseth’s initial essay sparked debate in game studies, with scholars like Stuart Moulthrop publishing responses and taking issue with some of Aarseth's claims. While Moulthrop, in “Stuart Moulthrop’s response,” agrees with the need for game studies to represent its own discipline, he does not agree with Aarseth’s affirmation that games like chess are not intertextual, and that they operate completely using internal logic—a point on which I also disagree with Aarseth. Moulthrop states, “…such an approach reduces chess to a series of abstract transactions, which may work well enough for mathematics but seems far too narrow for any serious cultural critique” (“Moulthrop’s response”). Furthermore, as shown in literature on player presence and narrative transportation, game narratives have the power to evoke player emotions that are similar to the effects of a physical experience. While the narrative and gameplay operate on internal logic dictated by the platform, the effects of

the narrative, as proven by the play study performed later in this dissertation, can be used to evoke sympathy for physical-world people and causes. Because I am, in particular, examining the possibilities of interactive narrative using virtual reality technology, it might be correctly assumed that I agree more readily with Moulthrop's stance. However, I also recognize the ludological constraints VR imposes on narrative. As designer and interactive narrative scholar Chris Crawford states in his response to Aarseth, "Just as a flight simulator must be true to the laws of physics, so too must an entertainment product be true to the laws of drama" ("Crawford's response"). VR is part simulation, as I will discuss below, and part drama. In fact, as I find in Chapter Three, participants in a VR narrative felt participation in the simulation (e.g., the realistic virtual setting) was an integral part of the narrative drama and essential to their enjoyment of the story, and they often tested the physics of the world as part of their exploration of the narrative. Crawford settles on an important distinction and interplay between a game's ludology, or procedure, and narrative, or drama; when we play, we often expect equal parts of both (and, as I will discuss below, physics in VR is particularly important when considering the potential for simulator sickness in participants). With this in mind, and guided by the responses of these participants to VR stories, I thus find myself for the purposes of this research taking the stance of a fourth—and the most VR-focused—scholar, Janet Murray, on the debate. Murray notes, "Those interested in both games and stories see game elements in stories and story elements in games: interpenetrating sibling categories, neither of which completely subsumes the other" ("The Last Word"). In other words, I consider the ludology/narratology binary unhelpful for the purposes of defining and understanding virtual worlds and their effect on participants' emotions and will therefore examine both the narrative and procedural aspects of VR technology along the spectrum they

deserve, viewing them as concurrent vehicles with which designers can create meaningful experiences for participants.

How the Ludology/Narratology Debate Extends into Virtual Reality

As this dissertation offers a discussion of virtual reality games and their potential impacts on their participants[1], I first explain how the terms, virtual reality, interactivity, and narrative, are defined and used within this dissertation in relation to each other. Recent research by Thomas Elsaesser identifies issues with defining the terms "virtual reality" and "interactive narrative" that reveal the tensions inherent in these now common terms. These issues extend into the debate between narratology and ludology, as they show how procedure and narrative are often considered as opposing forces, but the terms must also must be taken into consideration in a discussion of VR narrative games. In a 2014 paper, Elsaesser questions the logic behind the terms "virtual reality" and "interactive narrative" as a follow-up to examining what he views as oxymoronic terms in the field of film studies, "(multimedia) convergence" and "digital cinema" (296). He sees these terms as essentially contradictory; in the case of VR, he cites a "dilemma of the virtual not being definable in opposition to realism" (298), while in the case of interactive narrative, he the term "confuses narratives with games, and interactivity with non-linearity" (302). However, because both of these terms have entered the common vernacular, Elsaesser states, "their constitutive parts must form a unity at a different level, which is why our task will be to find a conceptual register that can reformulate or articulate this unity" (296). For the purposes of this analysis, I

[1] I often use the term "participants" in place of individuals using technology and where other authors might say "players" or "users." I make this distinction because "player" and "user" connote a one-way relationship to technology. As I will explore below, an agile interactive narrative requires communication between the technology and the individual (see Bogost and Crawford for deeper explanations of this interaction). Thus, the individual participates in narrative creation, rather than consuming a predetermined story.

will first examine the term “virtual reality,” and will then examine “interactive narrative” before combing the two to create what I argue as the definition of interactive VR narratives: dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story and transport the participant.

Heavily leaning on Klaus-Peter Beier’s definitions of VR, Elsaesser defines three parameters of virtual reality, the first two of which follow analysis by scholars like Murray and Marie-Laure Ryan. First, VR can represent or simulate real worlds. Secondly, VR can make “visible and representational that which is either invisible to the human eye or does not in situ qualify for visualization, such as statistical or dynamic processes” (297). Elsaesser’s most contradictory point, however, is his third parameter, in which he declares artistic works and entertainment objects as “afterthoughts to the much more directly ‘useful’ applications in the military field, in architectural design, medicine, and astronomy” (297-8). VR games could be seen as representations of real worlds, but it seems more likely that games join film in the third group of objects that, according to Elsaesser, benefits from VR only as a consequence of the development of the technology for more practical purposes (297).

Virtual Reality Is Dramatic Simulation

First, I would like to note some of the links between scholarship on virtual reality and fictional narratives focusing on the effects of virtual reality, because this dissertation explores the effects of stories on the reader. It is, therefore, important to mention the effects of virtual reality on society as displayed in fictional literature—such as *Snow Crash* and *Ready Player One*. Each of these fictional stories deals with what the authors see as the near future of VR, positing that the technology will become not just a hobby, but an essential part of life and extension of the physical world; in each text, for example, aspects of VR avatars such as their

appearances or abilities, can signal realities about the players' socio-economic statuses. Discussing his avatar and how it signifies his low physical-world social status, the main character, Wade, states, "My avatar was wearing a black T-shirt and blue jeans, one of the free default skins you could select when you created your account" (Cline 29). In *Snow Crash*, entering the virtual world through a public access port similarly signals low social status on the part of the user, and in *Ready Player One*, virtual currency becomes more stable than the world's physical currency. In our current society, even owning or being able to access new technology like a VR headset could be seen as a symbol of socio-economic status, and the ability to make in-game purchases in video games often enhances the player's ability and experiences, so the fact that access to technology becomes an increasing source of social and economic division in dystopian fiction is not a surprise. Though I will explore the ethical and theoretical implications of virtual reality and technological access (or lack thereof) in later chapters, I use the fictional examples here to identify the imagined future of virtual reality that I, and other scholars, caution against even while arguing for new and ever more immersive forms of interactivity. However, before jumping into what the future of the virtual might look like, we must still interrogate what "virtual reality" games actually are. As Elsaesser states, VR can represent or simulate the real world, but can also represent or simulate processes that are not otherwise visualized in the real world (297); further, Elsaesser points to a devaluing of artistic or entertainment works in VR (297-8). In the case of games, I confirm that they can simulate the real world. Many VR (and non-VR) games attempt to mimic real-world physics. The might also simulate processes that are not otherwise visualized in the real world. In Google's *Tilt Brush* (2016), for example, the participant paints in a three-dimensional room-scale setting, and can set the paintbrush to "paint" with various dynamic textures, like stars and fire. Furthermore, the participant can zoom into and out of

their creations, changing their perspective on a work in ways that would be impossible in a physical setting. While the basic controls and physics mimic painting in the physical world, the simulation allows for these extras that, while impossible, still behave in a logical physical manner. Thus, Elsaesser's first two points are confirmed. However, though VR has not been used to create many artistic works yet, I disagree that entertainment works have been devalued. Rather, I find entertainment works are beginning to come into prominence, and for that discussion I turn to Murray and Marie-Laure Ryan.

Murray and Ryan are two of the most prominent scholars that I place in the area of VR scholarship that deals with artistic or entertaining works, as both focus on narrative and storytelling in virtual reality. Both Murray and Ryan offer the idea of VR as an ultimate storytelling vehicle, a concept this dissertation tests by examining the participants' experiences within and responses to VR narratives. In Murray's eyes, we have already conceived of (though not realized) the highest form of virtual reality, the *Star Trek* holodeck, in which people can retreat in a dedicated room to play programmed stories and scenarios. Our technology simply has not caught up to it. The holodeck does not replace all other forms of media entertainment for characters in the *Star Trek* universe; it replaces TV but supplements pastimes like books and music, allowing the participants to explore feelings and emotions while being relatively entertained and active in what should be a safe environment. It should be noted that the safety of the environment is often subverted in the plot of the show, a storyline that perhaps reveals our underlying fears of the medium. Meanwhile, for Ryan, narrative itself, regardless of the technological medium, can function as a sort of virtual reality if the user is effectively immersed. I will explore Murray's and Ryan's concepts of immersion below in relationship to the idea of narrative transportation. For now, I turn to Murray's four essential properties of digital environments as means of understanding

what virtual reality narrative games are. Murrary states digital environments must be, firstly, procedural and, secondly, participatory, meaning they will have understandable rules that guide processes and that, by understanding these rules, we can induce the desired response ("Hamlet" 72-4). They must, thirdly, be spatial, meaning they must be navigable by the participant ("Hamlet" 79). Finally, virtual environments must be encyclopedic, meaning they able to extend the limits of human memory ("Hamlet" 83). She calls her first two properties interactive, and her second to properties immersive. Here, we can see how Murray's definitions extend Elsaesser's, though she defines the medium well before his essay. While Elsaesser focuses on the simulation of the physical, Murray leaves the simulation aspect a bit more open. The procedural portion of the simulation, in my reading of Murray's definition, does not necessarily have to follow physical-world rules, it just so happens that those rules might be the most initially understandable by the participant who is entering the world with prior understanding of how their own body and movements 'should' operate. Digital humanist Elizabeth Losh places Murray—along with Sherry Turkle and Brenda Laurel—at the forefront of feminist theory in game studies that later went on to explore issues such as literary theory's application to technology, programming, embodiment, and labor (Losh 8); in Chapter Five I will explore how that legacy of gendered inquiries into technology can help us understand and challenge how we use virtual reality for entertainment, education, and professional development while still remaining committed to equality, particularly in a medium with a potential to make participants physically ill. Because I agree with Murray in that VR must entail some sort of bodily enactment, I have used the word "dramatic" to describe and define VR narratives. In my definition, interactive virtual reality narrative games are "dramatic simulations," meaning that what they simulate may not, in fact, be "realistic" but that the simulation follows some sense of internal procedural logic. Ryan's discussion of

the dreams and realities of VR supports this claim. Like Murray, Ryan notes "active embodiment" and "spatiality of the display" as two conditions of VR (52-3). However, she also agrees with Elsaesser in that the simulation itself becomes a narrative, because "Every action taken by the user is an event in the virtual world. The sum of these events may not present proper dramatic form—an Aristotelian rise and fall of tension— but because all events involve the same participant, they automatically satisfy the looser pattern of the epic or serial (episodic) narrative" (64). In identifying this simulation narrative that occurs between reality and the virtual world, Ryan draws an important distinction for the examination of VR games—that simulation and VR must be considered as separate but interwoven concepts.

For now, and for the purposes of defining virtual reality games, I simply differentiate simulation scholarship from virtual reality scholarship to identify how scholars like Murray and Ryan have taken ideas of simulation from critical theory to create more applicable frameworks for how we access and use technology like VR in today's society. For both Ryan and Murray, the power of VR lies in the ability of narratives to create extremely immersive experiences. Though discussions of simulation have certainly informed our understanding of virtual reality, the concept of simulation depends on an ideological re-figuring of reality, and can and has existed without the use of the headset peripherals we normally associate with VR. Ryan exemplifies this distinction when she states fiction is a virtual account of fact, and music creates "virtual time" (41-3). She further bridges this gap between the practical and the theoretical when she cites Baudrillard and argues that in virtual reality, simulation itself becomes the narrative. Baudrillard's identification of three stages of simulation culminates in the unseating of reality in favor of its duplicate representation, the simulacrum (1). Though Baudrillard identifies ways in which media—particularly war films like *Apocalypse Now*—

make use of simulacra to further the importance of representation over reality (41), he writes before the advent of digital technology, which limits the scope of his analysis. Ryan thus traces Baudrillard's progression of representation to simulacrum. She argues the evolution of virtual reality begins with its status as a reflection of a "profound reality" and ends with it masking "the absence of a profound reality" (29). Finally, it has "no relation to any reality whatsoever" (29). Because, as consumers of virtual reality narratives, we become immersed in and entranced by the virtuality of the world, we forget that, in fact, all reality is virtual. Thus, in a theoretical conception of simulation, ideology is the peripheral through which we view our altered reality. However, in my digital humanities exploration of virtual reality, technology is the peripheral via which we can start to measure the effects of VR stories and hopefully protect ourselves against some of the technological fears identified by scholars and fiction authors. Thus, I am focused in my definition of VR on participant responses to the narrative as portrayed in a technological simulation—i.e., the dramatic simulation—and how the ideas and emotions brought up by that participation might affect their physical-world notions of justice. If the dramatic simulation is indeed immersive, participants should not be focused on the narrative of simulation, but on the narrative game presented by the simulation. Though ideology and technology can and certainly do work together, as in the case in the previously mentioned dystopian fiction, we have so far not reached the critical point in which the world inside the VR headset overtakes the physical world in importance. Baudrillard's concept of simulation ends with film, though Ryan takes his argument to the next logical conclusion for VR. Other simulation scholars like Bill Nichols and Elsaesser, who was explored earlier, update the work Baudrillard and Walter Benjamin introduced into film studies for the cybernetic age.

Nichols' work is fairly straightforward in pinpointing the root of some of our fears about VR, and he shows how these fears might translate from simulation theory to the virtual world. Nichols writes, "Simulacra introduce the key question of how the control of information moves towards control of sensory experience, interpretation, intelligence, and knowledge" (630). These fears certainly show up in dystopian literature, particularly in *Ready Player One*, where entry into the virtual world means rendering the physical body incapacitated, unable to sense its surroundings, and therefore vulnerable to attack (and death, in extreme cases). Even the mostly-positive Murray addresses new technology with some amount of tentativeness, particularly in a 2003 essay, in which she states:

> The technophobic response is most clearly useful when it spurs us to question the uses to which we put technology and to guard against the dangers of abuse. . . .The critics of a technology are an important part of the development of a new medium because they challenge us to identify more clearly what we find so compelling about it, why we are so drawn to shape this new clay into objects that have not existed before. ("Inventing the Medium" 8)

Discussing virtual reality in particular, she expresses the common fear of getting lost in VR because it becomes too real, and laments a possible loss of narrative in favor of "sensation," or what she calls the "feelies" ("Hamlet" 17). Murray makes minor elucidations to these fears, but Ryan, like Nichols, explores them, as does game designer Raph Koster. Koster hopes virtual spaces can begin to "increase channels for empathy with others" (26), because, "The biggest bias in virtual spaces is against empathy" (25). He argues emotional content helps players behave better in virtual societies (28), and this is an important point to consider when examining people's emotional responses to VR narrative games. As I find in the play study, VR as a dramatic simulation can encourage emotional response, and if the emotional response can encourage people to behave better in virtual societies, it only follows that they might take some of that good behavior with them to the physical world, especially if the

virtual reality game that they are playing contains social justice themes. For this reason, I content, in my definition, that virtual reality narrative games are dramatic interactive simulations that *incorporate meaningful procedural choices* designed to advance the story and transport the participant. Storytelling literature, which I will discuss below, supports this point, but I will first turn to the portion of the definition that focuses on interactivity—meaningful procedural choices.

Interactive Virtual Reality Games Incorporate Meaningful Procedural Choices

To begin the discussion, I turn back to Elsaesser's critique of "interactive narrative" as an oxymoronic term, and I propose a definition of meaningful interactive narrative that encourages the growth of complex narratives and procedural choices in virtual reality. This definition follows my recognition for the need of an equally narratological and ludological approach, and further identifies the need for ever more complex procedural rhetoric to underlie those narratives and create the meaningful interactivity participants crave. Elsaesser supports this point when he explores his second contentious term, "interactive narrative." He states, "what commonly passes for interactivity in narratives is strictly speaking hyperselectivity" (Elsaesser 303), meaning that interactive narratives create an illusion of freedom, but that "the computer does not aid interactivity but leads in the opposite direction: to automated story generation" (303). While I agree that this tendency toward automatic story generation is the case in the current conception of VR narratives, non-VR interactive narratives like *Façade,* which I will discuss later in the survey of non-VR games, can and have created the type of freedom that extends beyond hyperselectivity. Elsaesser further identifies VR as following Walter Benjamin's film studies concept of the distracted attention experienced by cinema-goers (308), suggesting that "if such digitally interactive situations

are becoming the (social) norm, then we would do well to separate 'interactive' from 'narrative' after all, mainly by reinterpreting what we understand by narrative" (308). With this affirmation, Elsaesser seems to agree with game designers and scholars Crawford and Ian Bogost in that if interactivity requires communication between the participant and the game, there is still little in the way of meaningful communication between game narratives and their participants. In *Persuasive Games,* Bogost follows Crawford in his description of this type of interaction as "meaningful interaction," stating, "interactivity is judged on the quality of the listening, speaking, and thinking activity" (44). Further, Bogost argues, "the computer does a lot of meaningful thinking, but not much meaningful listening or speaking" (44). Thus, narratives are still only superficially interactive, and gameplay depends almost wholly on the procedural rhetoric of the underlying code. For my definition, I borrow Bogost's term "meaningful" to describe the type of interaction VR narrative games should aim for if they propose to be agents of social change, but I borrow it with the understanding that meaningful interaction is still a mostly unrealized goal.

That said, it still may be possible that what passes for interactivity in our current technological society—that is, the stories and games that allowed us to use the terms "interactive narrative" and "virtual reality" without questioning their logic—is enough to warrant a consideration of VR interactive narratives, their current role immersive media, and their potential as agents of social change. The study conducted as part of Chapter Tree of this dissertation explores how storytelling in virtual reality can contribute to participants' sense of transportation and immersion into the narrative and thereby alter their views on societal issues, so it is important to understand how complex stories are generally understood to, as Koster asserts and I alluded to above, improve society. In his scholarly graphic narrative, Nick Sousanis explores the interplay and limitations of images and language in

communicating stories and concepts, ultimately arguing they should impart meaning equally, or that "Seeing, much like walking on two feet, is a constant negotiation between two distinct sources" (31). Following Koster's emphasis on creating empathy, Sousanis argues stories "let us reach across time and space to share in another's viewpoint" (95). His work is important not only for its assertion of the importance of storytelling, but for the visual mode in which he portrays his argument. Using the distinct way in which graphic novels can show changes of perspective and the passage of time, Sousanis uses the image of Hermes flying from the earth in winged sandals to suggest, "A changed approach is precisely the goal for the journey ahead: to discover new ways of seeing, to open spaces for possibilities and to find 'fresh methods' for animating and awakening" (27). He further interrogates the dangers of creating habits and following them without reflection (110) and suggests that in stepping out of the habitual or typical "we open ourselves to aspects otherwise unseen" (113). Interactive narratives and virtual reality grant us the technological ability to combine visuals with stories in new ways, but we have so far not broken our storytelling habits, as "Here, even choices (of which there are seemingly many), are predefined. Forgotten is the wonder of *what might be*, in its place, a single chorus . . . *this is how it is*" (Sousanis 7). Sousanis, though he speaks about language and visuals more broadly, thus informs this work on narrative and VR games in the sense that interactive narratives can, and should, offer the participant opportunities for awakening the unseen and exploring fresh perspectives. Here, we find a definition of meaningful that extends beyond Bogost's concept of procedural meaning and gets at the meaning-making that we expect from visual and textual stories. It is worth noting here that pedagogy scholars Charyl Matias and Tanetha Grosland further concur with Sousanis, as they find in a series of case studies using digital storytelling in higher education teaching courses puts the onus of justice—in their case, racial justice—on teachers' shoulders, "more so than

relying on the presence and interactions of people of color to push [their students] into a stage of contact" (161). In other words, the digital story itself can pull us out of our habitual way of seeing the world, creating new meaning and increased empathy with others, and we cannot necessarily depend only on procedure to impart meaningful choices. Some of that meaning must be present in the narrative. When taken in concert with Sousanis' and Bogost's work, Matias and Grosland's findings suggest that justice-based interactive narratives with engaging and effective visuals and a wide array of procedural choices could spark opportunities for stages of contact that encourage more critical reflections about justice and its implications in participants. However, as I will show in the survey below of recent justice-based game works, these fresh perspectives do not often make it to games, and, when they do, they are more often than not relegated to the independent market, reaching fewer players and garnering less industry-wide praise.

Thus, while we more readily acknowledge the importance of stories to a just society, we welcome the extension of a virtual society in which emotional narrative content has thus far been undervalued. As I will explore further in the below survey of the current virtual reality gaming landscape, development companies have mostly avoided narrative development for the sake of technological advancement. As Daniel Headrick states in his discussion of the history of technology, we often focus on instrumental progress without pausing to consider the moral shortcomings of the new technology (12). Though he discusses this in regard to technology and its ability to disseminate information, his definition of the types of information systems can help us understand how VR might fit into the technological landscape as its use becomes more widespread. Headrick identifies information gathering, naming/classification, transforming/visualizing, storing/retrieval, and communication systems as the five types of information systems, with the understanding that some technologies will

serve multiple functions (4-5), and, indeed, our everyday technologies like mobile phones might be said to serve all of these functions. Our phones can gather information about our habits and location. With them, we can identify and classify songs using apps like Shazam or look up general information. We can use them to create and edit images and data, can store and retrieve large amounts of information and data, and, of course, we can use them for their initial purpose, communication. The problem, according to Headrick, is that, while we as a society have created the technological means of achieving many of our goals, we fail at judging the morality of the goals themselves (12). So, while creating more immersive stories in VR might be the goal of a designer, and would certainly be entertaining to the participant, the danger is that we might lose sight of the narrative in favor of the feeling of immersion. Therefore, when I define virtual reality narrative games as dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story and transport the participant, I must clarify what I mean firstly by interactivity, and secondly by immersion. In Headrick's fear that we fail to judge the morality of our goals, we see a return to Murray's hesitancy that the holodeck, or VR, will come to preference sensation over narrative and, rather than create rich stories, create empty and addictive feelings (17). Furthermore, as Elsaesser, Crawford, and Bogost identify, design practitioners and scholars can find tension in the combination of stories and interactivity, especially given the potential diversity in types of narratives and the myriad forms of interactivity, which make defining "interactive narrative" slippery.

To turn toward the definition of narrative itself, Jesper Juul identifies six different meanings of narrative and their relationship to game design. First, he credits Bordwell and Chatman with the definition of narrative as storytelling, or, "the presentation of a number of events" (156). Juul credits Brooks and Prince with the next two definitions, respectively:

"Narrative as a fixed and predetermined sequence of events," and "Narrative as a specific type of sequence of events" (156). According to Juul, scholars who are "critical of applying narrative theory to games" (157) often rely on these first three definitions of narrative, and one can easily see why they would be critical of applying these definitions to games; interactivity does not lend itself to narratives in which the sequence of events is fixed. I argue, in my proposed framework, that interactive virtual reality narrative games require that the player have the meaningful ability to alter some story elements, be it the sequence of events, details of the world, or aspects of a character. Therefore, event-based narratives with one path, in my framework, are not suitable vehicles for this meaningful interaction, but are (so far) the majority of narratives we have the ability of experiencing in VR and are also the type of narrative that the play study in Chapter Three, because it was the only justice-based VR narrative available, uses to measure participants' immersion.

Several authors explore the concept of interactivity and its sometimes-contradictory relationship to narrative in digital works. Murray builds interactivity into her definition of VR by claiming the procedural and participatory aspects of VR are interactive ("Hamlet" 72-4), while Ryan builds a taxonomy of interactive, electronic and ergodic texts (208). Ryan identifies several varieties of interactivity, including (but not limited to) the ability to determine plot, shift the player's perspective on the world, try multiple possible paths, and keep the text going by adding more input, play games, and engage in roleplay (210-12). In my definition, the ability to determine plot remains central to interactive virtual reality narrative games and is perhaps the best way to create what has been identified as meaningful interactivity. I should note here that there are dissenting scholarly opinions on interactivity that dovetail with Elsaesser's issue with the term "interactive narrative." Alexander Galloway, for example, takes issue with Lev Manovich's declaration that interactivity is a

meaningless myth (Manovich 55). Galloway states, “yes, the term ‘interactive’ is practically meaningless due to overuse, but that does not mean the term should apply willy-nilly to static works of art” (Galloway 4). The slippery nature of the “interactive” does not concern Nick Montfort, however, who argues, “The different meanings of the term in different contexts do not present a real problem, though. The words ‘program’ and ‘poem’ have also been used, after all, to mean many different things; used carefully they still serve well” (8). Elsaesser seems to agree with Montfort, applying the argument of “different meanings” to the concept of virtual reality itself, and suggesting that as it becomes a more trusted vehicle for narrative delivery, we may find a more appropriate and less contradictory name for it. Crawford, having identified that the conventions of simulation differ from the conventions of drama (“Crawford’s response”)—a key point in my definition—might also agree that the issue is not so much how we define interactivity as a whole, but that genres and technological platforms have vastly different conventions for meaningful interactivity, and Ryan’s wide array of examples of interactivity support that. For my purposes, interactivity in virtual reality narrative games must involve some control over the plot, and for that I borrow from Montfort’s definition of interactive fiction.

Montfort’s four principles of interactive fiction defined in *Twisty Little Passages* provide a useful framework for beginning to define interactive narrative games in VR. First, the interactive fiction work is a “text-accepting, text-generating computer program” (23). As I seek to define interactivity in relation to virtual reality narratives, Montfort’s first principle only applies if we stretch the definition of “text,” to include embodied and visual works. I propose to modify his statement to read “action-accepting, action-generating computer program,” which does not completely disregard his definition, but opens it up to non-alphabetic mediums and aligns with the requirements of Bogost, Crawford, and Elsaesser,

who emphasize the importance of communication between the technology and the participant. Montfort also defines interactive fiction as “simulation of an environment or world” (23), an inherent quality of virtual reality narratives as established above, as the technology itself requires the creation of a space the participant can inhabit. Montfort’s principle of interactive fiction as a “structure of rules within which an outcome is sought, also known as a game” (23) is further achievable in a virtual reality story, which, as is also established above, can have procedural rules and an outcome. Finally, Montfort states interactive fiction is “potential narrative, that is, a system that produces narrative during interaction” (23). Juul offers yet another perspective on interactivity, that “Gameplay is the interaction between the rules, the game tree, the players pursuing a goal, and the players’ personal repertoires and preferences” (199). The complexity of interaction between the participant’s personal views and the digital narrative expressed in Juul’s work is mirrored in Ryan’s work on fiction and virtual reality, which states, “We experience emotions regarding fiction that can be intense. These emotions do not have normal consequences or inhibit pleasure” (154). Ryan compares being lost in a virtual reality fiction to being lost in a book, a parallel suggesting narrative transportation research, which has until now only been studied in relation to textual narratives, can be extended to digital narratives to explore the emotional response of participants. With that parallel in mind, I will explore the various modes of transportation as defined by scholars across the disciplines of psychology and human-computer interaction. Here, we have established that virtual reality narrative games are dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story. The concept of narrative transportation will allow us to explore the final part of my definition of virtual reality narrative games, which is that they must transport the participant.

Virtual Reality Narrative Games Transport the Participant

I use the term "transportation" rather than immersion because transportation, in cognitive psychology literature, is particularly related to a story's potential for belief change, and the purpose of this research is to determine whether and how VR narrative games can be used as agents of believe change. As I will argue, transportation is a particular type of immersion. However, in VR literature, it should be noted that immersion and transportation are often used interchangeably. With that in mind, narrative transportation first appears in the cognitive psychology literature in 2000, with Green and Brock's article, "The Role of Transportation in the Persuasiveness of Public Narratives." In this initial article, Green and Brock delineate the differences between public narratives and advocacy messages, stating, "The scientific study of persuasion has reflected an unfortunate displacement of poetics by rhetoric" (701). Thus, the authors conduct a series of four studies to determine the aspects of narrative that encourage reader transportation into narrative worlds, defined as "a convergent process, where all mental systems and capacities become focused on events occurring in the narrative" (701). Over the course of their experiments, Green and Brock identify the components of transportation, "emotional reactions, mental imagery, and a loss of access to real-world information" and declare that, ultimately, "the resulting transportation may be a mechanism for narrative-based belief change" (703). While belief change may be a main goal of social justice narratives, understanding the mechanism of transportation itself is the first step to understanding why narrative transportation can alter beliefs. Therefore, the study methodology delineated in Chapter Three focuses on the particulars of measuring narrative transportation within interactive narratives, rather than the actual process of creating a narrative with the intention of sending a particular message. Creating an interactive narrative

specifically intended to encourage a certain belief in participants would be an excellent subject for future study, but also holds its own challenges—both from an ethical and technological standpoint.

Though Green and Brock's initial article deals only with measuring narrative transportation in textual narratives, contributors to Green, Strange, and Brock's 2002 edited collection, *Narrative Impact: Social and Cognitive Functions*, have addressed the potential for examining transportation within interactive narratives. In "The Evolution of Interactive Media," Frank Biocca defines three levels of player immersion in mediated environments: telepresence, social presence, and mediated self-presence (104). For Biocca, the key to narrative transportation in interactive narrative is "interface intelligence." He states, "The interface has intelligence ('interactivity'), when it can sense its environment (usually the user), process the information within some representational or logical scheme, and respond in physically or socially appropriate and varied ways to the environment (i.e., user behavior)" (120). Some practical applications of interface intelligence might manifest as: sensors that track the player's movements to alter the narrative or the narrative's feedback; the simulation of real-world physics within the narrative world; animated and realistic physical and social behavior of other story characters; and Brenda Laurel's notion of the intelligent playwright, in which the player can control the storyline (Biocca 121). However, Biocca does not present options for empirical study in this area. Rather, he states that as narrative worlds become more transporting, players experience an increased sense of presence within the world, and the boundary between narrative and reality begins to blur (Biocca 124). Because literature surrounding the concept of presence is closely linked to narrative transportation—and is often discussed alongside virtual reality—I will also briefly consider it here.

In a 2001 article, “The Experience of Presence,” Human-Computer Interaction scholars Schubert et al. define presence as the “sense of being in the virtual environment” (266). The authors argue players draw upon their external environment and memories to make sense of the virtual environment (267). For example, an individual learning how to navigate a virtual reality story will first attempt to perform the types of bodily movements they use in reality to navigate the environment; the more the virtual environment aligns with the same possible patterns of movement in the physical environment, the more present the player feels in the virtual environment. However, Schubert et al. also found that the player’s judgment about whether the environment was real or not also affected their sense of presence (279). I find some tension between this point and narrative transportation literature, which finds readers respond emotionally to narratives they perceive as well written, and have little regard for whether the narratives themselves are fictional or nonfictional (Green and Brock 703). However, Schubert et al. did not ask participants to judge whether the virtual reality environment was fictional, so the “perception of realness” likely takes into account audio and visual elements of the environment. Green and Brock, on the other hand, present study participants with a textual narrative, so there are fewer media assets between the reader and the story. In the case of Schubert et al.’s study, participants could be judging the truthfulness of a narrative based on whether it is realistic, and not whether the events actually took place as presented.

In the third article on narrative transportation theory, published in 2004, Green, Brock, and Kaufman explicitly refer to Schubert et al.’s concept of presence, stating that it is similar to the concept of immersion, which is in turn similar to the concept of transportation. However, in this article, the authors go beyond examining the factors that influence narrative transportation and interrogate why it is considered an enjoyable state that players seek out.

They find enjoyment through transportation can come from the fact that transportation is a route away from self-focus (317), as transported readers can live vicariously through the narrative or even manage difficult moods and emotions. Here, I would like to briefly note the link to Murray's concept of the holodeck as a safe space to play with emotions and situations. The relationship between narrative transportation, self-reflection, and self-improvement would be another interesting area for further study, but it is important to also consider the concept of immersion. Like interactivity, several scholars discuss immersion, and VR is often (along with interactive fiction) referred to as immersive, but the definition varies.

Murray, for example, defines immersion as dependent on transportation, and as pleasurable, stating that it is the "experience of being transported to an elaborately simulated place" ("Hamlet" 98). In her conception, we "visit" the virtual world ("Hamlet" 106). Ryan treats immersion similarly, citing a type of spatio-temporal immersion that "transports" the reader into the narrative world (130). Furthermore, Ryan relates immersion to realism, nothing that in an illusionist conception of immersion, the "text creates a credible, seemingly autonomous and language-independent reality" (158). Her definition includes considerations of feelings such as suspense, which might arise from a participant's immersion in a narrative. Roth and Koenitz provide a useful framework (see figure below) for examining immersion-related terms and their relationship to each other that places immersion at the top level along with agency and transformation. Immersion, in their framework, encompasses both perceptual and narrative forms of immersion, and here we might see how they agree with Murray. Roth and Koenitz do not, however, include transportation in their framework, which, as it deals specifically with narrative, I would place in the most specific third level of terms along with role-identification, curiosity, suspense, and believability. Because it is a very

particular type of immersion, I found narrative transportation the most useful and focused vehicle for measuring participants' responses to VR narrative games.

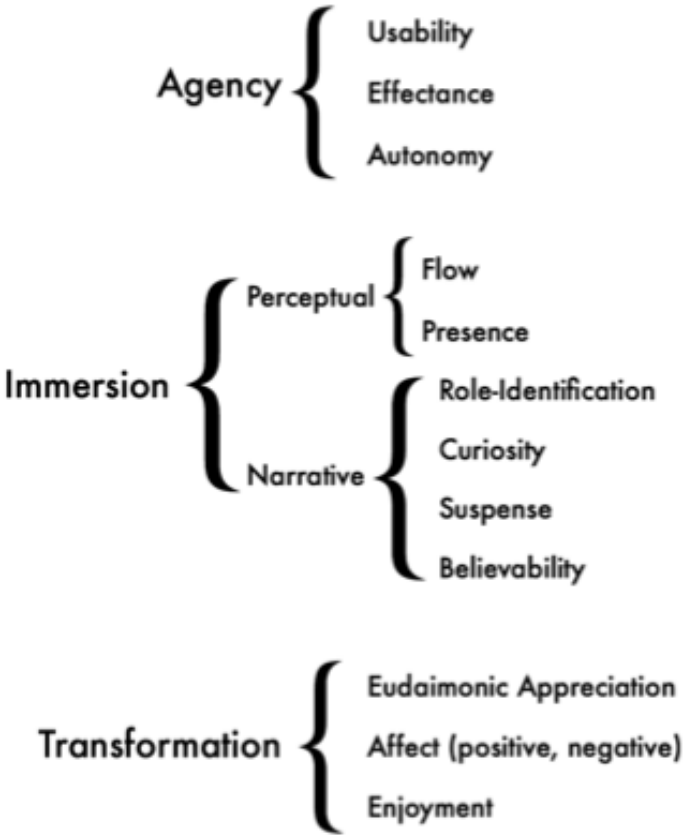

Figure 1. Review of immersion-related terms by Roth and Koenitz.

Marie-Laure Ryan further cites total immersion as one of the dreams of VR, a dream only achieved through total transparency of the medium (57), but that is a dream we cannot yet realize. According to Ryan, some degree of immersion is possible if the created world is "real enough to suspend disbelief" (89). She thus ties immersion to her "text as world" metaphor (90), while transportation becomes the feeling of "being lost in a book" (93), in which a person is transported by a technology as a result of their actions. As part of transportation, some aspects of the physical world become inaccessible (a point on which Green and Brock agree, and use to measure transportation), so that when the person returns to the physical world, they are changed by the experience (Ryan 94-5). One point on which

Ryan's concept of immersion and Green and Brock's conception of transportation diverges is the relation of immersion to aesthetics. For Ryan, immersion does not require high literary value (96), while Green and Brock find through study that transportation is easier with a more literary text. Because my definition of virtual reality narrative games requires a dramatic simulation and meaningful interaction, I choose a more polished and literary text for the play study in Chapter Three, as I believe in the case of VR narratives that a well-designed world will encourage transportation into the text.

However, as mentioned above, Green and Brock, to some extent, equate the process of transportation to that of immersion, and there seems to be a fine and sometimes indiscernible line between the concepts of transportation, immersion, presence, and flow in the literature. Immersion, Green and Brock state, is a "convergent" cognitive process, one in which the recipient of a message does not need to carefully consider the meaning (702). Immersion and transportation thus require low amounts of cognitive elaboration, which may make readers less likely to disbelieve the message, may make the experience seem more real, and may create strong feelings toward characters (702). James Paul Gee also identifies cognitive tension between immersion and conveying information when he states, "The dilemma is this: For efficacious learning, humans need overt information, but they have a hard time handling it. They also need immersion in actual contexts of practice, but they can find such contexts confusing without overt information and guidance" (114). Meanwhile, scholars like Jill Walker find immersion follows interaction in which the "user's actions directly correspond to fictional actions" (62), a state she refers to as ontological interaction. In this way, Walker's definition shares characteristics with Schubert et al.'s definition of presence. In a later article, Green discusses transportation and enjoyment as consequences of immersion (312), but that focuses more on understanding why people seek out enjoyment via

transportation, and does not address the attitude changes that transportation might elicit. As a final counterpoint, mobile storytelling scholars Oppegaard and Grigar reject the idea that immersion is the "holy grail of storytelling" (26) in favor of the unity augmented reality can bring to a user and a physical space. However, immersion appears to be one of the defining characteristics of VR, and it is a characteristic that might encourage storytellers to employ the medium for persuasive purposes.

Lastly, Green, Brock, and Kaufman mention the concept of flow; though is often identified by game designers as one of the reasons people can enjoy games uninterrupted for hours, flow fails to encompass all of the variables that transportation seeks to measure. The earliest of any of the “immersion-related” terms, psychologist Mihaly Csikszentmihalyi coined the term “flow” in 1990 to describe the body in the state of optimal experience—or happiness—and calls activities that make that experience easy to achieve “flow activities” (72). One can easily see how flow might apply to virtual reality narratives. If the player is embodied in the narrative and experiencing ontological interaction, potential patterns and actions will match actions the player might take in the real world; if the game controls mimic the kinesthetic movements of the player’s body, there is less of a barrier toward learning which buttons to push to perform a particular action. Thus, the player can focus on solving in-game puzzles or exploring the in-game narrative more readily. However, Csikszentmihalyi’s concept, because it applies more readily to procedural and non-narrative interactions, is not conducive to the discussion of narrative transportation.

Taking these definitions of immersion-related terms into consideration, I find transportation, with its focus on narrative-based belief change, to be the most effective measurement of the effect of VR stories on participant emotions, and transportation is further an essential part of my definition of VR narrative games: virtual reality narrative games are

dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story and transport the participant. With this definition now in mind, I turn my attention to the final point in this chapter's argument—we have thus far failed to make virtual reality narrative games—by examining the current landscape of VR storytelling, both interactive and cinematic.

The Dream and Failure of Virtual Reality Narratives and Games

With these myriad forms of participant immersion in mind, I would like to ground them in a discussion of the practical landscape of VR, which as I have mentioned, has focused more on immersive experiences than interactive narratives, but by examining the areas in which we have tried and failed to create immersive experiences I hope to begin to identify how we might succeed in creating virtual reality narrative games with the ultimate goal of creating games focused on social justice issues. This discussion will thus focus on two types of virtual reality work—films and games. Though both may be transportive to participants and affect their emotions, each is missing an essential portion of my definition of virtual reality narrative games.

The first are film-related narratives. While film-related narratives take place in a dramatic simulation and might transport the participant, they do not allow for meaningful procedural choices. Rather, the story plays out for the participant. One of the foremost organizations in the development of virtual reality narratives is Emblematic Group, founded by journalist Nonny de la Peña. Peña created and directed *Hunger in Los Angeles* in 2012, a documentary credited as being perhaps the first VR film. In *Hunger*, the participant witnesses massive lines outside of a food bank in Los Angeles—lines containing far too many people for the institution to handle—and sees a man fall to the ground in diabetic shock before he is

able to reach the head of the line for sustenance. In interviews and TED talks, Peña describes the reactions of her audiences to the narrative as deeply emotional, and these reactions led her to found Emblematic. The company refers to its creations as "experiences," rather than games, because they have little in the way of interactive elements, but they are important to mention as part of the history of VR stories, because they are focused on justice issues and are intended to be transportive and emotional. Peña's stories thus showcase the transportive power of VR, but they also de-emphasize interaction. Based on true and often disturbing events, they are more akin to journalism or documentary film than to interactive fiction as someone like Montfort would define it; indeed, Peña herself has named her occupation "immersive journalism" (Peña). However, Peña understands and identifies some of the ways in which VR practitioners across genres must visualize narrative cues differently than filmmakers working within a 2D environment. In an interview with *Wired* magazine, she argues, "Either way, you really have to drop the notion of a 2D screen, where you can direct the viewer's attention. There's no tracking or panning, no closeups. You have to find other ways to try and guide them through a narrative" (Garling). Peña addresses subjects similar to those we might find in other mediums; *Kiya* (2015), for example, uses footage from a real 911 call to tell a story of domestic violence, and *Project Syria* (2013) explores the conditions of the Syrian refugee crisis, but both do so with a conscious understanding of how the procedural affordances of virtual reality can allow viewers to interact physically with their surroundings, creating a more realistically kinesthetic experience. In recognizing that affordance, she also identifies a constraint; because of VR's exploratory possibilities, designers must rely less on traditional storytelling procedures to move narratives forward. The story must either come to the participant, or the participant must move toward the story. Peña's films, because they lack branching narrative elements and no plot choices, bring the

story to the participant, along it to play out. To create a more meaningfully interactive narrative, a designer might need to accept that part of the narrative process will be in the participant's exploration of the story world prior to moving on with the narrative arc.

Other organizations have also been intent on creating VR narratives focused on social justice. In *Four Walls*, a VR experience created by the International Rescue Committee (IRC), participants can use the Oculus Rift, a cardboard headset, or their web browser to visit a Syrian refugee camp and hear the stories of the people there. Participants might choose to hear an individual's story or may engage in activities like visiting one of the IRC's classrooms. To further engage participants, *Four Walls* incorporates narration by actress Rashida Jones, with whom viewers might be familiar. The goal of *Four Walls* is to raise money for refugees, so it is an important part of the conversation on whether VR narratives can persuade participants and encourage social change. However, like Peña's immersive journalism, *Four Walls* is more like a documentary than an interactive narrative. The narrative is, of course, fixed and the participant has no option for meaningful interactivity. As in Peña's examples, the dramatic simulation and possibility for transportation are present in *Four Walls*, but the narrative-based procedural choices are not.

A recent Fable Studios VR narrative adaptation of a Neil Gaiman story, *Wolves in the Walls*, may be the closest example of a virtual reality narrative with meaningful interaction in the film world. In the story, which premiered at this 2018 Sundance Film Festival, the story's protagonist, Lucy, invites viewers to help her prove there are creatures living in the walls of her house by handing them items like a magnifying glass and camera with which to explore and take pictures. Furthermore, Lucy draws the participant with a pen at the beginning of the experience, creating them according to her own size and also encouraging further identification with the character. Lucy further responds to the participant, and remembers

things the participant has done, suggesting there is some meaningful interaction in the story. However, the story is not justice-focused and is only nine minutes long, leaving little opportunity for the participant to be fully and meaningfully transported and engaged. It is also episodic, making it more related to VR film than VR games, though it certainly may be said to blur the line, and thus provides a useful introduction to the second type of VR work I will survey here: VR games.

As with VR film, current VR games are lacking the type of meaningful procedural interaction that allows them to qualify as virtual reality narrative games according to the definition I have laid out. As I mentioned at the start of the chapter, Steam has seventeen games tagged as story driven VR games available as of this writing, but not all of these actually qualify as either games or story driven works. *IKEA VR Pancake Kitchen* is a game but is a simulation and not a story rich game; *Please State Your Name* is a VR animated film rather than a game; and *Archipelago* and *Moriarty Endgame* are navigable VR comics. Three of the games are actually individual episodes of the same adventure game, *The Gallery*, and these are also available as part of a bundle. The only VR game in the group that has justice themes is *The Price of Freedom*, which was chosen for the play study in Chapter Three because of the justice themes. However, the choices presented to the participant in *The Price of Freedom* lead them down a singular path. There are particular ways to advance the story, and not following them does not allow the participant to move forward. For example, the participant must shoot and kill someone to continue the story, or quit if they refuse, making the procedural choices not particularly meaningful. In the strictest sense, even *The Price of Freedom,* the game which was best suited to a play study about narrative transportation, would not fit the ideal definition of virtual reality narrative games that I have laid out in this chapter. The fact that the protagonist of the story is mind-controlled makes the lack of choice

somewhat fitting to the narrative, and thus somewhat redeems the lack of choice, but is still a point of concern for people who might be seeking VR narrative games. Some of the most popular recent VR games are either not narrative driven, such as *Rick and Morty: Virtual Rick-ality*, a game which combines the playfulness of the VR *Job Simulator* with the humor of the *Rick and Morty* animated series, and *Resident Evil 7*, which, as it copies a non-VR horror game to the VR platform and is thus not designed with VR in mind, is not a virtual reality narrative game. A VR experience, *Injustice*, recently won the People's Choice Award at the 2016 *CHI PLAY* conference, and it is an excellent example of, like *Four Walls*, utilizing VR to create an interactive social experience. The creators, faculty and students at Carnegie Melon, state, "In *Injustice*, guests witness an act of racial discrimination happening in front of them, forcing them to make moral and ethical decisions on the spot" (Fawaz "About Injustice"). However, though *Injustice* is an important example of an experience that explores police brutality, it is only a three-to-five-minute experience, making it perhaps less playable and re-playable than a full-length story driven game. Furthermore, the choices provided are solely experienced via dialogue prompts, and the participant speaks their choices, rather than using a controller to move around (Fawaz "About Injustice"); this mode of interaction allows the participant more limited contact within and exploration of the narrative world.

Conclusions and Research Roadmap

Thus, though I wanted my play study to explore the transportive qualities of VR stories, I also wanted it to explore how the potential for interactivity might help or hinder the emotional impact of games in support of social justice causes. Unfortunately, as I surveyed the virtual reality landscape, I found little in the way of games dealing with social justice

themes like Peña's and the IRC's documentaries that also included sophisticated gameplay and meaningful choices. Most narrative-driven games led the user down a single path, behaving more like storybooks one must click through to advance. As I will discuss further in Chapter Three, which focuses on the play study, the game I ultimately chose, *The Price of Freedom*, deals with complicated social justice themes but is still mostly a linear narrative, in which the participant must perform certain pre-determined actions to advance. If virtual reality narrative games are defined here as dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story and transport the participant, those procedural choices might mean making a lasting impact on the identity of the character, aspects of the story world, or the sequence of narrative events itself, and there are not many (if any) of those to be found in the current VR landscape. VR narrative games need support from the game's procedural code to include affordances for this type of player control, and we have seen this type of control in non-VR narratives. Meaningful procedural choices are created to great effect in non-VR narratives, like *Façade* and *With Those We Love Alive*, which I will discuss in the next chapter, and games like these should thus be achievable as the VR platform's use becomes more prevalent. Having defined the meaning and elements of VR narrative games, as well as some of the current iterations in the landscape of VR film and games, we can conclude that there are few examples of virtual reality narrative games, and even fewer that can be said to deal with social justice themes. To interrogate this dearth and determine whether there is hope for the future of VR narrative games, Chapter Two will examine ethnographic practices, activist non-VR games, and modes of reclaiming digital spaces as a way to encourage digital social justice and ensure traditionally marginalized communities have meaningful access to technology—or, the tools to use it, create with it, and critique it. The next chapter, informed by the definition of virtual reality narrative games, will

suggest ways in which we can design social justice stories in VR by exploring non-VR narratives as models. Following that exploration, Chapter Three will present the results of a play study that measures the transportive effects of a VR narrative, *The Price of Freedom*, and finds that VR narratives are, in fact, more effective at transporting participants than non-VR digital narratives. Chapter Four will discuss some of the ethical implications of using the transportive effects of VR to further social justice causes by taking a look at some dystopic conceptions of VR. Finally, Chapter Five synthesizes the theoretical and experimental findings to recommend five design considerations for creators of virtual reality narrative games focused on advocating for social justice causes.

CHAPTER TWO: DIGITAL SOCIAL JUSTICE: LEVERAGING CRITICAL DESIGN TO TELL DIVERSE STORIES

As discussed in the previous chapter, current virtual reality (VR) games lack both complicated narratives and modes of interactivity, to the extent that I have found no examples of VR works that fit all conditions of my proposed definition of virtual reality narrative games—dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story and transport the participant. Due to the lack of VR narrative games generally, I have by extension found a lack of VR games focused on social justice causes. However, justice-based games comprise a large segment of non-VR games on diverse themes like civics, gender issues, racial issues, climate change, and international conflict. By looking to some of these examples, I argue that VR designers can use them as frameworks as they begin to design virtual reality narrative games with the intention of addressing social justice issues. Only when we have diverse examples of VR games that fit this genre can we fully address the main research question of how and whether VR narrative games can advocate for social justice causes. This chapter will therefore explore how inequality, and thus a need for social justice, manifests in the digital world through an exploration of current non-VR narratives and diverse peoples' access to interactive technologies as a means of transitioning this discussion to virtual reality and its place in social justice. For the purposes of this argument, I will follow Adam Banks' lead and use the term "access" to describe mere physical use of technology, while "meaningful access" refers to not only physical technological use, but "occurs simultaneously along the connected axes of critique, use, and design" (7). Thus, meaningful access entails access to educational programs that help technology users understand the inner workings of technology, critique its applications in

society, and create other artifacts using that technology. To explore the issue of unequal access, I will first define social justice using Paulo Freire's definition of oppressors and the oppressed, and will combine Freire's definition with the work of Banks and Lisa Nakamura to identify what social justice means in the digital world. Then, I will compare the work of Dolores Hayden with that of Nathan Jurgenson, arguing that augmented reality affords the opportunity to reclaim territory for historically marginalized groups, like women and ethnic minorities, but that we must fully dispense with the idea of digital dualism in order to reclaim physical territory using digital technology. Next, I will examine how Jurgenson, agreeing with Lawrence Lessig, also pinpoints a constraint of digital technology's ability to foreground social justice: the structure of code itself and its ability to regulate and filter the information to which we have access. I will further compare and contrast how activist and subversive uses of code can be paired with ethnography in game design to expand social justice, as discussed by T.V. Reed; Natalie Underberg and Elayne Zorn; Mary Flanagan; and Susanna Ruiz. Ultimately, I argue reclaiming digital spaces, digital ethnographic practices, and activist games combine to realize the design of diverse games. VR has the potential for expanding opportunities for social justice; however, games for justice have not broken into the mainstream market, where filtered content and competing sovereigns can constrain attempts at justice.

Social Justice in the Digital World

Before discussing how digital technology expands and constrains opportunities for social justice, I will first briefly define social justice as it relates to digital technologies and marginalized communities. At its most basic, social justice counteracts oppression. Freire defines oppression as, "a distortion of the vocation of becoming more fully human" (26), and

states oppression is, “the result of an unjust order that engenders violence in the oppressors, which in turn dehumanizes the oppressed” (26). He further proposes pedagogy designed to assist in the liberation of oppressed peoples. If oppression is, as Freire states, the result of an “unjust order,” then equality is the result of a just order. Therefore, I define social justice as two-fold. First, social justice requires that marginalized communities—those who are socially or economically devalued by their oppressors—recognize their oppression and its causes. In the words of Freire, the oppressed, “must perceive the reality of oppression not as a closed world from which there is no exit, but as a limiting situation which they can transform" (31). Second, social justice requires dedication to amplifying the voices of marginalized communities so that they are instrumental in enacting the social and political change needed to not only overturn the oppressive order, but also to stop oppression from simply occurring in another form to another community.

In the case of creating digital projects with marginalized communities, social justice requires both representation within and access to the digital environment. The marginalized community must be represented within the project but must be instrumental in creating their own representation within the project; the community should have the opportunity to engage with and access the technology used. Freire supports the idea of working *with*, rather than *for*, a community when he states, “Authentic education is not carried on by ‘A’ for ‘B’ or by ‘A’ about ‘B,’ but rather by ‘A’ with ‘B,’ mediated by the world—a world which impresses and challenges both parties, giving rise to views or opinions about it" (74). A question one might ask about social justice in the digital world is: why does it matter? Shouldn’t we fight for social justice in the physical world before we worry about digital technology? As I will argue below, digital and physical spaces are increasingly linked, and are linked in such a way that subversion of an oppressive order via digital formats can assist in physical social justice

issues. Conversely, in an increasingly digital society, justice online cannot be secondary to justice in the physical world; online social currency can be instrumental in individuals' economic and political status, two ways in which individuals can be otherwise marginalized. However, it is also important to note here that some marginalized communities might not want to be included in the digital world, so sometimes using digital projects to expand social justice means negotiating, recognizing, and respecting a community's desire to remain analog; historian and ethnographer T.V. Reed refers to these communities and people as digital "don't-wants" (190). Because this chapter focuses on digital social justice, I will not discuss in depth the idea that some communities may want to remain "off the grid." Though I will later discuss how access to technology can constrain social justice via digital projects, I will continue by exploring how communities who are underrepresented in the digital world can use technology to reclaim their identities.

Adam Banks proposes the idea of meaningful access as a way for black users of technology to reclaim black rhetoric and identity in the virtual world. He states, "If we truly paid attention, neither technical communication, rhetoric and composition, nor African American rhetoric could be the same in the face of the challenges posed by the Digital Divide's ten year history" (136). Banks and Lisa Nakamura both further this concept of access by exploring the notion of racial access to the internet and its effects on how participants see themselves as embodied in the digital world. Early notions of identity on the internet allowed for the erasure of the participant's physical identity in the digital world (Nakamura 3). If one had a body traditionally oppressed by culture (via race, gender, disability, or another culturally defining characteristic), the erasure of identity was supposed to be somehow positive and equalizing. On the contrary, if one were to encounter a predator on the internet, the erasure of identity was nefarious. However, both Banks and Nakamura

examine users' cultural experiences on the internet, finding that users took it upon themselves to make their access meaningful by express themselves using racial imagery for their AIM profile pictures (Nakamura 45) and black language and discourse for their forum posts on the community website BlackPlanet (Banks 68).

Thus, as Nakamura argues, in the 1990s when digital media was becoming more prevalent in society, it was popular to feel that the internet "disappeared" race from the discourse, when all that argument really did was oversimplify how users were accessing digital technology and communication tools. For Banks, this "disappearing" occurred at a time when politics was beginning to recognize the "digital divide" as an economic and social inequality. However, rather than provide meaningful access to combat the digital divide, politicians often pointed to figures of dollars spent in minority schools as an indication of providing access to students and closing the digital divide (Banks 34). The digital divide concept thus oversimplified both the problem of access and the solution of providing mere physical access, ushering in a dystopic system in which minority students were given technology and taught to use, but not to critique it or create with it. As Banks argues, "Technologies also include the systems of knowledge we must acquire to use any particular tool and the networks of information, economic, and power relations that enable that tool's use" (40). He further identifies the power of games and play as a way to provide meaningful access, and a low-stakes way to learn how to use technology. However, Banks does not see this happening enough in society, where access is still valued as cultural currency and meaningful access is less often discussed.

Meaningful access is made further complicated and difficult when taken in conjunction with issues of racial and gendered representation in games. In interviews with a young person with a disability playing the *Grand Theft Auto* games, Samantha Blackmon

identifies and interrogates the stereotypical representations of race she had found problematic in her youth. Blackmon writes, "[Daniel] finds the African American stereotypes that are prevalent elsewhere are simply being perpetuated in video games, and I tend to agree with him. Video games are not the problem here; it is the way that the games are being written, drawn, and marketed that is the problem" (211). Blackmon's articulation of the fact that games are not the problem is important as it further supports Banks' and Nakamura's assertions that identity in the digital and physical worlds are not independent of each other, and that in-game representation can influence and make use of racial stereotypes by identifying "a larger social issue, the perception and representation of those deemed Other" (Blackmon 213), and more recent work by games scholar Amanda Phillips, who links the valorization of video game twitch responses and headshots to the implicit biases that motivate increased police brutality among people of color (147). Though she is careful to state that no direct link between video game violence and the propensity for physical violence exists, Phillips argues, "Implicit biases govern the realm of twitch responses, and they have already been found to affect rapid decision-making along the lines of race and lethal force" (147). As we move into VR spaces, where bodies are an essential part of the technological experience, issues of meaningful access and representation for diverse populations are of even greater importance, but we must also be cautious of how the representations we design incorporate dangerous biases that influence the creation and understanding of virtual communities and can translate to social justice issues for the physical body. Though she writes of social justice from a physical, and not virtual perspective, Iris Marion Young cautions against the ideal of community in and of itself, stating:

> The ideal of community presumes subjects who are present to themselves and presumes subjects can understand one another as they understand themselves. It thus denies the difference between subjects. The desire for community relies on the same

> desire for social wholeness and identification that underlies racism and ethnic chauvinism, on the one hand, and political sectarianism on the other. (Young 1-2)

With Young's critique in mind, the issue of meaningful access becomes even more important, in that meaningful access allows participants in technology to critique and understand the identities designers and other participants might be attempting to convey and inhabit. The idea of a single VR community, as explored in Chapter Four is seemingly a utopian idea but might lead to the type of homogenous society feminist games scholars like Shaw have argued against. With issues of representation and the celebration, rather than erasure, of difference in mind, creators of VR stories must also explore the spaces those bodies inhabit. How can the competing ideas of digital dualism and augmented reality expand or constrain the reclamation of online and physical places by marginalized communities?

Reclaiming Digital Territory for Social Justice

Though she does not specifically discuss digital space, Dolores Hayden explores how cultural identity, social history, and urban design are intertwined. She states the word "place," "carries the resonance of homestead, location, and open space in the city as well as a position in a social hierarchy" (15). Furthermore, she argues that historic urban landscapes can nurture collective memory, but we need to first understand our complex relationships to space. However, if we understand the connections between space, memory, and social hierarchy and then dedicate places to marginalized groups, like women and ethnic minorities, we can claim political territory in tangible ways (Hayden 237). By combining Hayden's notions of reclaiming landscapes with Nathan Jurgenson's notion of augmented reality, one can see how digital territory might provide a place in which to counteract oppression. Jurgenson argues against digital dualism, the notion that our offline and online personalities are separate,

stating, “the notion that digitality was ever somehow a new space that transcends basic facts of social life is the height of digital dualism.” Furthermore, he argues, “this specific form of digital dualism perpetuates structural inequalities by masking their very existence.” Thus, he sees the internet as a digital space affected by physical social structures, and calls this mixture of the digital and physical “augmented reality.” I will therefore use the term as Jurgenson defines it, in a way that recognizes we live in a constant augmented reality, just as Elsaesser recognizes we live in a constant virtual reality, rather than to refer to particular hardware artifacts like Google Glass or augmented reality (AR) mobile applications.

If we reject the idea of digital dualism and adopt Jurgenson’s notion of augmented reality, we are presented with two hopeful views for the expansion of social justice by reclaiming digital territory. First, by acknowledging the link between physical and digital notions of space and identity, Hayden’s idea of reclaiming physical spaces can take shape via the use of digital technology. An example of using digital technology to claim physical space can be seen in *Re:Activism*, a PETLab/Parsons The New School for Design project. The PETLab website describes the game as, “a location-based urban game that maps the history of activism onto the streets where it happened, as players reenact and re-create the actions that once took place there” (PETLab). The technology required to play is a mobile phone—with the ability to text and take pictures—along with poster board, markers, and pamphlets. Participants then travel to historical sites in any order they choose and complete challenges at the sites. The game has been played in “New York City (2008-2012), Beijing (2008), Minneapolis/St. Paul (2009) and Philadelphia, PA (2011)” (PETLab), and when the game was played in Philadelphia a 100-point example challenge involved finding three passerby to interview about their views on censorship in art. More difficult and involved challenges, like finding three passerby to participate in the re-enactment at UPenn of the 1968 Black Bottom

Neighborhood Protest by Students for a Democratic Society, earn the team more points (PETLab). Susana Ruiz identifies *Re:Activism* as a game that helps players, "discover local pasts and imagine future narratives," is an example of reclaiming spaces using digital technology. While creating historical landmarks and installing memorials might require money and permits not available to most citizens, games like *Re:Activism* allow for the remembering of events via spontaneous involvement and technology. The New School's PETLab site further describes the New York City iteration of *Re:Activism* as, "an analog game with direction provided through SMS and cell phone technology," in which, "Players race through neighborhoods to trace the history of riots, protests, and other political episodes in the history of New York City" (PETLab). Though the game takes players to historic sites like the Triangle Shirtwaist Factory, it also encourages players to write on unmarked sites with chalk, creating a sort of temporary memorial to otherwise forgotten or unmarked historical events, and making it dependent—to follow Jurgenson—not only on technology, but on a physical presence in the world. Furthermore, the game chronicles myriad different historical events, from the Stonewall Riots to arrests of the War Resistors League at a 2004 march and can be adapted for use in different cities, supporting another of Hayden's points, that stories written on places do not "divide history into academic categories like women, ethnic, or labor, categories that often trivialize and marginalize urban stories" (236). Reclaiming and remembering physical spaces through digital technology can thus be an important way to uplift the stories of marginalized populations, who are often forgotten when governments construct official memorials and name historic sites. However, the reverse is also true: acknowledging the virtual world as an extension of, rather than separate from, physical identity can be a way to encourage marginalized groups to express physical identities, and reclaiming territory that acknowledges the lack of boundary between the

physical and digital self can allow people to enact and recognize diverse identities online. Jurgenson states, “It is not surprising that a bunch of (mostly) white males claimed to create a digital space somehow separate from their own socialization (i.e., the intersection of their specific race, gender, class, etc. standpoints).” Thus, participants in the virtual world need to be reminded that they are also always in the real world and that gendered and racial stereotypes infuse both worlds. T.V. Reed cites Lisa Nakamura’s work on online racial identities as one way to understand how marginalized groups might claim online spaces in which to safely perform their physical identities. As discussed above, Nakamura’s examples of racial embodiment in online avatars emphasize the individuals’ and groups’ determination to forge links between the physical and digital worlds, and supports Jurgenson’s points that “atoms and bits enmesh to create our augmented reality,” which provides another counterpoint to the argument for digital dualism; the breaking down of digital dualism suggests that, especially in the context of VR, acknowledging the entwining of the physical and virtual can enable virtual reality narratives games focused on social justice to make an impact on diverse sets of issues that encompass both the virtual and the physical. However, Jurgenson brings up a cautionary point that identifies one way in which digital technology could constrain social justice: code as a means of regulation and filtering.

Code as Regulatory and Filtering

Jurgenson invokes Lawrence Lessig in stating, “computer code itself, that ultimate symbol of inhuman, logical neutrality, is embodied, social, historical, and reflects specific value judgments.” In this statement, Jurgenson and Lessing directly oppose the idea of simple technological determinism, in which Langdon Winner posits “that technology develops as the sole result of an internal dynamic, and then, unmediated by any other influence, molds

society to fit its patterns" (Winner "Do Artifacts Have Politics?" 122). In a later article, Winner defines the related idea of "mythinformation" as "the almost religious conviction that a widespread adoption of computers and communications systems along with easy access to electronic information will automatically produce a better world for human living" ("Mythinformation" 592). In Chapter Four, I will explore the idea of VR technology as a force for the creation of either a utopic or dystopic society, but in the context of social justice, the ideas of technological determinism and mythinformation are important in reminding us that we must recognize the inherent cultural biases and value judgements in the technology we use to create games for social justice, and that VR, like other interactive technologies before it, will not function at the code level based on logical neutrality but will be laden with cultural contexts. Thus, when we create digital projects to expand social justice, we use a tool that, according to Lessig, "will present the greatest threat to both liberal and libertarian ideals, as well as their greatest promise" (6). Again connecting cyberspace to a metaphor of physical space, Lessig compares regulation by means of code to a locked door. Like a locked door, code can impose constraints that disallow access (Lessig 82), but code can also allow individuals to make choices enabling or restricting others' access to their personal information. However, in choosing what we allow others to see about ourselves online, we can also choose the content we see via filtering. In general, Lessig argues against "centralized structures of choice" (276), suggesting we should, for instance, be able to exercise individual control over our own privacy. Here, Lessig agrees with David Berry in that as code increasingly structures the world, and software is becoming more a transparent system that is part of everyday use, we need the vocabulary and language to critique and understand coded software processes; we therefore need meaningful access to exercise control over our own privacy, or we will not understand the decisions we make and their impact on our

relationships. For Berry, one of the metaphors of how we understand code is, "as text." If the text of code cannot be accessed or understood by many of the users of a software artifact, those users cannot recognize the biases that are implicit in the program.

However, in the context of filtering, Lessig believes individualized structures of choice give people too much power and lead to the unfair and arbitrary suppression of speech (255). How, then, can creators of digital projects engaged in social justice combat regulation and filtering that might obscure or alter their message? I argue that, in the several years since Lessig published *Code: Version 2.0*, filtering has become an even larger problem for the stifling of social justice. Social media algorithms choose which news people see and in which order they see it based on what they have already clicked on, meaning they get very little official news that does not align with their already-established viewpoint. Furthermore, Lessig points to a distinction between filtering and zoning to highlight a way in which filtering can be dangerous. In zoning, an individual's access to a site is blocked because of a certificate, but the individual can challenge the justification for the certificate (258). However, when content is filtered, the individual cannot see the content and does not even receive any information that the content is being blocked (258). A recent example of the fear of injustice via filtered content is Facebook's 2016 attempt to lift its seven-year ban in China through the creation of more robust censorship tools.

If Facebook partnered with the Chinese government to develop censorship tools for its social media platform, it would, according to Lessig, be allowing a government to develop sovereignty over its internet; China already has sovereignty over its internet, but other countries fear that the censorship tools would affect their own use of Facebook. If I post a link to my friend in China, but Facebook's censorship tools remove it, would I receive notice, or would I simply think she has not responded? Would the censorship also apply to private

messages? The example of censorship in China might be a dramatic one, but it is also important to consider, because social justice projects often challenge the dominant discourse. If censorship and filters become embedded into our sharing sites on the code level, there is always the fear that we will experience censorship without even knowing it and will be thus unable to challenge the dominant discourse. The locked door could become a solitary cell. Furthermore, as Lessig points out, censorship by sovereigns deepens the ties of the internet to a physical, nationalized, location.

As discussed above, Jurgenson's notion of augmented reality can expand social justice, but Lessig's notion of censorship based on geography and code limits social justice. Lessig asks, "Why would real-space citizens need to have any control over cyber-places or their architectures" (286)? To answer his question, he discusses the control of commerce over the internet, and contrasts the ease with which one could leave an online community if one finds oneself in disagreement with the rules with the difficulty one would experience trying to move to a different country; this point is one on which he might not agree today. In 2006, when Lessig made this argument, the online social community was much easier to ignore. Even by 2001, when Sherry Turkle wrote *Alone Together*, social media had begun to play a much larger part in people's lives. Turkle argues we are "tethered" to technology and uses texting and driving as an example of a need for connection and a willingness to take risks for that connection (171). This indicates that, even though our privacy might be in danger online, we are unlikely to leave the online community as a result of that danger, and therefore might be unlikely to abandon opportunity for interaction in VR technology, even if that interaction did not follow a socially just model. Furthermore, Lessig does not consider the economic and social privilege required to emigrate without being deemed a "refugee." The complicated nature of Lessig's argument, and what he leaves unsaid, drives one point home: it is much

easier to use digital technology to reclaim physical space than it is to claim a purely digital space for social justice. Code, driven by commerce, prevents us from writing on digital spaces without permission, and we will continue to encounter this issue as VR technology gains more prevalence in the industry. This difficulty may occur partially because we have many competing views about what rights people should have on the internet. As Lessig points out, code's regulation can sometimes be in direct conflict with the law's regulation, and "It will require the nations of the world to come to a common understanding about this space and to develop a common strategy for dealing with its regulation" (293). Part of the difficulty in developing a common strategy is that our competing views engender puzzlement about other people's ways of life; ethnographic practices seek to reduce that puzzlement.

Virtual Ethnography for Social Justice

Ethnography scholar Christine Hine argues the internet is both a site of culture and a cultural artifact, which is one of the reasons why censorship and regulation are so complicated. If, as Jurgenson and ethnography scholars argue, we live digitally, we feel we should have some agency over our digital communities, just as we have certain civic rights in our physical communities. However, social justice scholars have long pointed out practices that marginalize physical communities, such as red-lining and voter suppression, and I have discussed above how reclaiming physical space with digital technology can be a way to encourage social justice. How, then, can we create new digital spaces to encourage cultural exchange and communication? Hine suggests the ethnographer's presence in the field setting is important, as it helps us reduce the puzzlement evoked by other people's ways of life (63). For this reason, the ethnographer should not lurk online, even though it's easy to do in a virtual setting; rather, the ethnographer should engage with the community. Natalie

Underberg and Elayne Zorn, in *Digital Ethnography: Anthropology, Narrative, and New Media*, also support Hine's point. Underberg and Zorn examine the difficulty in designing a game around a linear folkloric narrative. The narrative, originally called "La Pavera," was collected by Ralph Steele Boggs in the 1930s in Ybor City, Florida, an area historically known for its role in the cigar industry and for its high population of Cuban and Spanish immigrants ("The Turkey Maiden Game"). Underberg and Zorn used the narrative, which follows the plot of "Cinderella," to design a game called *Turkey Maiden*—an interactive, situated, narrative plot ("The Turkey Maiden Game"). Furthermore, they discuss the need to transform physical places into interactive spaces, which must then be imbued with narrative meaning, and follow's Sarah Pink's argument that, "By rethinking digital media through a theory of place, we can bring together the diverse processes in which media are implicated, the different media technologies and media practices involved and other constituents of place" (131). Though Pink's work is further discussed below in relation to activist games, Underberg and Zorn's game, *Turkey Maiden*, "is set in the Ybor City of the 1930s to permit specific explorations of the area's history and culture" ("The Turkey Maiden Game"). Of the gameplay, Underberg and Zorn state:

> "The folktale forms the basic narrative structure of the game, combined with interactive quests based on lessons using Depression-era Works Progress Administration (WPA) materials on Ybor City history and culture. The WPA federal writers project documented the stories and customs of places throughout America, including those of Ybor City, and resulted in collections of material including traditional tales and other folklife." ("The Turkey Maiden Game")

In the case of *Turkey Maiden*, the player must solve all of the problems in one particular space in order to move to the next and move the narrative forward. Ultimately, the authors hope, through their projects, "to provide readers with a theoretical and practice-oriented overview of the ways in which the disciplines of anthropology and digital media can be

combined in order to help artists, communities, and anthropologists express new insights into culture" ("Digital Ethnography" 85). Underberg and Zorn again show how physical communities can connect to and inhabit digital spaces in order to spark cross-cultural communication, and their game, because it is situated with a particular physical space in mind, showcases some of the ways in which scholars Oppegaard and Grigar, who are focused on mobile storytelling, argue for the four interrelationships between the digital and the physical versions of a space. First, location-based storytelling creates relationships between the content and the medium allowing for "freedom, potential, and optimism" (Oppegaard and Grigar 23). Secondly, location-based storytelling creates relationships between people, time, and space, meaning that people can be "close" even if geographical distance is great, and that tangible space can be integrated with the virtual environment (Oppegaard and Grigar 24). Thirdly, these types of multimedia games and exhibits hold visitors' attention longer (Oppegaard and Grigar 26). Lastly, they more effectively connect people with information, by fostering more complex interactions and creating a shared space for people (Oppegaard and Grigar 28). In concert with the authors, Ruiz, "embraces the belief that both social justice and transmedia production are collective efforts, that they are beyond the capacity of any one individual, and that it is this collaborative nature that imparts legitimacy." However, there is a difference between location-based ethnographic or historical games and activist games. Virtual ethnography might not have as strong of a "take action" message as some of Ruiz's activist narrative games, examples of which I will examine below. Where virtual ethnography thrives is in the idea of cultural exchange being an essential part in promoting social justice through education and the exploration of another culture in the virtual world, and the hope is that that exploration of culture can encourage empathy within participants.

In “Imaging the Intangible,” ethnographic photographer Tony Whincup further describes how visualization of an environment or collection of objects can provide insight into otherwise intangible facets of human experience (79). Whincup pinpoints three ways in which visualization, specifically a photograph, of an individual’s living room, can communicate their life experience. First, the arrangement of objects displays their individual history for social consumption (Whincup 85). Second, objective variables such as the environment and products available in that environment provide insight into their experiences (Whincup 86). Finally, the amount of agency that they have taken in arranging the space is a social expression in itself (Whincup 86). Ultimately, Whincup argues that such images are readable and inter-contextual, providing a significant opportunity for social expression (Whincup 87). Whincup’s discussion of space and its readability as an image connects ethnography to a discussion of how VR technology has remediated the public consumption of places. His assertion of the inter-contextual nature of images, as when spaces are recreated via media, shows that the emphasis is not necessarily on the inclusion of all the details in one image, but on the message the images relay and the interactivity of the space in relation to the story. A place can attain several different and sometimes conflicting identities stemming from the relationship of the designer to the space, the viewer to the space, and the design itself to the reality or other subsequence designs of that space, and VR games designed with the intent to facilitate social justice must then take into account how space itself—and not simply narrative, is designed and presented. As the play study in Chapter Three finds, the items and interaction available in the environment play a large role in how transported participants playing the game are.

However, as historian and digital scholar T.V. Reed points out, “Jurgenson doesn’t address the fact that the vast majority of the world’s population still has never been online at

all, or discuss the vast range in degrees of onlineness that individuals experience" (77). Ethnographers are perhaps more adept at and focused on examining the relationships of their subjects to technology, but virtual ethnography necessitates that all participants in the project have, to some extent, a relationship with the digital world. If the participating community does not have access to and digital technology, and the ethnographer approaches the community about studying and then representing the community in an online project, I would argue the project could not be completely socially just. If the community gave the ethnographer the freedom to represent participants in whatever way the ethnographer deems appropriate, they are not crafting their own virtual identities. Furthermore, if the community's sole experience with digital technology is under the guidance of a single ethnographer, they may not have been provided the tools necessary to meaningfully critique and work with the technology. Participants, if they choose to engage with digital technology, should be afforded a wide range of perspectives. Reed identifies an important point that coincides with Banks' reading: that the digital divide is more than an issue of people who have access to technology and people who do not have access to technology. Reed also adds another layer to the divide: people who do not want access to technology. Digital notions of social justice need to consider the "haves," the "have-nots," the many degrees of "in-between," and even the "don't-wants" (Reed 190).

Reed further challenges the notion of digital cultural exchange as a way of facilitating social justice when he suggests, "While many talk about the (very real) new kinds of cross-cultural links possible via the Web and other digital technologies, it is important to also realize that digital cultures have often created cyberghettos that replicate existing informal forms of social segregation" (98-9). Here, the link between physical and digital spaces so hopefully discussed above again becomes nefarious. Reed exemplifies his point with a

discussion of the popularization of Facebook over MySpace. While the name MySpace is mostly thrown around as a joke now, Reed cites a four-year study by danah boyd, that examined the role of social media in the lives of American teens. In "White Flight in Networked Publics?" boyd found white kids fled MySpace because it "had become 'too ghetto,' a move that resembles the 'white flight' of the 1970s and '80s when Euro-Americans left racially mixed cities for predominantly white suburbs" (Reed 99). According to boyd:

> "The notion that MySpace may be understood as a digital ghetto introduced an analytic opportunity to explore the divisions between MySpace and Facebook—and namely the movement of some teens from MySpace to Facebook—in light of the historic urban tragedy produced by white flight. Drawing parallels between these two events sheds light on how people's engagement with technology reveals social divisions and the persistence of racism." (boyd 206)

Reed does not mention one of the early differences between Facebook and MySpace that boyd identifies in her article; in its early iterations, Facebook required participants to have a university (.edu) email address to sign up for the service. This requirement is another form of socio-economic segregation—this time based on participants' level of education, which one can see as a type of social currency. As Reed argues, it is discouragingly easy to find instances of racism and sexism online, but digital technology also "enables a critical mapping of these social blights, as well as providing new technical tools for fighting them" (100). There is a greater barrier of access to VR than there is to social media, as VR requires far more specialized technology. Therefore, we might consider VR to be a privileged space, which is another reason that it is important to begin using VR as a technological tool to work against unjust technological divisions. Activist games are another way in which we can leverage those tools to fight for social justice.

Social Justice Through Digital Games

To understand how activist games function in the quest for social justice, we can turn again to the twofold definition of social justice stated earlier; First, social justice requires that marginalized communities—those who are socially or economically devalued by their oppressors—recognize their oppression and its causes. Second, social justice requires dedication to amplifying the voices of marginalized communities so that they are instrumental in enacting the social and political change needed to not only overturn the oppressive order, but also to stop oppression from simply occurring in another form to another community. The creation of activist games can both draw attention to the marginalization of communities and create empathy for them, and can also, as in the case of the ethnographic examples described above, amplify the voices of those communities and address the forces that oppress them. Though Reed focuses on the question of whether games are making people violent, he also asks, "Can Videogames Save the World?" (160) and cites several games that are socially conscious and engaging as examples of how games can address real-world problems, including: *Climate Defense; Papers, Please; Half the Sky;* and *Peacemaker* (162). Here, Reed agrees with Ruiz, who identifies three critical lenses for understanding design practices: Anti-Oppressive Game Design; Games as (Politicized) Art; and Play and Real-World Social Change. Ruiz links Games as (Politicized) Art to Mary Flanagan's work on values in digital games, which I will discuss below. For the moment, I will focus on Play and Real-World Social Change as a way in which digital technology can expand social justice.

Ruiz identifies what she calls the "civic tripod," "(1) civic learning, (2) performance/art, and (3) social change." She further states that these dimensions need to work together with activism, art, and learning. Ruiz discusses the game *Raise the Village* as

an example of a casual game successfully designed to raise donations of real money, and we can look to Chapter One for examples of VR works that have been focused on raising money for social causes, such as *Four Walls,* which takes participants into a Syrian refugee camp. However, *Four Walls* is not a game but an interactive documentary. In the case of *Raise the Village* and other games designed for fundraising purposes, Ruiz cautions, "A discussion about real-world achievement structures requires a close look at extrinsic and intrinsic motivations and rewards." She states that focus on extrinsic rewards, like points and badges, does not allow the player to reflect on their intrinsic motivation, and thus may not allow people to question their own beliefs and foster social change. In a sense, Ruiz's argument may indicate that she does not believe extrinsic rewards are effective at transporting players, and thus games that focus on extrinsic rewards would be less effective at enabling belief change. This does agree with the definition of virtual reality narrative games proposed in Chapter One; extrinsic rewards indicate less of a focus on narrative, and more of a focus on procedure. A better example of intrinsic rewards, Ruiz states, can be found in the game *Darfur is Dying,* which allows the player to embody inhabitants at a refugee camp in Darfur. The player must perform tasks like leaving the camp to acquire water, a perilous journey in which they must hide behind scattered bushes and trees or be killed by patrolling jeeps. The game is effective in communicating the difficulty and real life-threatening danger that a refugee might find themselves in while fulfilling the most simple and basic of their daily needs. When the participant chooses a refugee to inhabit, there is the sense that they are placing a person in the way of physical harm. Indeed, Ruiz argues, "*Darfur is Dying*'s mechanic incentivized players to conceptualize the virtual and the real world as coextensive rather than unconnected," a point that aligns with the ideas argued earlier, that one of the prevailing strengths of digital technology to support social justice is through an understanding

of the digital as a place that can be written on and inhabited in concert with the physical world. In this sense, an activist game like *Darfur is Dying* would translate well to VR. As I will discuss below with the results of the play study, if the participant were playing the game in the first-person, the identification between the participant and the character they embody would be even greater, and the sense of danger that is already quite moving in the non-VR medium might be effective to the point of being disturbing, pinpointing an ethical dilemma to presenting disturbing narratives in VR that I will discuss further in Chapter Five.

Digital games can not only allow for location-based activist practices, but can also educate participants on how to navigate aspects of the world, including issues of civics and citizenship. Virginia Eubanks, a political scientist, women's studies scholar, and co-founder of the Our Knowledge, Our Power anti-poverty organization, identifies how digital games help participants to gain understanding of necessary bureaucratic processes in the physical world. Eubanks helps people understand the technologies of citizenship—systems like the welfare system, Social Security, health care, or Medicaid—that provide services to citizens of a nation, and she planned a game called *Beat the System: Surviving Welfare* to fulfill that goal. First, Eubanks interviewed women taking technology courses at a YWCA who were also users of the welfare system. She found that women described feelings of loss and despair when technologies of citizenship were "ambivalent towards them, rather than completely inaccessible to them" (Eubanks 22). Eubanks further states, "many [women] described feeling that they 'became a number,' and complained that the computers 'find out everything about you. . . .' The role technology played in the lives of women in the YWCA community was characterized by ambivalence, not absence" (10). The women often described feelings of loss, for example, when a caseworker could not find record of them in the system. They would rather not have access to the system at all than feel invisible to it. Because of the

complex relationship between inequality and information technology, Eubanks comes to a similar conclusion as that of other digital social justice scholars like Banks and Reed, that a picture portraying "haves" and "have-nots" cannot adequately represent digital culture or the digital divide (Eubanks 23). Though Eubanks and Banks both critique the oversimplified digital divide concept, they approach it from different angles. Banks analyzes it through a lens of racial justice, while Eubanks favors an intersectional feminist approach focusing on social location (24). It is important to note that both recognize how public policy has latched onto the digital divide as the problem to fix, pointing to the myth that there is a "self-reproducing 'culture of poverty' in the United States that is driven by the individual choices of poor and working class people themselves rather than being the structural effect of class, racism, and unequal income distribution" (Eubanks 36). With this culture of poverty in mind, *Beat the System: Surviving Welfare* was intended to not only teach necessary tools to navigate the welfare system, but teach the middle-class about challenges their fellow citizens might face while trying to live on public assistance (Eubanks 119). The game was conceived as an interface similar to the popular Electronic Arts game, *The Sims* (Eubanks 119), but the digital portion of the game was never completed.

An interesting finding arose during the workshop planning process, in which participants were roleplaying possible characters and scenarios for the game. Eubanks writes, "the group's final solution to [Andrew's] dilemma was to have Andrew commit a crime brutal enough to get five months in county jail, where he would get the medical care he needed, but not one so severe that he would have to go to federal prison" (125), and she finds that even participants "with no experience with social services—seemed to understand the double binds of public assistance and the potentially catastrophic "choices" many clients are forced to make" (125). In the end, Eubanks did not create the simulation, but focused on the

participatory workshops, because she argues that, “the real work of popular technology was contextualizing everyday experiences in the information age through collaborative research and education projects” (Eubanks 127). What I argue Eubanks created here, though she did not end up creating a digital product, was a physical roleplaying simulation that mirrors some of the type of interpersonal and justice-focused interactivity that we could see in VR narrative games for social justice. Through her work, Eubanks learned, “that we must judge the success and efficacy of our participatory projects by their ability to foster growth, in ourselves and in others who work alongside us, rather than their achievement of narrowly defined deliverables” (156). This is a little-stated point that I think is important for anyone considering a project dealing with the intersection of social justice and technology. Though the creation of the digital deliverable is important, the community participation in the educational and planning process is just as essential when dealing with issues like navigating the technologies of citizenship. If this roleplaying process could be replicated in a virtual environment, where participants from different backgrounds could learn about and work through these issues together with their multitudinous perspectives and knowledge bases, such a digital tool could be an extremely useful addition to the cadre of social justice technology works.

However, we have not yet reached the point where that kind of interaction in VR is available to people, and then we must consider the barrier to such technology for people on public assistance. Though this initial view is somewhat bleak, both Jeff Grabill, another scholar focused on digital community projects, and Eubanks end up expressing utopian hope for technological access. Grabill liaises with the citizens of the community and designers to create a website that meets the community needs, and argues, “that the work of citizenship is knowledge work, meaning that people in communities must coordinate their work, use

specialist technologies to write, and write about issues that are considered scientific, technical, or otherwise demanding some form of expertise" (59). Meanwhile, Eubanks works with women at the YWCA to create the roleplaying scenarios described above (99). Eubanks' citizenship-focused game, if it could be created in a VR setting, not only assists people with lower income in learning how to navigate the welfare system, but also helps people who might not be familiar with the welfare system learn about the frustrations and time involved in navigating the technologies of citizenship. It thus provides meaningful access in a few ways that could be translated to VR projects if scholars and designers are able to work within communities. First, the creators of the citizenship game were women who might not otherwise have had meaningful access to technology. They were users of technologies of citizenship who felt powerless against them. Now, the participants can use technology to create their own response to what they saw as an oppressive system, and have access to the solutions other citizens used that they may not have thought of before. Second, users of the game can understand a relationship to technology to which they might not have been privy before. Eubanks' experience shows how meaningful access can be utopic—a point that will be discussed in Chapter Four when I discuss the potential future of VR—fostering equality and social justice. She declares, "Much of the current high-tech equity policy and scholarship dismisses the resources of poor and working people, either mourning them as inevitable victims of progress or seeking to retool them to 'fit' into the new economy" (Eubanks 154). However, when communities and citizens have meaningful access, diverse relationships to the technologies of citizenship are understood, and are not discounted. Furthermore, in the absence of being able to directly create the technologies of citizenship, citizens with meaningful access can at least critique their place in society through the invention of technologies with varying viewpoints.

In proposing to create a space within VR for citizens to play out and critique their relationship to the technologies of citizenship, I also look to the game designer and scholar Mary Flanagan, who views digital games as a space that can be claimed by activists; in *Critical Play*, she refers to games as a "third space," stating that, "Computer games, especially networked computer games, have become often-used and 'public' social spaces. As such, they must be seen as spaces of translation, already transformed by game designers and the growing numbers of game players: international, transbordered, fluid" (253). I do not think "third space" is necessarily that best way to describe the digital game world. Like Jurgenson, I argue physical space and cyberspace overlap, and like Baudrillard, we must to some extent consider that the border between simulation and reality has blurred. As we have seen from the work of Banks and Nakamura, physical social identities and hierarchies manifest in cyberspace, and the game can never fully consume the player's consciousness, and as I will explore in the next chapter, emotions experienced while a participant is transported by a VR narrative game focused on social justice can influence their beliefs about physical-world issues. Therefore, social justice issues can be both understood and explored through digital technology, and—as virtual ethnography posits—from within digital societies. Discussing Antonio Negri's work on subversion, which could be defined as using code for an unintended outcome, or even something as simple as cheat codes, Flanagan states it "can be a powerful means for marginalized groups to have a voice. Perhaps games are such a tool: Negri notes that subversion is *necessary* within a multitude of organizations in myriad types of forms, and not merely for the functioning of such organizations but for individual and collective well-being" (11). Flanagan continues to explain subversion as an act of creation, rather than destruction, and, like Ruiz, links it to the artistic avant-garde movement. Flanagan suggests designers can use subversive techniques to "move the player beyond normalcy"

(259), citing obnoxious language and sound poetry as ways of intervening between the player's comfort and the game, and furthering social justice through means of digital technology. Flanagan and Nissenbaum describe their own work in a game called *Layoff*, in which players simulate having to lay off employees during the economic recession in the United States. In initial playtests, players had very little empathy for the characters they fired, and thus very little difficult firing people. However, when the authors added more robust character profiles to the game, players felt like they "knew" the characters better, had more empathy for them, and had trouble laying them off (Flanagan and Nissenbaum 135). As Flanagan indicates, creating deep and human characters in digital games that are based on real-life situations—something at which *Darfur is Dying* is also successful—can promote cultural understanding and social justice via activist games by intervening with the player's comfort, and the tendency of non-VR activist games to take away participants' comfort and control is something I will discuss further as a perhaps ineffective convention for the VR medium.

Conclusion

Thus, digital technology can expand and constrain social justice in several ways. Digital technology can help marginalized groups reclaim physical and digital territory through games like *Re:Activism* that bring memories of forgotten or underrepresented history back to physical spaces, but digital technology can also constrain, filter, and regulate cultural exchange through coded locked doors. Digital technology can promote cultural exchange through virtual ethnography, as seen in the example of the Ybor City folktale, *Turkey Maiden*, and activist games like *Darfur is Dying* can further engender empathy for marginalized groups and social causes. To return to Freire's discussion of oppression: "The

oppressor consciousness tends to transform everything surrounding it into an object of its domination. The earth, property, production, the creations of people, people themselves, time—everything is reduced to the status of objects at its disposal" (40). If we are to ensure digital technology is not dominated by oppression, activists and scholars concerned with social justice must inhabit the digital world just as they do the physical world, with an eye toward subverting oppression and amplifying marginalized voices.

Taken in the context of the previous chapter, the lack of virtual reality narrative games based on social justice is troubling in the sense that VR technology has the potential to be dominated by oppression if we do not consider its effect on social causes and the ways in which it can be levered, like non-VR games before it, for the purpose of communicating between groups about justice issues. To this end, the next chapter identifies and tests a play study methodology for examining participants' responses to a narrative in VR that has justice themes. By learning how participants react to the particular affordances and constraints of VR technology, we can then come to some conclusions about what the future of VR might look like in a dystopic society—where digital social justice is not valued—or utopic society—where we work for equality and meaningful technological access. Furthermore, learning from participants' responses to VR narratives and the design decisions that have worked in activist non-VR narratives, we can begin to explore the design decisions and best practices that lead us to the creation of virtual reality narrative games focused on social justice.

CHAPTER THREE: DOES TRANSPORTATION CHANGE MINDS? A STUDY OF THE PSYCHOLOGICAL IMPACT OF VIRTUAL REALITY NARRATIVES ON SOCIAL JUSTICE ISSUES

Virtual Reality and Narrative Transportation: Why Does It Matter?

In Chapter One, I reviewed the literature on myriad terms that I deem "immersion-esque." Each of these terms—transportation, presence, flow, immersion, and ontological interaction—has its own relationship both to the technology being used and to the participant enjoying the technology. For the purposes of this play study, I settled on transportation as the most appropriate measure of how narratives can change readers' minds, because, as I mention earlier, transportation is a particular type of immersion that is dependent on participant involvement in the narrative. Where flow can be based on procedural immersion and presence and ontological interaction might be tied to the participants' embodiment of the character, transportation is a direct function of the story and characters. This point is made stronger when we consider that transportation studies have, so far, been conducted only in relation to textual narratives, but that it has been found to be an effective measure of belief change. It is important to note that other scholars' work—in particular, Mary Flanagan's—has addressed the roles of participant bias and empathy in game narratives, and how design practices might encourage participant empathy in games designed around social causes and encourage designers' reflection on how games might resonate socially, culturally, and politically throughout the design process (Flanagan and Nissenbaum 33), though that work has also not yet branched out into virtual reality narratives.

However, work by Geoff Kaufman and Mary Flanagan finds "games utilizing Embedded Design strategies may be especially effective at creating more open, expansive,

and empathetic mindsets in players, one that makes them more likely to consider or accept the information contained in more direct or more obviously didactic interventions" (Kaufman and Flanagan 13). In their study, they look at player responses to design strategies that dealt with activist issues (they call these games "prosocial games") and conclude design strategies that are less overt in their presentation of social themes were more effective at reducing participants' previously held stereotypes and biases (Kaufman and Flanagan 1). There is some relationship between this work and narrative transportation, though the approach is slightly different. Flanagan and Nissenbaum enumerate fifteen elements that generate a game's meaning, and these include both procedural elements (like the game engine and strategies) and poetics (like the narrative premise and characters) (33). Where narrative transportation has been helpful has been in identifying how the poetics—the game's story and characters—might be distinguished from the procedure for the purpose of a study that is particularly focused on the story aspect of virtual reality narrative games. Furthermore, where Flanagan's work is focused on identifying and reversing implicit biases and stereotypes, narrative transportation does not measure bias, but whether immersion and enjoyment in a narrative can affect participants' beliefs; in this case, beliefs in whether the world was a just place or not were the measurement. It is, however, important to note that techniques identified by Flanagan and Kaufman in a 2016 paper as helpful in reducing bias are often also related to the story and characters. For example, their identification of the success of guided perspective-taking activities in reducing bias (Flanagan and Kaufman 222) aligns with findings below in this study that found first-person perspectives were highly effective in increasing players' feelings of transportation.

Part of the purpose of this study is to determine whether digital narratives, like textual narratives before them, might be effective in changing participants' beliefs about justice

issues, and these beliefs may be either implicit or explicit biases. In “How Fictional Tales Wag Real-World Beliefs,” Jeffrey J. Strange, one of the scholars studying transportation, suggests, “Through the vehicle of fiction, we are invited to reconceptualize past, present, and future, and to consider alternatives to our entrenched point of view” (282). in Chapter Two, I identified how games can be used to promote social justice causes, as well as some reasons why they should be used for that purpose. In this chapter, I will test these assumptions via a play study of a VR narrative with social justice themes, *The Price of Freedom*. As mentioned previously, the narrative does not fit my definition of a virtual reality narrative game. Rather, given its single-path storyline, it would be better defined as simply a virtual reality narrative. However, since there are no current VR games with a justice-based narrative focus, I have settled on *The Price of Freedom* as the best option for the study, given that is has, as I will discuss below, the appropriate themes. As part of future research, I hope to develop a VR narrative game with social justice themes for the express purpose of studying participants’ responses to the game. Because *The Price of Freedom* is a work of historical fiction, it would be useful to create a game focused on a more current story, but with similar themes, to see how participants might react differently to something that did not happen so far in the past. This might avoid what Strange cites as a tension between reflection and invention for authors of fiction, given that they are able to “treat life both as an object to be reflected and as the raw material from which to shape new visions, experiences, and forms” (267); this tension can create distrust if the reader feels they have been misled, or if the author fails to properly contextualize invented information as part of the story world (268). For the purposes of this study, participants experienced a historical narrative, but Chapter Four will further discuss the potential pitfalls of using VR narrative power—particularly historical fiction—to change beliefs. Given the increasing visibility and prevalence of virtual reality technology, digital

humanities scholars must begin exploring the relationship between narrative transportation, social justice, and virtual reality in empirical, tangible ways in order to understand how the stories presented might affect participants. Using the results of the play study presented in this chapter as a backbone, I will further propose design techniques in Chapter Five for creating VR narratives that encourage participants to recognize and critique physical-world social justice issues.

The Price of Freedom: The Story and Themes

For the purpose of this study, participants played *The Price of Freedom*, a room-scale spy story developed by Construct Studios and released in December 2016 for the HTC Vive. The story itself is historical fiction and is based on a series of CIA mind control experiments during the Cold War known as Project MK Ultra. During the project, psychiatric patients and military war veterans were subjected to experimental drugs, such as LSD, barbiturates, and amphetamines, designed to make them more susceptible to suggestion. In 1977, many documents from MK Ultra resurfaced after the CIA attempted to destroy the documents during the Watergate Scandal. During that time, the Senate held a hearing between the Select Committee on Intelligence, the Subcommittee on Health and Scientific Research, and the Committee on Human Resources to investigate the project. During the hearing, Senator Ted Kennedy recounts some of the horrifying practices engaged in during the project, stating, "For example, heroin addicts were enticed into participating in LSD experiments in order to get a reward—heroin" (United States Senate 3). Other subjects were not notified of their participation in the project and were therefore administered drugs without their knowledge; many suffered health concerns in the following days and weeks, and at least one subject died as a result of the experiments (United States Senate 2). The fact that MK Ultra existed, and

that it was only uncovered when stray documents were found, raises questions about government ethics and the rights of citizens to know the measures that are being undertaken in the name of public safety and national security. What rights do citizens have to know about these types of projects, and how can we trust a system that would cruelly experiment on its own citizens? We see similar debates arise in our current political system when we discuss issues like the sale of citizens' private internet browsing data, the ethical treatment of prisoners, the ongoing care of veterans with disabilities, and whether we should interfere when other governments violate human rights agreements.

Thus, the study's survey asked participants about their opinions on social justice in relation to government surveillance and control issues in hopes of pinpointing whether a story about government conspiracy could influence players' perspectives on justice and government in the physical world. Narrative transportation literature suggests that participants respond more emotionally to narratives they perceive as high quality, and *The Price of Freedom* has a "very positive" rating on Steam with 238 reviews. These reviews indicate that participants have found the game engaging, and choosing this existing narrative would create an effective experiment. As I mentioned previously, future research will include the creation of a VR narrative game focused on social justice themes, but in this case the creation of an entirely new virtual reality narrative of a high enough quality to be effective would have delayed completion of the study. However, the results of this study provide insights into what story elements can be successfully incorporated into future virtual reality narratives to tackle myriad other social justice issues. Future studies may thus be able to leverage the findings to create and test new narratives specifically designed for this purpose.

The interactive narrative was chosen for its positive reviews, its justice-based themes, and also because it can be played in its entirety in about 30 minutes, allowing participants to

experience the complete narrative arc. In *The Price of Freedom*, the participant takes on the role of Cathy, a CIA operative who is unknowingly part of the MK Ultra project. The program aimed to create a perfect spy, and the premise of the game is that the participant, playing *The Price of Freedom* as Cathy, is being tested for their progress. The game opens as Cathy's handler orders her to kill a man in his apartment and locate secret documents. However, upon finding the documents Cathy finds out the man she has just killed is her father, who was collecting information to uncover the government's involvement in performing experiments on Cathy. She is unknowingly part of the program. To progress the narrative, the player must use clues in the apartment to locate a safe and its combination, and then burn the incriminating documents. As the fire engulfs the apartment around the player, they are returned to a mental hospital, where the handler praises them on a job well-done and shows them the dress they will wear on their next mission before locking them in a cell-like room. The narrative ends.

The narrative raises questions about how far the state should be able to go in the name of security for its citizens, and the ethical implications of keeping such programs secret from citizens of the country. Issues of privacy are also rooted in physical representations of surveillance, like Michel Foucault's panopticism. However, Lawrence Lessig connects privacy and freedom of speech to the latent ambiguity of computer code itself, stating, "We have nothing to be faithful to, because the choices we now face are choices that our forebears did not" (156). With the recent focus on digital security, including controversies like the March 7, 2017 Wikileaks release of information on the CIA's ability to spy on American citizens through camera-enabled devices like smart televisions and the Russian hacking surrounding the 2016 presidential election, the themes in *The Price of Freedom* are well-

suited to a study asking participants to connect the social justice aspects of the narrative to the social justice questions they might already be asking themselves while reading the news.

Play Study Methodology

To measure participants' transportation in a VR narrative, a play study was conducted using an HTC Vive virtual reality system in the Games Research Lab, part of the digital media department at the University of Central Florida (UCF). The study began at the beginning of UCF's fall 2017 semester, on August 29, and ran until October 6[2]. The study was advertised among digital media, English, and composition students via posted flyers and emails, and forty-six students (N=46) participated. This total number of participants is fewer than Green and Brock's initial narrative transportation study (which has an N value of 97), partially because, due to the nature of the VR technology available, only one participant could complete the study at a time. However, because the researcher could then spend time performing individual participant observations and conducting one-on-one interviews, the study yielded qualitative results not found as part of Green and Brock's research.

Study participants were divided into three groups: two groups played *The Price of Freedom* on the HTC Vive, and a third control group watched a screen capture of *The Price of Freedom* on a two-dimensional computer monitor. One group who played *The Price of Freedom* was told verbally before the study that the story is real, while the second group who played *The Price of Freedom* was told it is a fictional scenario. The control group was not given any information on the story's fictional or nonfictional status. This methodology further mirrors the previous narrative transportation study, in which participants were given

[2] Due to Hurricane Irma's impact on campus there was a 1.5-week period during which the lab was inaccessible and no research could be conducted.

the same textual story, but half were told it was fictional while the other half were told it was nonfictional. Furthermore, the use of a control group who watches the narrative will help determine whether VR narratives truly score higher on the transportation scale than the same story viewed on a non-VR monitor. All groups completed similar pre- and post-study surveys, with some modifications to account for the fact that the control group could not influence the story. Because *The Price of Freedom* contains roughly thirty minutes of gameplay, and pre- and post-study surveys and interviews were expected to take another thirty minutes, each participant was scheduled for roughly one hour, and each participant was compensated for their time with a $10 gift card to Amazon.com. The study methodology and reward system was approved by UCF's Institutional Review Board (IRB) office.

I hypothesized, prior to the study, that participants playing through the narrative in VR would be more transported than those watching the 2D playthrough because they would have direct control over the story and experience. Thus, I hypothesized that the virtual reality participants would also experience a greater degree of belief change in response to the story.

Following Green and Brock's study, which, as stated above, was chosen for its particular focus on narrative as a function of belief change, the study isolated transportation through a series of eight measures: story-specific beliefs, just-world items, the transportation questionnaire, thought listings, character evaluations, reality monitoring, source manipulation checks, and a post-study interview (though Green and Brock use a recall test) (705). Because emotion itself is a difficult metric to measure without some way to monitor physiological reactions, I depended on respondents' perception of their own emotions as indicated in the post-study survey for the measurements in this initial qualitative study. I have outlined these measures below.

Story-Specific Beliefs.

Green and Brock instructed participants to read the short story "Murder at the Mall," which is about a college student whose younger sister is stabbed by a psychiatric patient at a suburban mall. The story was chosen because, though it was fictional, the authors could present it as fiction or nonfiction. Prior to reading the narrative, participants took a belief survey that included statements on a 0-60 scale on story-related topics, such as, "freedoms for psychiatric patients and the likelihood of attacks in public places" (705). The authors hypothesized that participants whose beliefs aligned with those presented in the narrative would feel more transported, but also measured beliefs after reading the narrative to see if transportation affected those beliefs. In the case of *The Price of Freedom*, I asked participants to take a belief survey using the Likert scale. However, I altered the statements themselves to include topics related to the virtual reality story.

Just-World Items.

For Green and Brock, this was another pre-survey, in which participants rated two items from Rubin and Peplau's "Belief in a Just World" scale from 0-60. Unlike the story-specific belief survey, the just-world survey is more abstract. For *The Price of Freedom*, I used the following selected items from Rubin and Peplau's scale:

1. Basically, the world is a just place. (J)

5. It is a common occurrence for a guilty person to get off free in American courts. (U)

8. The political candidate who sticks up for their principles rarely gets elected. (U)

9. It is rare for an innocent person to be wrongly sent to jail. (I)

11. By and large, people deserve what they get. (J)

14. Although evil people may hold political power for a while, in the general course of

history good wins out. (J)

17. It is often impossible for a person to receive a fair trial in the USA. (U)

18. People who meet with misfortune have often brought it on themselves. (J)

19. Crime doesn't pay. (J)

20. Many people suffer through absolutely no fault of their own. (U)

(Rubin and Peplau 69-70)

Transportation Questionnaire.

Green and Brock's transportation questionnaire, which was given to participants after reading the story, includes items such as "While I was reading the narrative, I could easily picture the events in it taking place" (704), and items about picturing particular characters, such as, "While reading the narrative, I had a vivid image of Katie" (704). Virtual reality does not always necessitate that the reader picture characters or events, as they are already pictured, but in the case of *The Price of Freedom*, the narrator is heard through an earpiece and not shown, while the protagonist is only shown as a pair of hands controlled by the player. I updated the transportation questionnaire to take some of the affordances of interactive virtual reality narratives into account. For example, to align with Biocca's identification of different levels of player immersion in virtual reality, I modified the first above to read, "While I was participating in the narrative, I could easily picture the events in it taking place in reality." To take into account the fact that real-world expectations affect how the reader views narratives, the second statement reads, "While playing the narrative, I had a vivid image of the narrator." Thus, my transportation questionnaire includes the following modified statements from Green and Brock's narrative transportation questionnaire:

1. While I was participating in the narrative, I could easily picture the events in it taking

place in reality.

2. While I was participating in the narrative, activity going on in the room around me was on my mind. (R)

3. I could picture myself as the main character, Cathy, in the scene of the events shown in the narrative.

4. I was mentally involved in the narrative while participating in the story.

5. After finishing the narrative, I found it easy to put it out of my mind. (R)

6. I wanted to learn how the narrative ended.

7. The narrative affected me emotionally.

8. I found myself thinking of ways the narrative could have turned out differently.

9. I found my mind wandering while playing the narrative. (R)

10. The events in the narrative are relevant to my everyday life.

11. The events in the narrative have changed my life.

To Green and Brock's questionnaire, I added the following questions specifically related to virtual reality and *The Price of Freedom*:

12. While participating in the narrative, I wanted to explore each room fully before moving on.

13. I felt I had to take actions I would not do in reality to progress the narrative.

14. Some of the images in the story disturbed me.

15. I found myself distracted by elements in the apartment that I could manipulate but were not important to the story.

16. I would have burned the secret room in real life.

17. I would like to play more narratives dealing with themes of government control and surveillance.

18. While participating in the narrative, I had a vivid image of the narrator.
19. While playing the narrative as the main character, Cathy, I felt as though I became her.
20. I want to know what Cathy's next mission is.

Thought Listings.

According to Green and Brock, "Participants were instructed to list all the thoughts and ideas they had while reading the story, without worrying about spelling or grammar" (706). Because the participants' hands were occupied while playing, I remained in the room to observe participants and took notes of places where they had trouble or asked for assistance. They were also, as part of their participant interview, asked to verbally list thoughts and emotions they had while playing the narrative that they may not have verbalized during the experience. For example, if a participant said, "The controller buttons were confusing," I would consider that a technology-related, rather than a narrative-related, statement. If a participant wrote, "I wanted to know how the story ended," it would indicate interest in the narrative itself. This metric can show how much the technology itself distracts players from the narrative, and whether players with more thoughts about the technology felt hampered in their understanding of the narrative, but it also led to identifying some interesting similarities between how players approach games that were not anticipated.

Character Evaluations.

Green and Brock hypothesized that readers who liked, and identified emotionally with, the characters would experience greater narrative transportation. Thus, they asked readers to rate the characters from 0-60 on four scales: "good-bad, pleasant-unpleasant, attractive-

unattractive, and responsible-irresponsible" (706). Since *The Price of Freedom* is from a first-person perspective, the main character is the player. To maintain the link between narrative transportation studies, participants will be asked to rate the main character and narrator.

Reality Monitoring.

Green and Brock took this simple measurement by asking the participants one question: whether the story they read was true or false. Thus, I asked participants whether *The Price of Freedom* was true or false in the post-study survey. Interestingly, Green and Brock found that the reader's perception of the material's truth or untruth did not affect transportation. Participants were just as transported by the stories marked as fiction. Though this metric was used as part of this play study, the results were not conclusive, and are something that would be better explored with a different narrative. As I discuss below, because the narrative was historical fiction and some participants already had knowledge of the historical events, they may not have listened to whether I told them the story was fiction or nonfiction.

Source Manipulation Checks.

Similar to the measurement above, participants in Green and Brock's study were asked to identify whether the story was "fiction, nonfiction, or don't know" (706). These answers were checked against the reality monitoring metric—so in Green and Brock's study those participants who misidentified the source were not included in this result—to determine that the perceived truth of the story has no effect on transportation. As part of my study, the majority of the participants did not pass the source manipulation check, meaning they either misidentified the source completely or gave a different answer for the Reality Monitoring and Source Manipulation questions. Because of this inconsistency, I did not use the results of this

question to test whether a participant's perceived truth of the story affected their amount of transportation, and I was not able to determine whether these results aligned with previous studies into the effects of textual narratives on transportation, which find that the perceived truth does not have an effect on readers' transportation. As I discuss below, the failure of participants to correctly answer this question may have been due to the way the information was presented verbally prior to playing the narrative. It was mentioned but not written down, and so participants may have forgotten what was said by the time they experience the story and read the question on the transportation questionnaire thirty minutes later. As part of a future study, I would find a way to keep this information fresher in the participants' mind, perhaps with an information sheet about the narrative or a pre-study test.

Participant Interviews.

Green and Brock gave participants an 18-item true-false recall test about information from the story to determine whether participants were paying attention while they read the story (706). In virtual reality narratives, it would be difficult to not pay attention to the story while playing it, because the participant must take certain actions to progress the story, so I replaced this metric with a post-study interview. In the interview, I asked participants questions about aspects of the game that may not have been addressed in the previous surveys, such as how they felt when the game forced them to kill another character to advance, or whether they felt like watching the narrative on a monitor as opposed to playing it was detrimental to their experience. To ensure that participants were asked the same questions and experienced the same style of interview, I used the script and questions below for each individual:

“Thank you for participating in the study today. I’d just like to ask you a few brief questions about your experience with The Price of Freedom. I’m going to turn on the audio recording now, but if you’re uncomfortable with it at any time, let me know and I’ll turn it off.

[If participant completed the whole story in VR] How did you feel physically when progressing through the story?

Did you think you might be experiencing simulator sickness at any point?

How did you feel mentally while progressing through the story?

Can you describe any emotions you might have had?

[If participant completed the whole story in VR] Did you enjoy using the VR headset?

Did you feel comfortable with the technology?

[If participant watched the story in 2D] Did you feel like you were missing something by not participating in the story?

[If participant completed the whole story in VR] What was the most difficult part of the technology to operate?

[If participant watched the story in 2D] Would you like to try the story using the VR technology?

How did you feel about the main character, Cathy? Did you like her?

Does knowing Cathy was under the effects of mind control change your opinion about her?

How did you feel about the voice in Cathy’s headset?

Is there anything you feel would have made the story more effective?

Do you like it when stories deal with real-world issues?”

As indicated by the script above, the interviews were audio recorded, and I transcribed them afterwards. All participants agreed to the audio recording, and each interviewee was given a

participant number that was tied to their survey response. In order to keep their identities confidential, participants' names were not collected.

In *Ethnography and Virtual Worlds*, Boellstorff et al. affirm, "while participant observation involves spending time with persons in contexts that are not always fully public . . . interviews provide an opportunity for truly private discussions that can reveal beliefs and opinions difficult to access otherwise" (93). Because it is important that these conversations be kept private and confidential, the interviews were conducted in a private conference room in the Games Research Lab with the door closed, and since participants had already filled out an extensive survey, the interviews were completed in roughly five minutes each. The room adjoins the space in which the HTC Vive is housed, so participants were able to spend the whole experience in complete privacy. Because VR can be a disorienting experience in which the participant is not fully aware of the actions happening in the physical space around them, it is important that participants feel physically safe in the space, and comfortable knowing they are not going to be harmed or surprised in any way in the physical world. Prior to the experience, I informed participants that I would be in the room the whole time, but that I would be quiet and only observe unless they asked me a direct question, and that no one else would be entering the space. Observing and conversing with participants about their experiences and emotions within the narrative ended up being one of the most interesting aspects of the study, and I would encourage and recommend that future studies on narrative transportation include observation and interview. The findings helped determine whether certain characters and scenarios reminded participants of real life, and identified the particular points in the narrative and aspects of the game that might be the most effective at inducing emotions, thus determining whether narrative transportation functions in virtual reality as it functions in textual narrative—as a mechanism for narrative-based belief change.

Study Limitations

With the methodology and measurement metrics of the study in mind, it is also important to explore some of the limitations of the study. Firstly, participants self-selected to participate in a virtual reality play study, and most were UCF students (either undergraduate or graduate), meaning they fell within a particular demographic. As the study was most heavily publicized in digital media and technical communication courses, it can also be deduced that many had a strong understanding of technology, and of games, prior to participating. Indeed, nearly half of participants indicated previous experience with some form of VR. It would be interesting and beneficial to conduct a similar study with a wider demographic. In particular, a wider range of ages and a more even breakdown of participants' genders would be helpful; as shown in the table below, fewer than half of the participants identified as female.

Secondly, the study measures belief change, but participants beliefs are measured directly before and after playing the VR narrative game, meaning the game's themes are fresh in their minds when they answer the survey for the second time, and they are also likely to remember that they answered the same questions less than an hour prior. A longitudinal study that determines whether the belief change experienced from participating in a VR narrative game are maintained for longer than a few minutes would be a beneficial addition to the research. If participants could take the post-study survey at regular intervals—from a few minutes to weeks or months after playing the game—it would help determine how effective narratives might be at permanently altering beliefs. That said, it would be more difficult to measure whether the belief change then stemmed from the particular narrative game being studied, or whether other news or fictional narratives the participants were exposed to in the interim might also have contributed to the belief change.

Thirdly, as I will explore further below, some of the transportation-related questions should be re-worded for further studies, as participants prioritized the virtual space when answering questions about distraction, though the questions expected them to answer in regard to the physical space. Despite this confusion, the responses combined with qualitative responses to the interview questions still led to some interesting results. In future studies, the questions will be better explained and whether they are meant to deal with the physical or virtual will be better defined.

Finally, one of the findings of narrative transportation is that participants are transported and experience belief change as a result of transportation regardless of whether the narrative used is fictional or nonfictional. In the case of the VR play study, participants often could not determine whether the narrative was fictional or nonfictional, even though they were told one or the other before beginning the study. This led to inconclusive results for this measurement. Further studies should find a way to make the information more explicit, perhaps by indicating the story's fictional or nonfictional status at the top of the post-study survey or asking a question about the story's realness during the post-study interview, as playing the game after hearing the information seems to have made participants forget what they were told. Familiarity with the story's subject may also have impacted participants' perceptions of whether it was real or not.

Study Results

As stated above, 46 participants completed the study, with the breakdown of participants in each study condition shown in the table below.

Table 1. Listing of participants according to gender and experiment condition.

Gender Identity	2D - Control	VR - Fiction	VR - Nonfiction	Total
Male	10	13	7	30
Female	5	2	7	14
Nonbinary	0	1	0	1
Prefer not to say	0	0	1	1
Total	15	16	15	46

In regard to previous experience with VR, 26 participants indicated some experience with the technology, with most citing cardboard or mobile setups as their primary use of VR. In interviews, as shown below, many participants indicated that their experience with the HTC Vive was more immersive than previous VR setups they had used.

In regard to the breakdown of participants by gender, future studies would ideally include a more even breakdown of male and female study participants. Furthermore, though I did not collect other demographic data, the participants were students at the University of Central Florida, and therefore most were young and likely had previous experience with technology. In future studies, I might aim for a more diverse demographic of age and gender in participants, and might use this information to determine if certain types of stories affect demographics differently.

Story-Specific Beliefs and Just-World Items.

Participants took the same 14-question survey before and after playing *The Price of Freedom* or viewing the narrative to determine whether the narrative's themes had an effect on their beliefs in whether the world is a just place. The responses to 10 of the 14 questions indicated

that the narrative's themes were effective at causing participants to reconsider their previously held beliefs. For example, prior to completing the study, 32 participants (see Figure below) indicated some form of agreement in the statement: "I feel safe in America." After the narrative, only 29 participants indicated agreement, and only 1 indicated strong agreement with the statement.

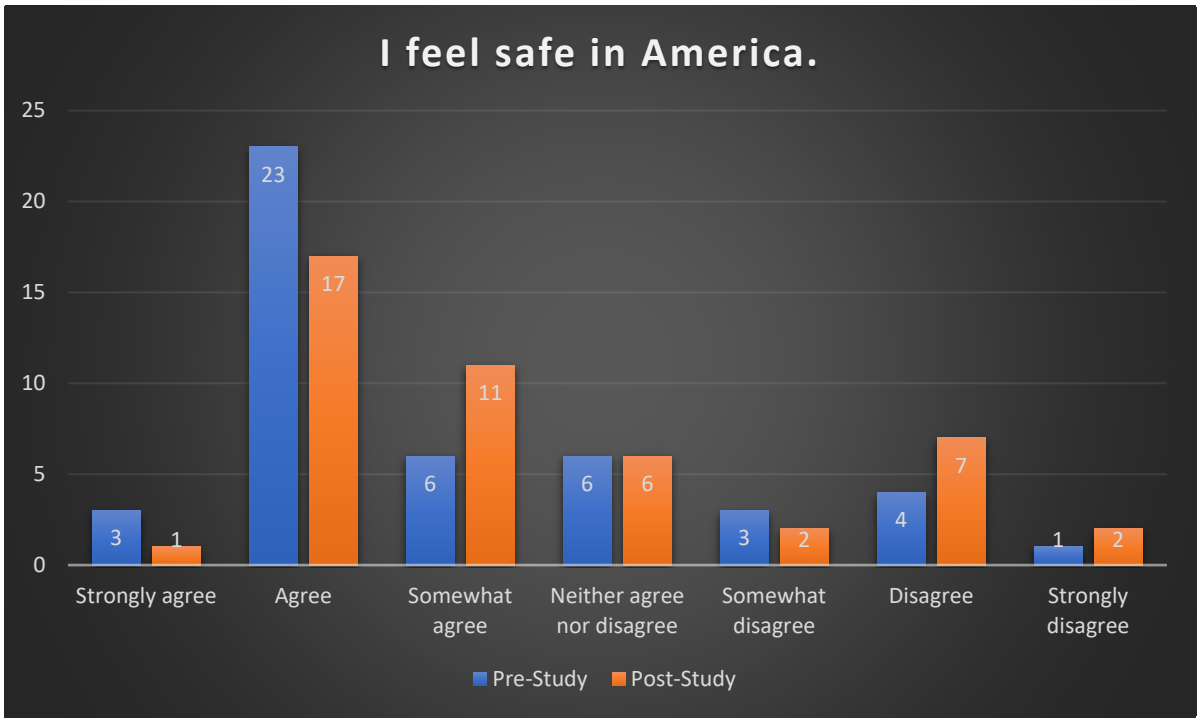

Figure 2. Participants' responses to story-specific belief questions about their feelings of safety in America.

Statements with stronger connections to the narrative's themes saw greater shifts in participant response. For example, in the narrative, the player learns about a series of secret experiments conducted by the CIA on unwilling citizens. As shown in the figure below, prior to playing, only 4 participants disagreed with the statement, "It is ethical for the government to withhold some information for the protection of the people." After, 13 participants disagreed with that statement.

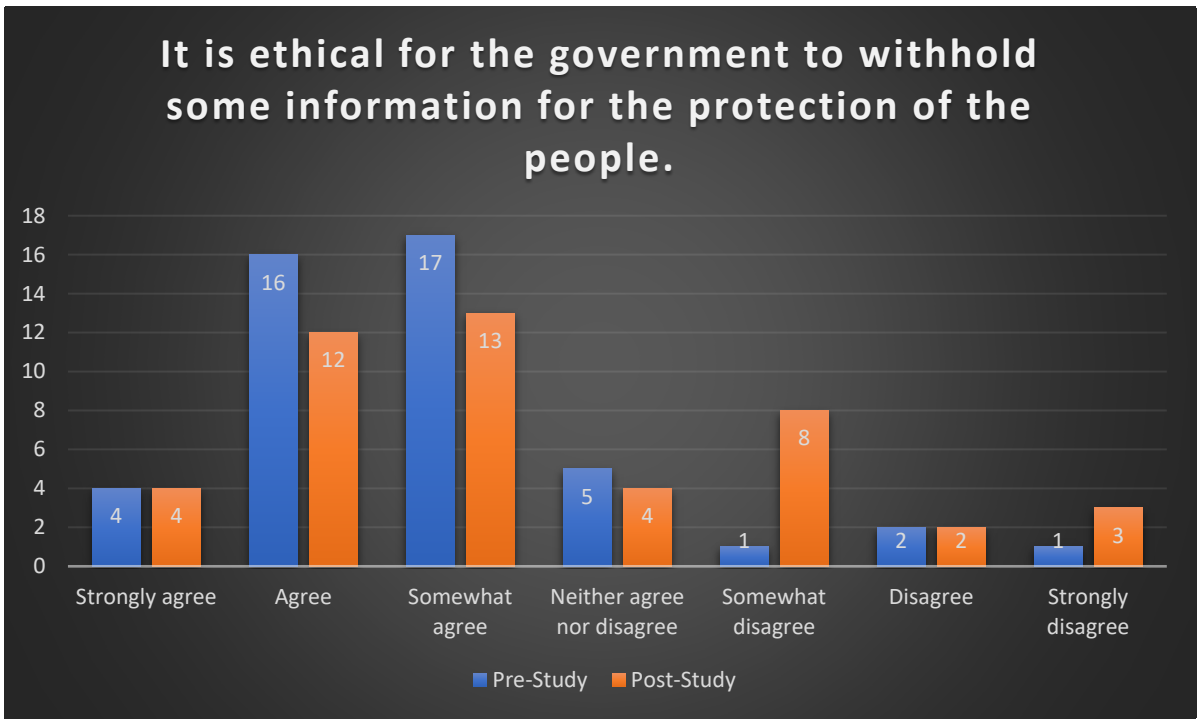

Figure 3. Participants' responses to story-specific belief questions about government information.

However, before playing the narrative, 33 participants agreed, “Private citizens have a right to know what happens in the intelligence community.” After playing, there was almost no change, with 32 participants agreeing with the statement (see Figure below). It appears the narrative was not strong enough to sway those participants who felt some amount of secrecy was necessary to effective intelligence operations.

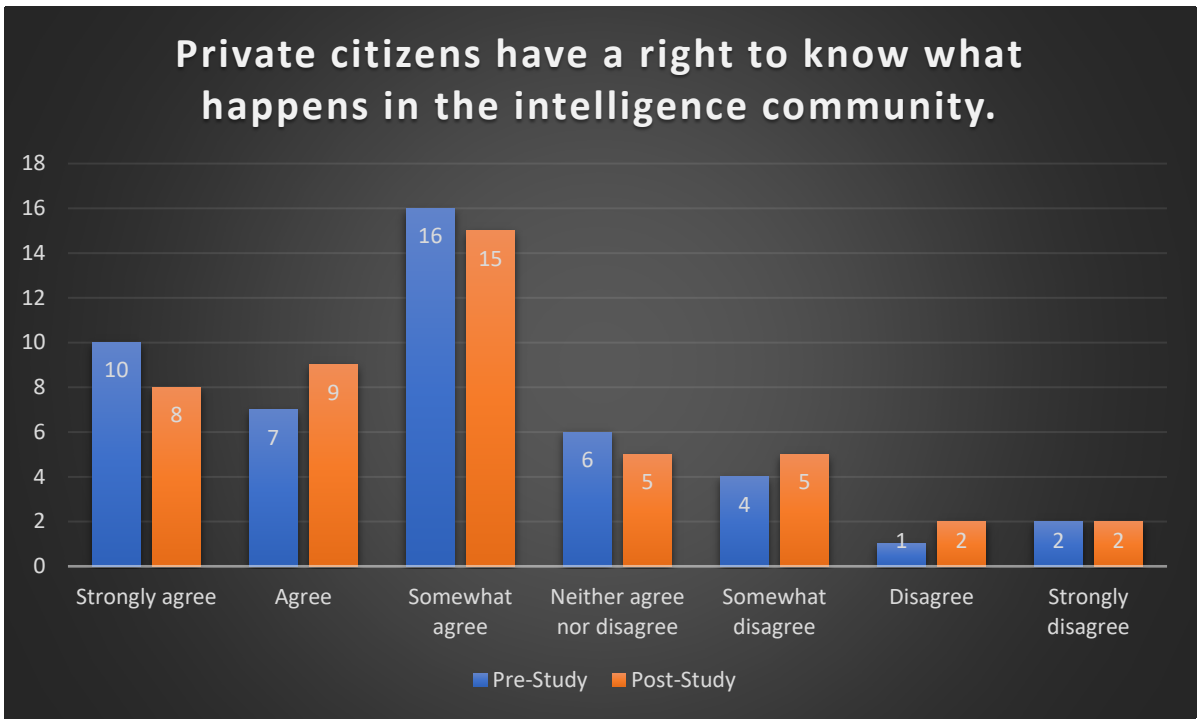

Figure 4. Participants' responses to story-specific belief questions about the citizens' rights to intelligence information.

Participants also demonstrated a shift in opinion when asked more broadly about just-world issues, with 20 participants disagreeing before the study that, “Basically, the world is a just place,” and 24 participants disagreeing with the statement after the study (see Figure below).

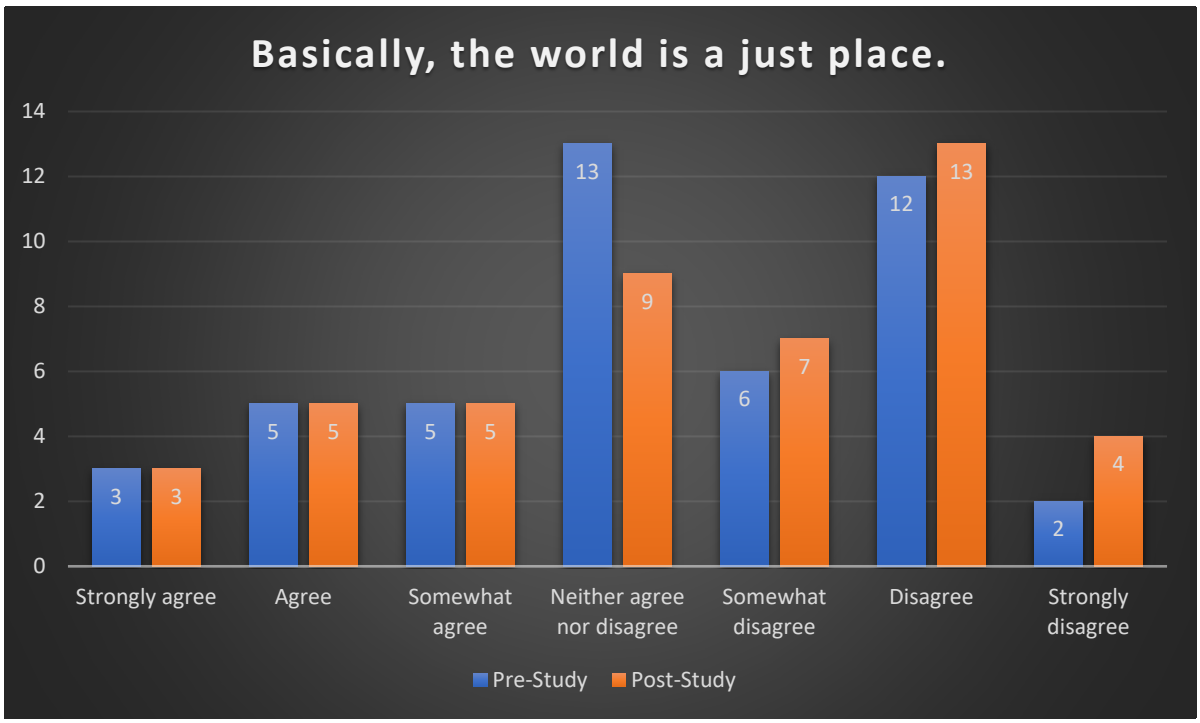

Figure 5. Participants' responses to just-world survey questions about the general amount of justice in the world.

However, the strongest contrast between the pre- and post-study surveys was in the statement, “By and large, people deserve what they get.” Before the study, 14 participants agreed with this statement, while only 9 agreed with it following the study (see Figure below). Participants’ perceptions of Cathy, the main character, may have influenced their responses to this question, as they described her in the post-study interview as “innocent,” “powerless,” and not in charge of her own choices.

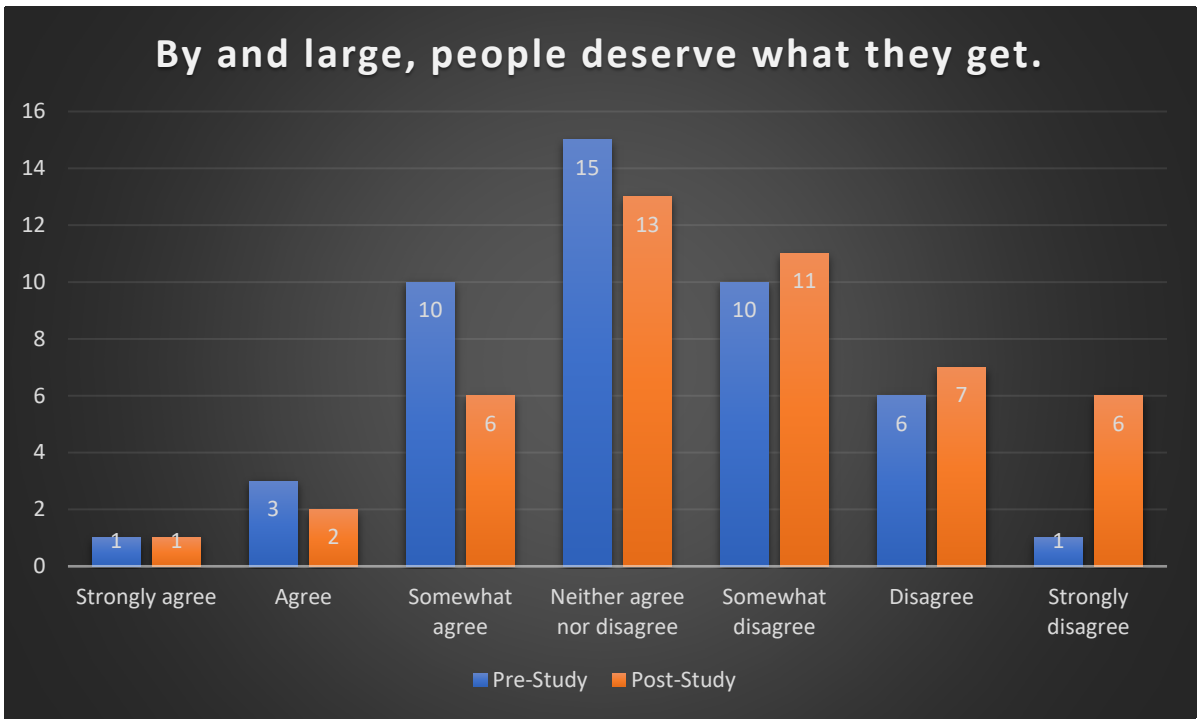

Figure 6. Participants' responses to just-world survey questions about whether people deserve what they get.

Thus, the responses to most statements in the justice surveys indicated that the narrative had the potential to alter participants' beliefs. As shown below, these changes in belief may be a function of how transported participants felt while playing the narrative.

Transportation Questionnaire.

The narrative likely acted as an effective method of belief change because participants indicated that they were successfully transported by it. When asked if they were mentally involved in the narrative while watching or playing the story, all but two participants indicated agreement with that statement (see Figure below).

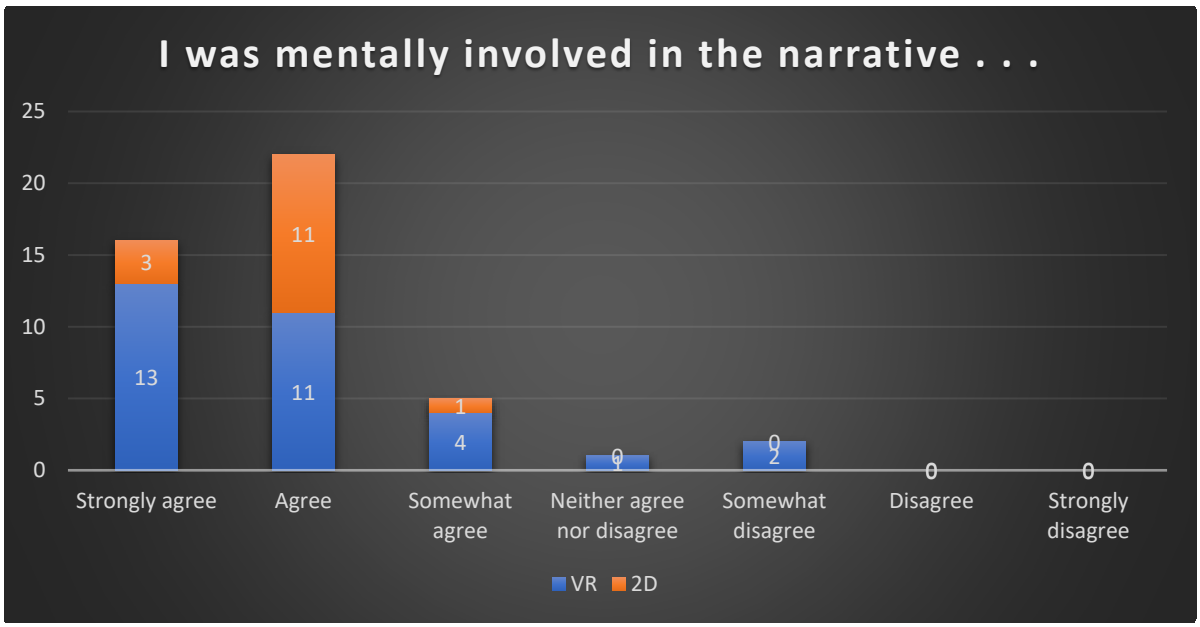

Figure 7. Participants' responses to the transportation questionnaire about whether they were mentally involved in the narrative.

Interestingly, the two participants who stated they were not mentally involved in the narrative played the game in VR, which was hypothesized to be more transportive and immersive than watching the 2D playthrough. One reason for this response may have been, as indicated in participant interviews, that some participants were concerned with exploring the room and playing with objects before focusing on the narrative. For example, one participant stated:

> I considered how I became distracted by some elements in the room, but I think that was also very important because it adds to a sense of realism and immersion, and that might have been because it was my first VR experience, but I don't know. I very much enjoyed all of the text in the room, although I could see myself being distracted by other things to do in the room in the future. In the simulated environment having all the texts in the room was, yeah.

This may also explain why, as shown in the figure below, 21 (68%) of the participants in the VR condition of the experiment indicated, " . . . activity going on in the room around me was on my mind." The question was taken from Green and Brock's transportation survey, but became confusing when applied to the VR game, as some participants were unsure as to whether "the room around me" meant the virtual or physical room.

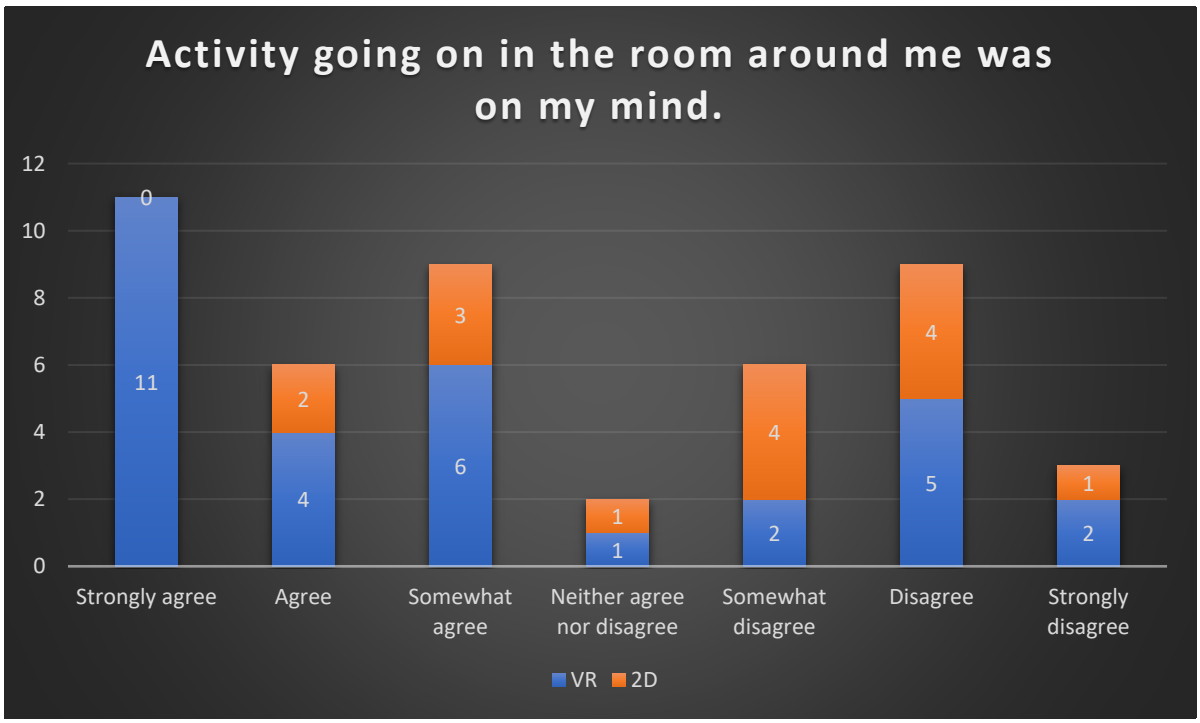

Figure 8. Participants' response to the transportation questionnaire regarding whether they were distracted by activity in the room.

In the VR experiment group, participants commented on the surroundings as lending to the immersion. For example, a participant in the VR group stated, “I felt very immersed, like when the cabinets and stuff were around me I had to avoid it, like I didn’t want to bump into it, like I kind of knew it wasn’t really there.” Initially, this might look like it contradicts the statement by the previous participant, who stated they were distracted by items in the room. Rather, this participant felt that even know they knew the furniture in the VR experience was not there, they still avoided bumping into it. This indicates a level of immersion in the environment, that allowed the participant to act naturally and avoid bumping into things, as they would do in real life. However, it is not indicative of transportation, because it is more of an observation about the setting than the story. That said, both participants experienced transportation in the sense that they were more in tune with objects in the virtual world than with those in the physical world.

In contrast, a participant who watched the story on the monitor indicated, “There were a couple times I’d miss something they would say though because I’d look around the room I was actually in.” The first statement indicates a lowered sense of reality, one of the measure of transportation, but because the narrative included an interactive setting, the participant was perhaps distracted by the story itself. The second statement indicates that the participant was not as highly transported, as they were distracted by the physical room while watching the story; the statement supports the hypothesis that participants with direct control over the narrative would feel more transported than those who simply watched someone else progress the story. Furthermore, participants’ responses to an item about whether they were distracted by elements in the apartment that were able to be manipulated but were not important to the story support this claim. As shown in the figure below, twenty-four (77%) of VR participants indicated distraction by other elements of the story’s setting, in contrast to 47% of 2D story viewers. However, as indicated above, “distraction” to the VR participants seemed to mean something different than for the 2D viewers, who often expressed frustration at not being able to control the narrative and the amount of the time spend exploring elements of the setting. When asked to list their thoughts while playing on the transportation survey, one participant demonstrated this difference in types of distraction when they wrote: “I didn't like watching it at some points because I didn't get to read everything as thoroughly as I wanted to. I wanted to understand more of the plot, but I didn't get to read certain files and documents that I thought were intriguing.” Responses to other questions on the transportation scale support this claim, as well, as do thought listings that indicated participants were frustrated at not being able to identify whether there were alternate endings to the story. For example, 2D participants often asked me if the player they were watching had to burn the documents, or if

the story could have turned out another way, with one participant stating in the post-study interview:

> I probably would have stood there and seen what happened, cause I even noticed that in the last part of the game where it's like "oh burn the documents" a voice clip started playing when you held on to it longer, so I'm like if he would have just not done it what would have happened?

Because the narrative was interactive, they expected the player to have some level of control over the story.

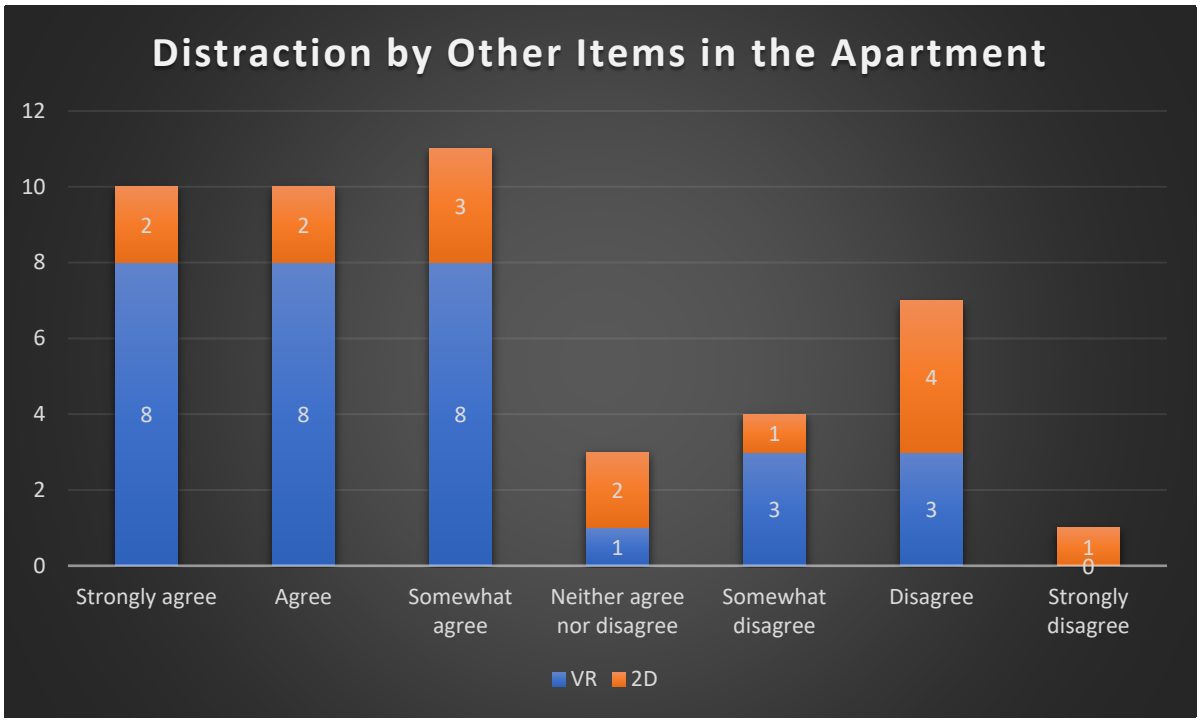

Figure 9. Participants' responses to the transportation questionnaire regarding whether they were distracted by items in the virtual world.

Forty-seven percent of participants who watched the 2D version of the narrative, for example, found their mind wandering while watching (see Figure below). By contrast, only 23% of participants in the VR condition indicated that their mind wandered while playing the narrative.

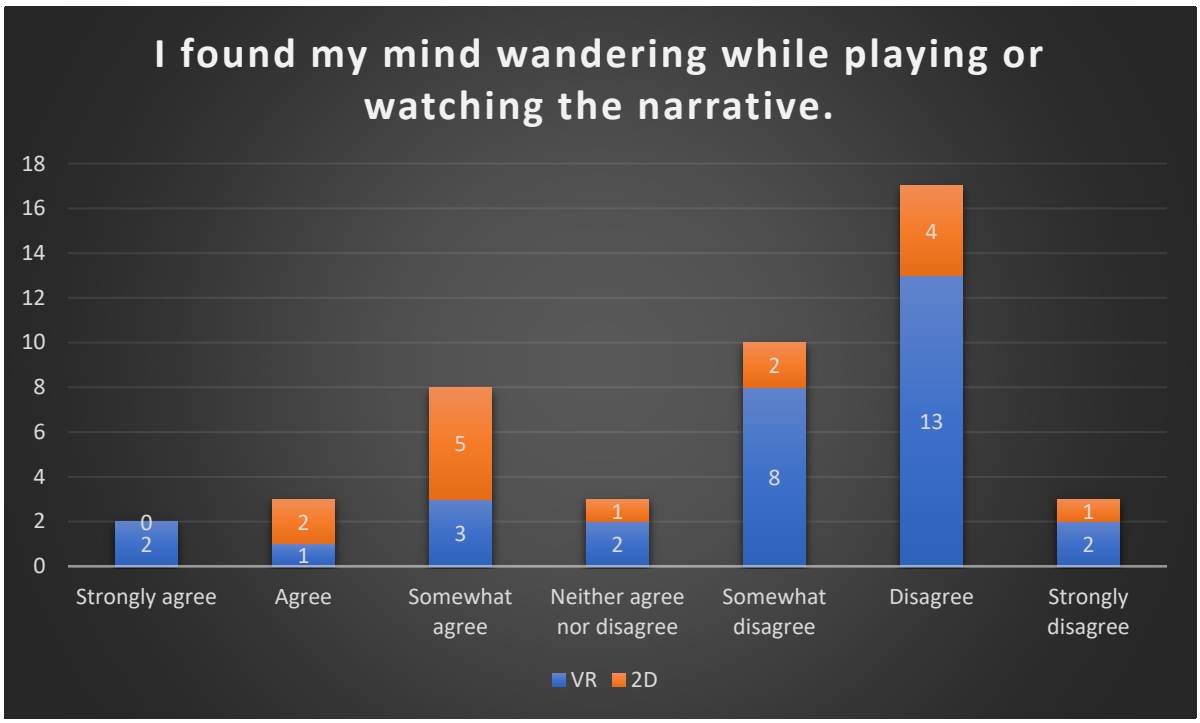

Figure 10. Participants' responses to the transportation questionnaire regarding whether they found their mind wandering while playing or watching the game.

Furthermore, only 1 participant in the 2D condition agreed that the events in the narrative were relevant to their everyday life (see figure below), while 10 participants in the VR condition agreed with the statement. This agreement also suggests a higher level of transportation by participants who were able to play the game in VR, who related to the story more, as opposed to those who watched the playthrough. Similarly, only 1 participant in the 2D condition agreed that the events in the narrative changed their life, as opposed to 7 in the VR condition.

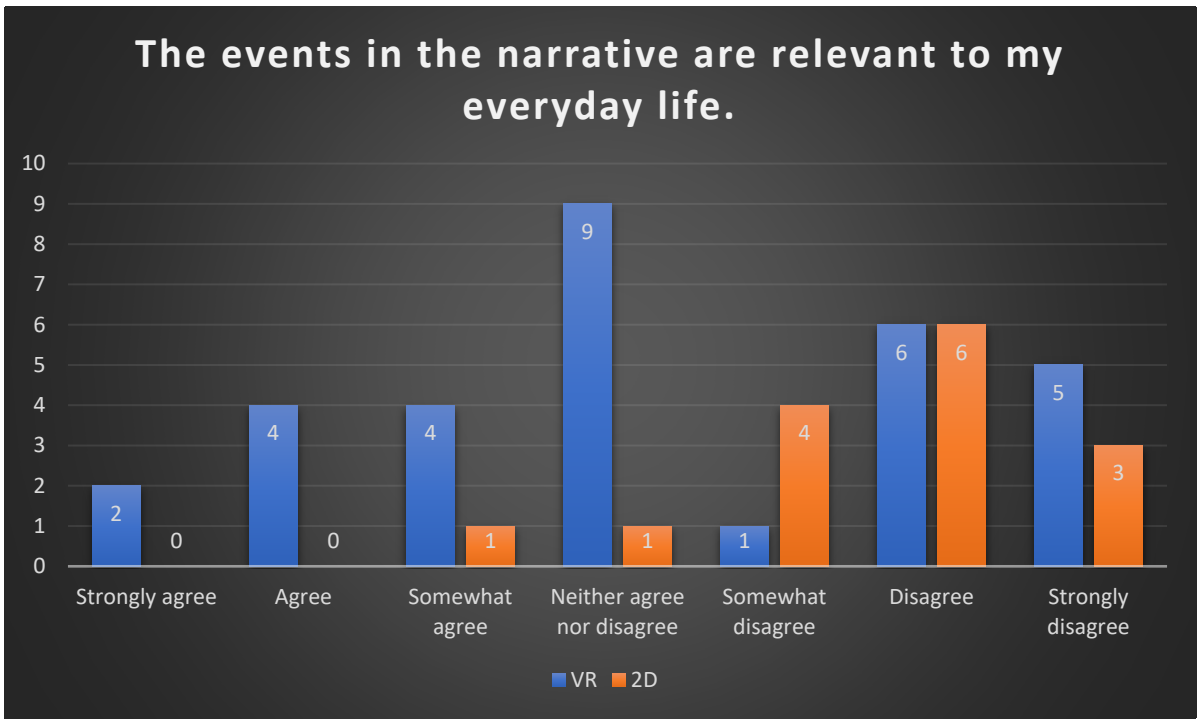

Figure 11. Participants' responses to the transportation questionnaire regarding whether the events in the narrative were relevant to their life.

Character Evaluations.

While transportation items related to the story's themes and the players' or viewers' feelings of immersion indicated participants felt transported by the story, responses to the characters were more complicated. When asked about their image of the narrator, who is first only heard as a voiceover, but who the narrative later reveals visually to be Cathy's doctor and the lead psychiatrist on her experiments, most participants (55% of VR participants and 53% of 2D participants) agreed that they had a "vivid image" of him (see figure below).

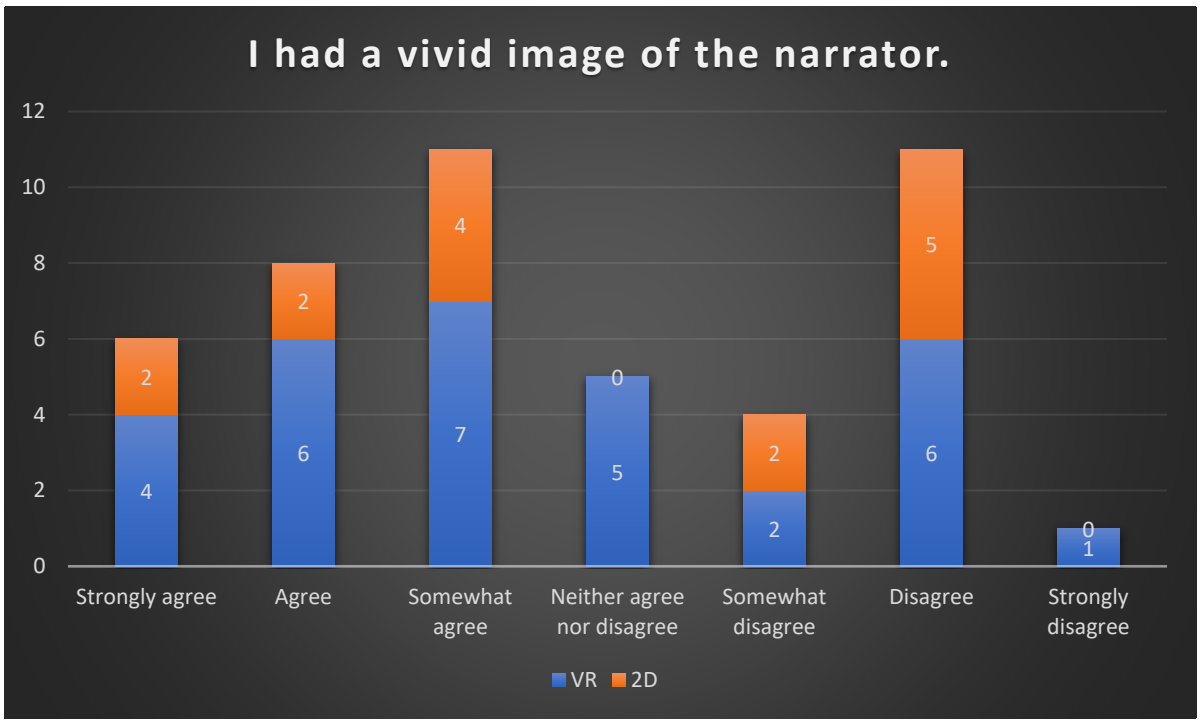

Figure 12. Participants' responses to the character evaluation questions regarding whether they had a mental image of the narrator.

However, participants often felt that they could not rate Cathy herself in terms of goodness, pleasantness, attractiveness, or responsibility, citing the fact that they felt they themselves were the main character due to the game's first-person viewpoint. As indicated in the figure below, 77% of VR participants and 53% of 2D viewers agreed that they felt they "became" Cathy and thus could not assess her as a character, a point they supported via thought listings and post-study interviews. A member of the 2D group, when asked how they felt about Cathy, for example, responded:

> I feel like you don't really learn much about Cathy. You pity her, but I don't feel like I knew enough about Cathy to be like "she was a great character" because you didn't. The player kind of did the thing—is Cathy. I'd say I don't like her. To pity her would probably be my answer.

Members of the VR group expressed similar sentiments, with one stating, "I didn't know that [Cathy] was not me. I didn't know I was somebody else at the beginning until the last scene where they told me who I was." Two participants used the term "blank slate" to describe

Cathy, and many felt that, even at the end of the story, her personality was not strong enough to encourage any sort of assessment about her, with one participant saying, “In the end I still thought she was me, and I think I’m great, so. . .”

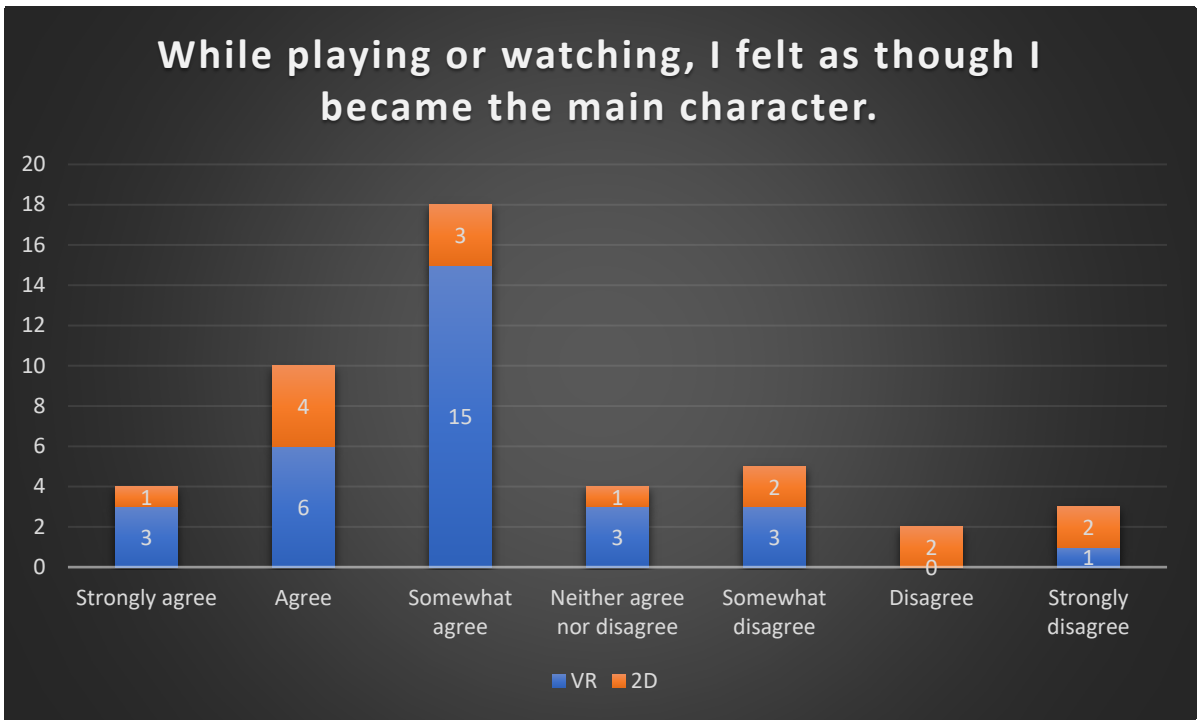

Figure 13. Participants' responses to the character evaluation questionnaire regarding whether they identified with the main character.

However, despite being unwilling and unable to evaluate Cathy’s personality, the vast majority of participants (93%) agreed that they wanted to know what her next mission was (see figure below), indicating an interest in the story and the character as they conceived her while playing. In the interview, one participant stated:

> What is her next mission gonna be? What is she gonna do? Now I just recall after getting herself fixed up and the dress that was left in her room. Seems like they’re gonna send her someplace for a fancy party just to do some more spy work. I’m kinda wondering what’s that gonna be like?

Thus, participants were invested in, and transported by the story and the main character, even without being able to identify with Cathy as a separate persona from themselves.

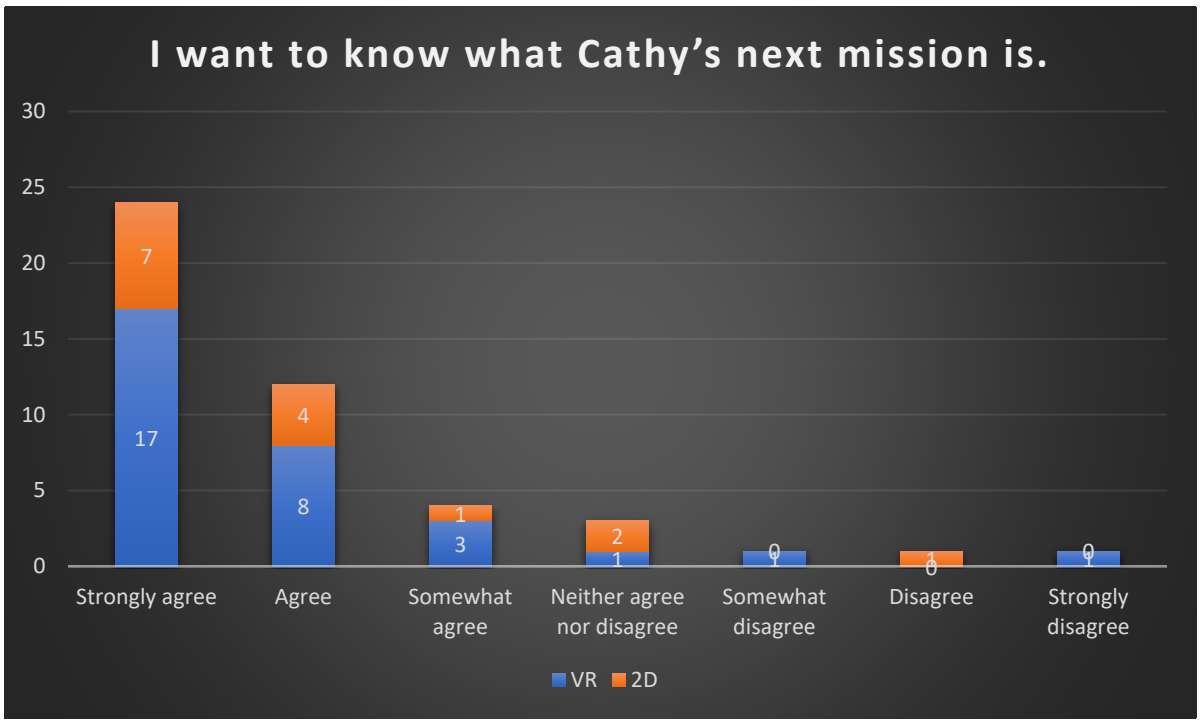

Figure 14. Participants' responses to the character evaluation question regarding whether they wanted to learn more about the characters.

Reality Monitoring and Source Manipulation Checks.

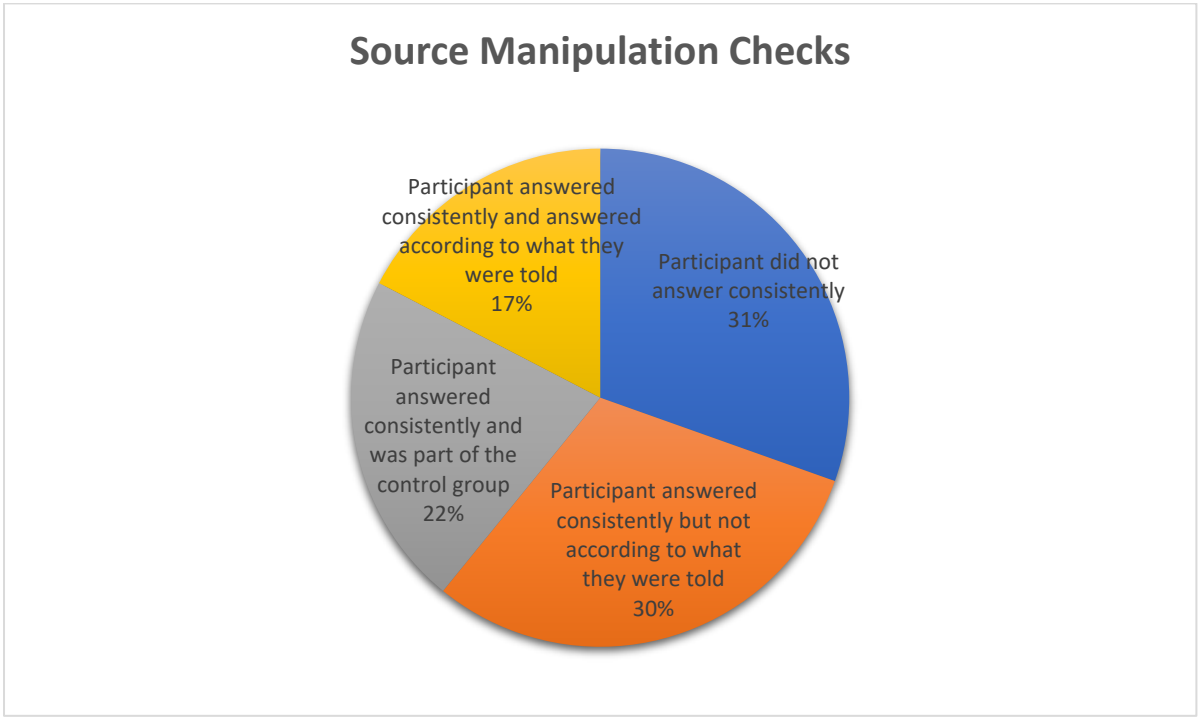

Figure 15. Percentage of participants who failed the source manipulation checks.

As shown in the figure above, a majority of participants (61%) failed the source manipulation check in one of two ways. The source manipulation check was designed to ensure that the participants correctly understood whether the story was fictional or nonfictional. At the beginning of the study, participants were told verbally that they would be playing either a fictional game or a nonfictional game. Then, after playing the game, they had to answer the two questions below to determine whether they remembered what they had been told. One question was placed at the beginning of the survey, while another was placed at the end, to ensure that they would not answer each question the same simply because one directly followed the other.

Beginning survey statement:

“The Price of Freedom was a true story.

True

False

Unsure”

Ending survey statement:

“The Price of Freedom was:

Fiction

Nonfiction

Unsure”

Firstly, 31% of participants inconsistently answered the two survey questions designed to complement each other for this purpose, meaning they may have chosen that the story was true, and then have answered that it was fiction, or they may have answered “unsure” to the first question and either “fiction” or “nonfiction” to the second. Secondly, 30% of participants answered the questions consistently, but did not answer in line with the

verbal information they were given at the beginning of the study, meaning that if I told them the story was fictional, they may have answered “true” and “nonfiction” for the first and second questions, respectively, or simply answered “unsure” for both. Of the 39% of participants that did not fail the check, 22% were in the 2D control group, and were thus not told anything about whether the story was true or false. Of these 22%, half (5 participants) stated they were “unsure” whether the story was fictional or nonfictional, while the other half correctly guessed that the story was fictional. Only 17% (8 participants) passed the source manipulation check as part of the VR study. Given the inconsistency of participants’ answers, it is impossible to determine with any statistical accuracy whether perceived “realness” of the story affected participants’ transportation, but this does not affect the measures of transportation themselves, as measurements like being distracted by items in the room are not affected by whether the story itself is fictional or nonfictional. In fact, participants failure to care enough about this metric to answer the questions correctly may in some sense indicate that the story’s status as fiction or nonfiction truly does not matter to them, as participants did not deem it important enough to remember or confirm the status.

I posit three additional explanations for the difficulty participants had in answering the questions about the story’s truthfulness consistently and accurately. Firstly, participants were told verbally whether the story was fictional or nonfictional at the beginning of the study as part of the introductory script. For example, if a participant was part of the nonfiction group, I stated, “Today I will be asking you to play a nonfictional game called *The Price of Freedom*. The game is a true story about the MK Ultra experiments conducted by the CIA during the Cold War.” If they were part of the fiction group, I stated, “Today I will be asking you to play a fictional game called *The Price of Freedom*. The game is a historical fiction story about the MK Ultra experiments conducted by the CIA during the Cold War.” If

they were part of the control group, I stated, “Today I will be asking you to watch a play through of a game called *The Price of Freedom*.” While I made these statements verbally, in Green and Brock’s study, this information about the source was included as part of the written text that participants were reading for the purposes of measuring their immersion, meaning participants had prolonged exposure to it and could refer back to it. Though there was no written text associated with this study, if verbal the script had stated the source information multiple times, perhaps more participants would have picked up on and remembered that detail. Secondly, in the VR portion of the study, participants were told whether the story was fictional or nonfictional prior to playing the game and were given the survey asking them to recall the information after playing the game. The amount of time that elapsed between the beginning of the study and reaching the part of the survey that asked for source information may have been as much as thirty to forty minutes for some participants, and they thus could have forgotten the information they were told before reaching the survey, especially given the excitement of trying a new VR game. Lastly, some participants indicated in the post-study interviews that they had heard of the MK Ultra experiments before, meaning that regardless of whether they were told the material was true or untrue, they may have had alternate ideas based on past experience with the history and thus not responded to the source manipulation test questions according to what I told them at the beginning of the experiment. That said, in accordance with IRB guidelines when participants are given false information as part of a study, all participants were debriefed verbally at the end of the study and given a written debriefing statement to take home. Both the verbal and written statement indicated that the game is, in fact, a fictional story based on historical events, and included my contact information in case they had any additional questions. Participants who wished to receive a

copy of the study results could also leave their email address with me, and will be notified via email when this dissertation is publically available.

Conclusions and Recommendations

The results of the play study measuring participants' transportation while playing a virtual reality narrative support claims that firstly, based on measures of distractedness, VR players are more transported than individuals viewing a narrative on a 2D screen. There is one complication in this finding, which is that 2D narrative viewers watched a playthrough of the VR game and not a dedicated narrative created for the platform they were using. As one 2D viewer wrote in their thought listings:

> Watching the game playthrough, versus if I'd watched a more 'polished' movie of the same subject, was detrimental to my immersion, in that periods where the player failed to review some information presented (such as Miller's 'Confession Part 2') or got stuck while trying to complete a task (such as opening the safe) pulled me out of the story as I felt frustration.

Unfortunately, since both groups had to experience the same narrative for the study to be effective, there was no way around this issue aside from developing a completely new narrative that was somehow created to be equally engaging and interactive on both platforms. Even then, differences in the type of interaction may have made it difficult to determine exactly how transportation was functioning in that instance. Therefore, my first recommendation for further study in this area is to develop a VR narrative that also has a more polished 2D component for better comparison. In this case, the VR experience was quite polished, while the 2D experience was a bit more clunky; viewers indicated feeling immersed at lower levels, but still felt interested in the story.

Secondly, when measuring reality monitoring, giving the player some written material to refer back to during the survey might help them answer questions about whether the story

was true or not. However, given that this metric was attempting to get at whether fictional or nonfictional stories are more conducive to transportation, it would seem that the results are tentatively in line with Green and Brock's study; we can glean that participants were transported by the story regardless of whether they were told the story was fiction or nonfiction because they were transported even though they did not, for the most part, know whether it was or not. Four participants indicated in the post-study interview that they had some familiarity with the MK Ultra experiments, so, as stated above, participants' familiarity with the underlying history may also have been a factor in whether they answered the reality monitoring questions based on the information they were provided at the beginning of the study or based on prior knowledge.

Thirdly, ten participants mentioned that the documents they had to read in the game were "blurry." All were able to read the documents, though some participants were able to adjust the headset to read them more easily. Blurry text was the most commonly stated technological constraint. Worry about tripping over cord attached to the headset, which many participants felt was awkward, was the second-most stated constraint. The blurriness may have been caused by the fact that the headset was not calibrated for each person, though the lens was wiped off. Some individuals stopped to adjust the straps on the masks, and that helped the issue. Others felt it was "good enough" and simply continued. That said, the amount of reading required in a game should be a consideration for any sort of VR play study or game development, as some participants found this difficult on the eyes.

Interestingly, no participants experienced simulator sickness as a result of the technology, though one mentioned feeling a bit uncomfortable at one point, when the room spins to open a secret door. It is possible that the game, as a room scale narrative with limited movement and no option for teleportation, was particularly gentle in this regard. It is also

possible that, since 26 participants indicated they had some experience with VR before, participants who do not get motion sick self-selected for the experience. One participant who had not played VR before mentioned being susceptible to seizures in the interview, and stated that they did not feel in danger of having one at any point in the narrative. Regardless, the purpose of the study was not to measure simulator sickness, but participants were asked about their comfort before and after the study in accordance with IRB procedures.

Despite the above recommendations for further study, it appears that VR interactive narratives can be effective vehicles for belief change, as responses to 10 of the 14 justice survey questions indicated participants had some change in their beliefs before and after playing through the narrative. Furthermore, VR narratives are more transportive than their 2D counterparts, even when the narrative itself is the same. We can see these most definitively based on the answers to two of the questions from the transportation questionnaire. First, as indicated in the figure below, all but two participants who viewed the playthrough of *The Price of Freedom* indicated that the events in the narrative were not relevant to their everyday lives, demonstrating that they were not transported by the narrative. Meanwhile, ten VR participants indicated that the events in the narrative were relevant to their everyday lives, indicating that they were transported.

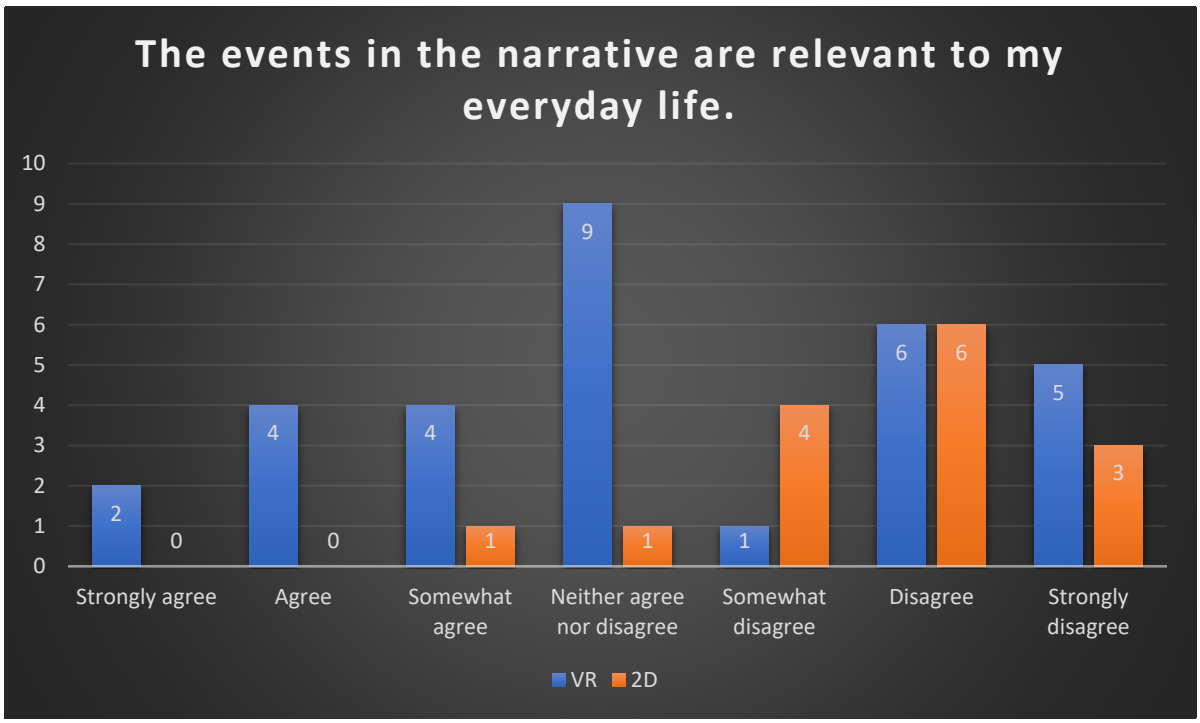

Figure 16. Participants' responses to whether events in the narrative are relevant to their everyday lives.

Secondly, as indicated by the figure below, a greater percentage of participants who watched the game's playthrough indicated that their mind was wandering while watching the narrative, suggesting that those participants were less likely to be as transported, and supporting the hypothesis that VR narratives have a higher chance of being transportive than non-VR digital narratives.

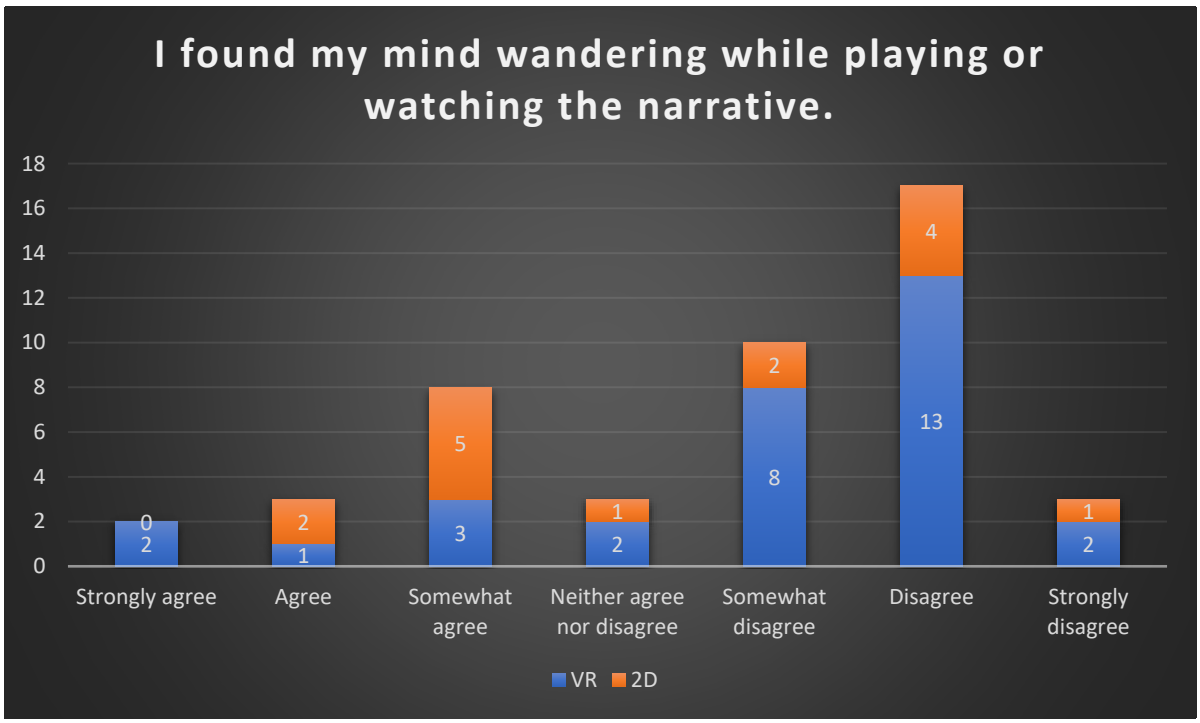

Figure 17. Participants' responses to whether their mind was wandering while playing or watching the narrative.

With the results of the study in mind, that VR participants were transported at higher rates than participants who watched a playthrough, that they identified highly with the main character, that they enjoyed the ability to explore the environment, and that they wanted more diverse narrative choices, the following two chapters will use these findings to explore two topics. First, Chapter Four will explore the potential future of VR to identify whether it will be used to create a dystopic and dangerous world. Then, Chapter Five will develop a framework and recommendations for creating justice-based narratives in virtual reality to attempt to avoid that uncertain future.

CHAPTER FOUR: PROBLEMS AND CONSTRAINTS: WILL WE USE NEW TECHNOLOGY TO TELL THE SAME DOMINANT STORIES?

The play study discussed in Chapter Three of this dissertation finds that VR narratives, like textual narratives, have the potential to be transportive, and that transportation via VR narratives can change participants' beliefs about social justice issues. The study found that VR participants were transported at higher rates than participants who watched a playthrough on a monitor, that VR participants identified highly with the main character due to the first person perspective, that they enjoyed the ability to explore the environment and surroundings, and that they wanted more diverse narrative choices. However, given that the results of the study find that VR narrative games would be effective in furthering support for social justice causes, designers and scholars must now tackle three problems. Firstly, we must begin to create virtual reality narrative games, a genre that, as we saw in Chapter One, is currently underrepresented in the offerings of VR games. Secondly, we must think about how the conventions used in non-VR activist games might or might not be effective in the new medium. Thirdly, we must consider the ethical implications of the medium, and the ways in which VR design is informed by and informs society. Because the goal of this research is to determine whether virtual reality narrative games can be leveraged in support of social justice causes, and the particular design decision that might be effective toward that end, Chapter Five, the final chapter, will cover specific recommendations for the design of VR narratives, and potential avenues for further study in the area. This chapter will delve into the potential hazards of using VR games as a means of furthering causes, as well as the limitations of current VR games and the potential for VR, like other visual mediums before it, to be used as an agent of propaganda and control. I will thus begin by exploring some of the dystopic

potential of the current incarnation of VR technology, arguing that failing to recognize the moral implications of technological progress will lead to continued remediation of the same inequalities that have so far dominated technological culture, and I will continue with a discussion of the possible dangers inherent in turning VR into a medium that employs emotional persuasion, even if that persuasion is for just causes.

Virtual Reality Delivers Old Morality in a New Medium

In *The Gutenberg Elegies*, Sven Birkerts laments the fact that visual media such as digital texts value "impression and image over logic and concept" (131). In changing the delivery of the story from a printed to a digital text, he argues "detail and linear sentimentality are sacrificed" (131), and his argument in a way translates to the delivery of video games from two-dimensional to virtual reality. Just as he suggests visual media value impression and image, I would argue the current VR market values the heightened immersion and potential for world exploration over narrative experimentation. In short, as designers and theorists we have a tendency to treat VR as a completely new medium with fresh storytelling potential. However, the first blockbuster game playable entirely in VR was *Resident Evil 7,* the 2017 release of a popular and established two-dimensional franchise. In other words, VR is a new mode of delivery for the medium of video games but has not seemed to come into its own as a medium in and of itself. Rather than release new blockbuster games designed particularly for VR, we rely on the popularity of titles created for non-VR console gaming to pull new participants to the medium; it is possible that designers are waiting for the technology to be more widely adopted before allocating more resources to dedicated VR game development. This may also be in part because, as demonstrated by the VR play study, participants in VR narratives value even non-narrative world exploration options within VR,

and so are simply happy to explore the physics of VR worlds at this point in the technology's lifecycle. As the initial excitement about the new technology wears off and the prevalence of the technology becomes more widespread, we will likely see more experimentation in the medium. Furthermore, in some ways, Birkerts' assertion—written in the 1990s when it was popular to fear the death of the book in light of the growing popularity of the internet—treats video games in the same way as James Paul Gee's later games studies work. Gee briefly touches on the issue of violence in games, stating that he does not believe games encourage violence in and of themselves (12). Meanwhile, Birkerts, like Gee, concedes that games evolved into learning tools, but did once rely on violence (131). However, Birkerts does pinpoint a fear common to VR narratives. Like Ryan, Birkerts is concerned we will get lost in hypertext, since it is "infinite" (161). He also suggests reading is a meditative space in which interaction is ungainly, while hypertext is marked by interaction (162). The idea that virtual reality cannot be a source of safe, controlled exploration of emotion is directly in opposition to Murray's conception of the holodeck (14), and further contradicts her assertion that there exist narratives within pre-digital media, such as fan narratives and roleplaying games, that have multiple entry points and could be considered hypertextual (55). Within all of these viewpoints—Birkerts', Gee's, Murray's, and Ryan's—there exists a similar thread; each author recognizes the potential of interactive narrative for learning and exploration, though Birkerts tempers that potential with more fear than the other examples when he suggests that the immersive quality of hypertext will not necessarily lead to self-reflection.

Current incarnations of VR in media often appear to agree with Birkerts. "U.S.S. Callister," the first episode in the most recent season of the Netflix series, *Black Mirror*, lends a fresh and somewhat dystopic voice to the discussion of how ethical considerations in VR games might evolve. In the episode, which aired in December 2017, Robert Daly (Jesse

Plemons), a socially awkward coding genius, creates a popular and networked virtual reality universe and, as a result, becomes the Chief Technology Officer of a successful company. However, each night after work, he retreats into his own private VR universe that he has removed from the public network and modeled after the fictional *Space Fleet* series. His private playground has one essential difference from the public version he spearheads as CTO by day; Daly collects the DNA of his colleagues to create fully cognizant replicas of them in the virtual world, then takes out his workplace frustrations and unhappiness on these virtual people. In one scene, for example, Daly modifies one of the characters to remove her facial features, thus removing her ability to breathe. However, as a digital entity, she cannot die, so Daly threatens her with the feeling of eternal suffocation to ensure her cooperation. His created characters also remain within the world, conscious and desperate to get out, while Daly goes through his day-to-day life interacting with their physical counterparts, who in turn have no idea that Daly has uploaded their consciousness into his playground. The episode critiques several aspects of digital life and gaming, from the ethics of artificial intelligence to privacy and security within biometric systems. However, for a study of the dangers of simulation and gaming, the most interesting aspect of the "U.S.S. Callister" episode is perhaps the virtual world itself.

Black Mirror clearly models Daly's obsession, *Space Fleet*, after the original *Star Trek* series and creates sets, uniforms, and fictional scenarios that immediately recall the canon of stories that eventually gave VR scholars like Murray the entrancing concept of the holodeck. However, Daly's version of the holodeck is a terrible trap, a world that, rather than encouraging the healthy emotional development of its main character through fictional scenarios, advances his embodiment of toxic geek masculinity. Salter and Blodgett describe toxic geek masculinity as "a constructed fantasy, a world in which young white men outside

the traditional definitions of masculinity are victims turned heroes, entitled to their rewards" (4517), and Daly fits the description of the archetypical main character of these fantasies (Sheldon Cooper of *The Big Bang Theory* and Benedict Cumberbatch's *Sherlock*, to borrow two of Salter and Blodgett's examples). However, there is one essential difference in that *Black Mirror* does not celebrate Daly's genius, but depicts Daly as irredeemable, cruel, and unethical, making him own up to his flaws. In the end, Daly's VR constructions escape him and enact their vengeance, trapping him forever in his solitary world so he can only watch as they delete it around him. Meanwhile, they manage to connect to a cloud server and pilot their ship, the U.S.S. Calister, into the populated universe to interact with other inhabitants of the physical world. At the conclusion, the crew, led by their female captain, encounters Gamer691 (Aaron Paul), who, in perhaps a more familiar display gamer masculinity, calls himself the "king of space" and demands that they leave his corner of the universe or he will destroy them. The exchange again recalls the type of toxic geek behavior Salter and Blodgett mention, in that Gamer691 presents a hypermasculine, violent, and threatening persona online (275), though the view never sees his online self to verify if his physical qualities match this persona. The show treats the encounter as humorous; the main characters speed away into space rather than face the threat of violence (with the deletion of Daly's program, they are presumably "mortal"), still reveling in their newfound freedom.

The fictional representation of Gamer691 as a representation of toxic geek masculinity gets lost amid Daly's horrific sociopathic representation, but the fact that it is written as and viewed as humorous, suggests that the view of video game culture as predominantly masculine and unwelcoming of women will remain entrenched even as VR becomes a more popular gaming medium. For example, sexual assault in virtual worlds, like that of Jordan Belamire by a male avatar in the VR game *QuiVR*, has prompted game

companies to create a “bubble” around characters that can only be penetrated by agreement from both parties (Wong). In a keynote speech at the 2017 Game Developers Conference, scholar and designer Raph Koster focuses on virtual and augmented reality, arguing that instituting technical barriers like the avatar bubble is not enough of a deterrent against harassment; designers must completely ban offenders from the world. Koster notes, “When you take up the tools of online world design, you are designing societies” (4), and it is thus frustrating to see the new frontier of virtual world design further the same gendered inequalities and dangers seen in previous mediums.

Adrienne Shaw’s work suggests a need to situate games, and by extension VR games, into the wider framework of cultural studies in order to question some of the power imbalances inherent in the industry and community. She argues that video game culture has been too narrowly defined as white, cis-gendered, and male, forcing scholars and popular press writers, when discussing any demographic not inside that “gamer” definition “to talk about their subject in relation to the perceived center” (Shaw 408), even while acknowledging their subjects’ active participation in video game culture. Shaw writes, “Video game culture is thus often seen as something on the fringes of, but which nevertheless influences, popular culture. This has ideological and political ramifications as it allows for video games to be dismissed both as a form of entertainment or the culture of an ‘other’” (Shaw 415). Shaw’s argument raises questions about how we treat VR technology, which is relatively new to the mainstream, as part of video game culture. She states, “Defining gaming culture as something distinct and separate from a constructed mainstream culture encourages us to only study those who identify as gamers, rather than more dispersed gaming” (Shaw 416). For Shaw, the problem becomes one of cultural studies; when we automatically “other” the culture as scholars, we limit our ability to study the wider implications of the culture and the diverse

people who participate in it. This problem creates a further issue, namely that game developers then create content and narratives based on what is palatable to the perceived culture, and this perhaps in part explains why, rather than widespread VR experimentation in the video game industry, we see the remediation of old favorites.

The idea that the community somehow dictates how the author approaches a work is supported by scholars. In his 2001 book, *Writing Space,* Jay David Bolter discusses Michael Joyce's work of electronic literature, *afternoon, a story,* and suggests that the reader shares control with the author in interactive texts, a departure from traditional textual forms (122). His affirmation echoes Roland Barthes' definition of texts. Barthes lays out a framework for the structures of meaning found within in texts, of which he has an open definition in the sense that texts are the objects of "play, activity, production, practice" (161-2) facilitating the breaking down both of disciplinary boundaries (155) and the concept of authorial primacy (142). Though he writes at a time before the development of digital texts, many of Barthes' assertions concerning the definition, purpose, and elements of what we understand as texts can be applied and are useful in analyzing digital works and the way we interact with and understand their elements. When considering texts, Barthes identifies layers of meaning: denotation (the narrative and sensory elements), connotation (the symbolic themes), and significance (metalanguage) (52-61), which translates well to a reading of VR that identifies the narrative, themes, and procedural code as the three elements that make up the text. For Barthes, texts are separate from mere works in that texts are organic entities that are not self-contained but, "can cut across the work, several works" (157), and I find that this is true, particularly when considering the medium of VR as it is presented in dystopic and utopic fiction. To return to the example of "U.S.S. Callister," the single *Black Mirror* episode cuts across several different works and themes in its presentation of VR. The story itself is a

dystopic vision of technology that is wrapped within the visuals of one of the more famous utopic visions of society, *Star Trek*. Furthermore, the conception of VR in the episode is similar to that of the *Star Trek* universe's holodeck, so the episode is an extremely reflexive text in that it presents a version of VR that is informed by the holodeck, in the universe that the holodeck existed in, though with a different name for the purposes of the show. However, this updated holodeck is used for nefarious purposes, leading the viewer to question, in a way, whether *Star Trek* really presented a plausible view of the future; the text of the episode, by cutting across the different works, re-writes the viewer's understanding of the *Star Trek* universe as a utopia. And finally, as discussed above, the narrative presents a metalanguage about the gendered discrimination within video game culture. However, what neither Bolter nor Barthes could have addressed, writing prior to our current incarnation of interactive texts, and where the problem lies in viewing VR as a subset of video game culture, is that the participants in the text (the reader, in Bolter's terms), now expect a certain authorial control that comes along with interactivity, to the extent that anything that goes against the established order is challenged. It should be noted that the player community's role in game development can have some positive side effects that keep the industry from taking advantage of players' wallets. For example, in 2017 the game company Electronic Arts removed microtransactions from its *Star Wars Battlefront 2* game after players were outraged at the amount of additional content they had to pay for after already paying sixty dollars for the game itself (Horti). However, it is important to distinguish between digital texts, like *Battlefront 2*, that follow the established morals and ideals of the video game industry and activist texts, which are often independently developed and at times only belong within the game industry as an 'other' or counterpoint to established narrative norms.

An excellent recent example of a game that tests narrative conventions while at the same time pinpointing the lack of control that the participant actually has in interactive texts is *Doki Doki Literature Club!*, the disturbing visual novel created in 2017 by Dan Salvato. The game begins with all the conventions of a Japanese dating simulator, in which the player, as the main character, joins a high school literature club with four attractive female members who he must presumably romance. However, the game quickly turns into a horror piece; the club leader, Monika, realizes she is computer-generated and learns how to control the game's code. Monika alters the personality of the other characters in hopes that the player will choose to be with her, and her alterations cause the other character to commit horrible acts and, in extreme cases, commit suicide. Monika's manipulations finally lead to a situation in which the player can no longer save the game or make any choices within it. The artificial intelligence is in complete control of the game, and the only way to defeat her is actually to alter the game's source files. The game rails against conventions of the player having authorial control in interactive narratives in several ways. First, though it presents itself as a cute dating simulation, it defies generic conventions in that the player is not able to control who they romance. No matter what they choose, Monika gets rid of the competition. Secondly, the tendency in interactive narratives is to save the game before important choices, and then to go load the saved game and make different choices if the outcome is not desirable. *Doki Doki Literature Club! (DDLC)* removes that option, as Monika not only eliminates the ability to save the game (see figure below) but destroys all of the player's saved files in the course of the game.

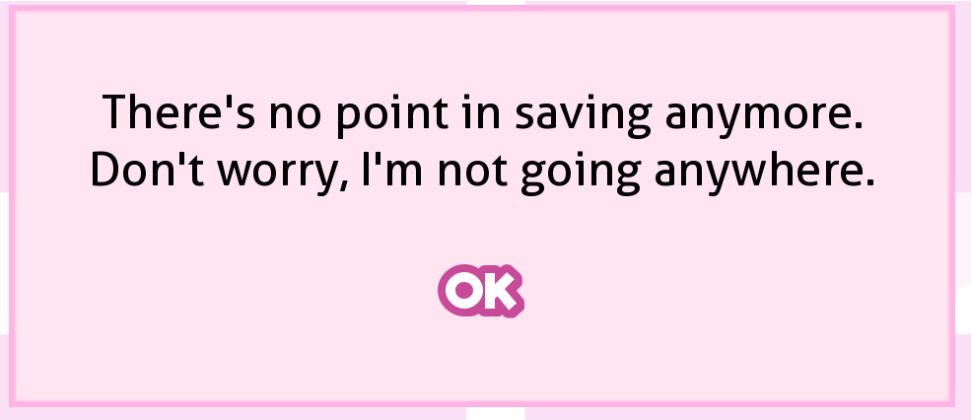

Figure 18. The "save" dialogue box in DDLC after Monika removes the option for the player to save the game or load previous saved games.

Finally, even though the player can delete Monika and seems to regain control of the story, it is ineffective, and she still manages to delete the other characters. If the player wants to attempt the story again, they must either uninstall and reinstall the game, or reset the story by, again, altering the source files. *DDLC* is effective in its critique of both the dating simulation genre, by introducing disturbing psychological elements, and the common gamer practices of pursing all narrative plots before choosing the "best" one. The narrative takes away that illusion of choice, and in doing so identifies how little choice we actually have in current narrative-driven games. Like many activist games, *DDLC* foregrounds the removal of choice as the means of getting its message across, but participants' responses to the VR study indicate that this may not be the most effective way of transporting players.

VR and its Potential for Activist Texts

Sarah Pink, in her examination of everyday life as an attempt to understand wider society, discusses activist texts made via digital means. However, Pink cautions, "they are not the products of activism alone, but are in fact contingent on the possibilities of software, agendas of corporations and forms of online regulation" (126), a point Lawrence Lessig would agree extends to the level of software code itself. For this reason, Pink argues, "By

rethinking digital media through a theory of place, we can bring together the diverse processes in which media are implicated, the different media technologies and media practices involved and other constituents of place" (131). For this reason, I argue VR as a more literally representative, but still digitally created and code-driven space becomes all the more important as a vehicle for narrative games. For Pink, immersion in the physical world—via "participatory, collaborative and engaged methods" (149)—is key to effective ethnographic research, especially when creating activist texts. Her argument translates well to the creation of VR stories, not only because VR is such an immersive medium but because the conventions of digital texts as demonstrated above by Bolter's and Barthes' definitions make them inherently participatory. However, the example above of gamers' participation in changing the way *Battlefront 2* functions illustrates how we now interact with media as a whole. To say something is created by participation, collaboration, and engagement may not necessarily mean it is "activist" anymore.

What I deem as virtual reality narrative games requires the manipulation of narrative elements and can be defined as a setting or fictional world that not only allows the player to procedurally impact the setting, its narratives, and its characters, but also encourages the formation of player stories about both the fictional world and real-world impacts and emotions. Like the holodeck, VR narrative games empower players to learn about themselves and others in a safe environment, and this is where I argue that, like in the example of Eubanks' *Beat the System* concept, collaboration, participant, and engagement can become activism. However, when a story has the potential to affect the participant outside of the fictional world, what stops it from being disturbing? Perhaps because virtual reality narratives have not yet been fully realized, even in the almost-twenty years between today and the publication of *Hamlet on the Holodeck*, the dream of utopic interactive fiction is just that—a

dream. Because it is still a mere dream, there is always the possibility that we will never realize the narrative potential of virtual reality, or that we will, as shown by scholars like Koster, simply transfer the ills of our physical society into the realm of the virtual world.

As seen in Chapter One, Ryan spends more time articulating the fear inherent in VR narratives than Murray. We get lost in virtual reality in the same way that a reader can get lost in a book. However, though many people would describe the experience of being lost in a book as pleasurable, for Ryan there are four degrees of increasing absorption ending in a troubling conclusion. The first three degrees increase in immersion, beginning with concentration, in which the text is dense and the reader is still highly distractible; I compare this to the degree to which we are probably absorbed reading works of theory. The second degree of absorption is imaginative involvement, in which the text engages the reader emotionally, but they may still be critical of it. The third is entrancement, in which the reader gets so caught up in the world that "language disappears" (98) or they forget they are reading. The fourth, and most nefarious degree of absorption, though, is addiction. The addicted reader seeks an escape from reality but consumes the text so quickly they "cannot find a home in the textual world" or lose the ability to distinguish fact from fiction altogether (98). In this fear, Ryan may not be so different from Murray, though Ryan expounds upon it more. However, there is an instance of Murray's epitome of virtual reality, the holodeck, causing addiction in one of *Star Trek*'s characters, Reginald Barclay. In the episode, "Hollow Pursuits," Barclay flees reality to interact with simulated members of the crew; the simulated crewmembers not only treat him more nicely, but they do things they would not do in real life. Within the virtual program, one of the female members of the crew, for example, is interested in him romantically. The romance is dangerous not only because he begins to prefer it to his authentic relationship with the real woman, but because one could see how

someone could become used to acting out their every desire in a realistic simulation, and might consequently forget the rules of real-world sexual consent, a theme that the recent episode of *Black Mirror* continued to explore.

Ryan's fear of addiction to absorption as a dangerous means of blurring fiction and reality aligns with a fear Jill Walker associates with interactive fiction. Though she does not write about virtual reality, Walker identifies two types of narratives that blur the boundaries between fiction and reality, exploitative fiction (like the spam emails disguised as pleas from foreign princes) and unfiction (an early 2000s term for Alternative Reality Games or ARG). Both of these types of interactive narrative blur the boundaries of reality to create a fictional narrative encouraging the user to engage in real interaction. In these examples, ontological interaction—or "interaction where the user's actual actions directly correspond to fictional actions" (62)—can either trap the user in the fiction or trick the user into thinking the fiction is reality. This feeling can lead to anger on the part of the user, which "may be a simple self-defensive mechanism, because we know that our dependency on our machines carries with it a very real risk" (137). Walker identifies this feeling as a lack of user control, and states that while commercial games rarely make lack of control a theme, it is often central to political games and interactive art (144). If lack of control is one way in which we as designers approach subjects like politics, and aesthetically challenging art games, perhaps we need to rethink those design decisions to create narratives that return control to players, allowing them meaningful interactivity. For example, *The Price of Freedom's* story hinges on lack of narrative control, and since the narrative itself is about mind control experiments, that lack of control works as part of the theme of the story. However, participants still found it frustrating and wanted the theme to be more central in their narrative choices. When asked if anything would have made the story more effective in the post-study interview, one participant stated:

> Um I think at the beginning giving you more of a reason to follow instructions. Especially if you are Cathy and you're brainwashed to do this, you need to give the player a reason to be like, "I need to follow these commands. This is good for me to follow these commands." Just like Cathy would think that, rather than a player being like, "Oh I want to play around, and what's this do, and I don't know what if I don't kill him."

The participant identifies that the brainwashing plays a part in the lack of narrative choices but wants that theme to be more explicit. If it is not explicit, and the lack of narrative control is not central to the story, the participant states that they are less likely to follow the narrative, and more likely to find ways to subvert the story and play around. *DDLC* effectively critiques lack of control by taking away the means that players usually use to subvert the story and explore the narrative choices without consequences, and the effects can be disturbing in the form of graphic abuse and even death. Ryan states, "We experience emotions regarding fiction that can be intense. These emotions do not have normal consequences or inhibit pleasure" (154). If Walker's issue lies in the fact that the narrative is obfuscating its status as fact or fiction and is thus taken by the player as fact, then acknowledging the narrative's fictional status should allow the player to separate the narrative from reality, grasp the emergent narrative, and experience intense emotions that are not necessarily un-pleasurable, but it does seem that participants' responses to VR acknowledge that lack of control can be a narrative choice, but that they still *want* meaningful interactive choices. Designer Katherine Isbister's work seems to support this point, as she notes, "Actions with consequences—interesting choices—unlock a new set of emotional possibilities for game designers. Ultimately, these possibilities exist because our feelings in everyday life, as well as games, are integrally tied to our goals, our decisions, and their consequences" (2). It may be that, given these findings, activism in VR needs to pursue more meaningful choices with consequences, rather than the removal of choices and limitation of the player.

One way that we may be able to interrogate the future of VR activism may be to look toward the development of film in VR. With journalists like Peña, who is discussed in Chapter One, working in the VR documentary genre, we may begin to see generic conventions that can then translate to the creation of interactive narratives. At the most recent Sundance Film Festival, a three-part VR series called *Spheres* was purchased by the VR distributor CityLights for an undisclosed seven-figure sum and will premiere on Oculus Rift in the next year (Watercutter). The VR experience allows viewers to explore space, but it remains to be seen whether its success will open the door for new and immersive experiences that challenge cultural norms, and it is important to note the potential for the use of film as propaganda, as Walter Benjamin has identified. In Benjamin's example, watching a film requires no attention by the masses. Rather, the spectator is "absent-minded" (17), and the work of art cannot absorb them, because they are not concentrating on it but distracted by the photographic reproduction. This absent-mindedness may be magnified in VR films, as the viewer may be distracted by the virtual medium, just as the VR study participants were engrossed in exploring the virtual world around them. Benjamin argues in the case of film that this state of distraction allows fascism to succeed in providing the masses with "a chance to express themselves," rather than providing rights or the means by which to eliminate the property structure (17). According to Benjamin, this effect aestheticizes politics, which culminates in war (18). He states, "Only war makes it possible to mobilize all of today's technical resources while maintaining the property system" (18). He further expounds on this in the notes, strengthening the link between mechanical reproduction and war when he states, "Mass movements are usually discerned more clearly by a camera than by the naked eye" (25) because the wide angle of the camera can capture more than the eye.

Hopes of VR Narrative Games

Thus, escaping the current danger that virtual reality will become a vehicle for the narrative standards of two-dimensional video games or propaganda requires that participants continue to have the means to create activist narratives and critique (per Banks' recommendations in Chapter Two) VR film and games. Maria Chatzichristodoulou, in her essay on emergent practices in digital storytelling, wonders whether the multiplayer online game, *The Endless Forest*, is a digital interactive narrative. In the game, she spends her days embodying a deer in the forest. Chatzichristodoulou states, "my own choices and actions created my unique, personal narrative for the day" (226), and she goes on to ask, "Life as a deer opens up a number of narrative possibilities—but can we call them *stories*" (226)? Chatzichristodoulou answers her own question by invoking Murray's definition of multiform stories, which present "a single situation or plotline in multiple versions, versions that would be mutually exclusive in our ordinary experience" (Murray 30). Like Montfort, Murray and Chatzichristodoulou agree that interactive narrative acknowledges the possibility of different storylines, and the user can sometimes use these multiple storylines to explore different expressive possibilities within the narrative. When the user knows up front that narrative play is a possibility, they can use the different storylines to explore different emotions. In the early interactive narrative *Façade*, for example, the player is invited to dinner at the apartment of a married couple they knew in college. As the player steps off the elevator and approaches the door of the apartment, they hear an argument through the door. The door opens, and it is almost immediately evident that the couple's relationship is in trouble. The couple fights, sometimes involving the player in their disputes, and the player can type words and questions to interrupt or interact with the two characters. As the narrative plays out, it becomes evident that the player's interactions are driving the couple's decision to stay together happily, stay

together begrudgingly, or completely call it quits. As the player, it is easy to get lost replaying the narrative, trying to find the branching points, and trying to determine which language cues will achieve the desired outcome, thus making it an example of interactivity that, while not an activist narrative, allows for multiple paths and the exploration of multiple outcomes that might make each player's experience and emotions different from one gameplay instance to the next.

Conclusion

The holodeck appears, once again, in the *Façade* creators' vision statement. They write, "The dream of interactive drama, perhaps best envisioned by the *Star Trek* Holodeck, has players interacting with compelling, psychologically complex characters, and through these interactions having a real influence on a dynamically evolving storyline." Though the story is not created in virtual reality, the player easily sees how the reality of the situation and its purpose of exploring some difficult real-world emotions in a safe setting mimics the VR-like technology of the holodeck. However, the emergent narrative of *Façade*, in which the player is encouraged to try different storylines, some ending conventionally happily and others conventionally sadly, follows Murray's vision of a utopic interactive narrative, and my own version of narrative games, in which the interactivity is meaningful and leads to varied experiences and conclusions. The creators envision *Façade* as embodied drama, just as Chatzichristodoulou envisions *The Endless Forest*. Invoking Murray once more, Chatzichristodoulou states, "she approaches the story as enacted—and thus dramatic—as opposed to narrated, situating the interactors at the very heart of the story (*immersion*), as its protagonists" (224). If virtual reality narratives, still in their infancy, can follow the example of games like *Façade* and create the type of narrative arc that combines drama and

simulation, they will “ultimately [refer] to the sorrows and pleasures of human life” (Murray 199). Furthermore, virtual reality will allow the player to experience the “rhythmic kinetic pleasure of dancing and the visual pleasure of sculpture and film” (Murray 263). The virtual world thus becomes, as in the notion of Crawford expressed in Chapter One, a space open to the conventions of both drama and simulation. The next and final chapter will discuss some ways in which designers can leverage virtual reality to create that marriage of drama and simulation for the purpose of creating narratives that encourage social change.

CHAPTER FIVE: VIRTUAL REALITY DESIGN RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Chapters One, Two, and Four explored theoretical considerations for virtual reality, including the definition of virtual reality narrative games, what they can learn from activist narratives, and the potential for utopic and dystopic narratives. In this conclusion, I weave the results of the Chapter Three play study with theoretical findings from the other chapters to propose five recommendations for the design of virtual reality games that can help guide designers toward the creation of virtual reality narrative games focused on social justice in the new medium; these games will consider the needs of VR participants, and as part of this discussion I propose future research problems to be addressed in additional work on this topic that include: an exploration of gendered responses to VR and different types of motion sickness, the length of time participants might expect to spend exploring the virtual world, and a the ethics of presenting certain genres (like horror or graphic documentary) without a rating system that might indicate they are disturbing in VR.

Five Recommendations for Narrative Design in Virtual Reality

Based on the findings of Chapter Three's play study and the prior theoretical discussions, I propose five recommendations for thoughtful narrative design in VR, each of which I discuss in further detail below:

- Designers should create rich and detailed worlds that are an integral part of the narrative.
- Designers should take advantage of increased self-identification with first-person characters to create stronger relationships between characters and forge a deeper connection between the participant and the characters.
- Following the principles of human-centered design, designers should create holistically.

- Motion sickness or simulator sickness must be a consideration and its triggering effects should be studied further.
- Forget about the successful features of two-dimensional video games and create with the affordances and constraints of virtual reality in mind.

Rich and detailed worlds.

As indicated by the play study results in Chapter Three, participants in the narrative felt more transported if objects in the world were able to be explored and provided tactile response. All but three participants supported this by indicating that they wanted to explore each room fully before moving on, as shown in the figure below.

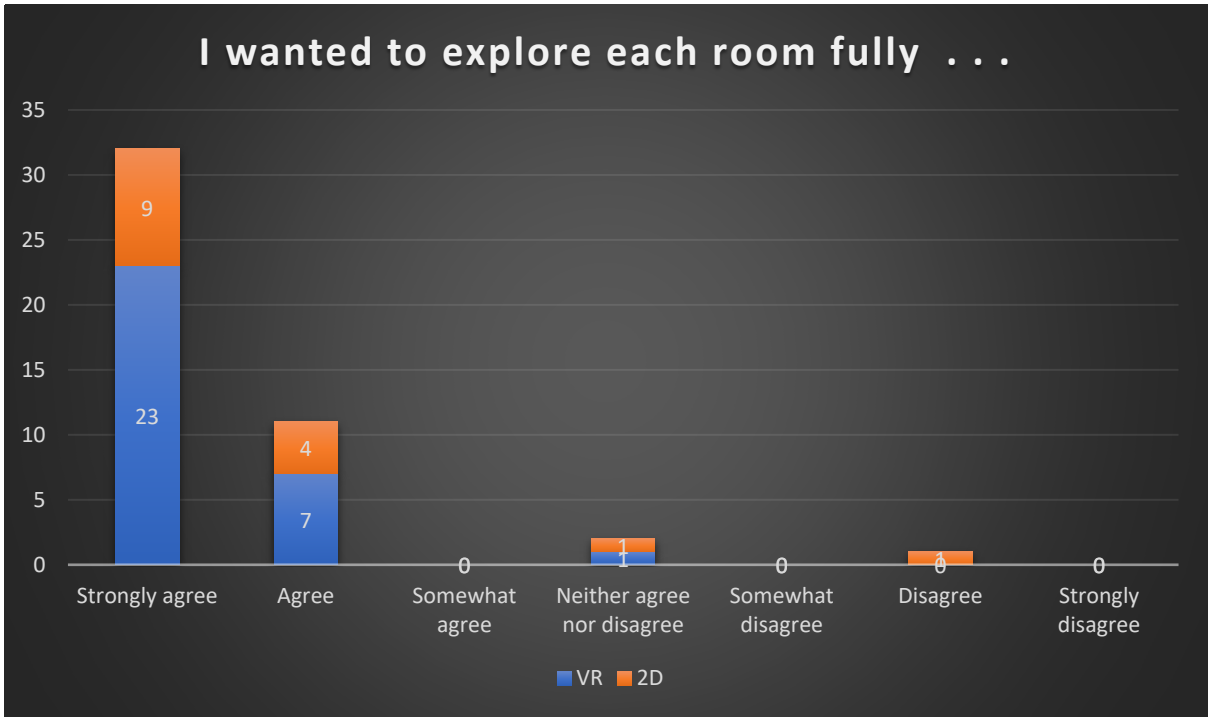

Figure 19. Participant responses to whether they wanted to explore each room fully before moving on with the narrative.

It is important to note that, as stated in the study findings, some participants saw this type of non-narrative exploration as a distraction from the story itself. However, participants stated that they felt more invested, and thus more emotional, when they were able to explore their surroundings, and when physics reacted as they expected it would in the physical world. In *On Interactive Storytelling*, Crawford puts forth a lesson that perhaps contradicts these

findings when he instructs designers: “Constrain your storyworld to as narrow a scope as possible; that's the only way you'll ever be able to include everything that it needs” (254). For Crawford, it appears to be important to have a concise world, so as to make that world as detailed as possible, a point on which Evan Skolnick’s work on storytelling in games might agree. Skolnick states, “A vibrantly realized fictional space will always help draw the player into the experience, contributing greatly to her immersion and that all-important suspension of disbelief” (148). For example, some participants in the play study found themselves distracted when they were unsure which items they could manipulate, as indicated by one participant who stated in their interview: “It took a couple tries with some of the different items to make sure I—I was like wait am I can I actually open this? Or am I just sitting here clicking a button in front of something that isn’t interactive?” It appears then when participants enter the virtual world, they expect a deeper amount of interaction. When there is no visible indication as to which items they can interact with, they might expect to be able to move and interact with everything. In the case of *The Price of Freedom*, most of the game took place within three small rooms of the character’s apartment, and so many items were able to be manipulated. However, participants still managed to find the items they could not interact with, and sometimes asked the observer if they could manipulate the item, of if they were wasting their time. Participants consistently wanted more opportunities to interact with the world that were not necessarily directly involved with the story. One participant suggested:

> Maybe if there was things to make it so that there were like other rooms, that weren’t directly involved in the story. Because one of the things about VR is that you can make it realistic by adding a lot of elements that you like wouldn’t in a different game. So if there were a bathroom, say, something like that.

In this case, it would seem that Crawford's suggestion to include only what you need may not be enough. Explorers of virtual reality want more opportunities to explore, and giving them more may increase their feelings of engagement with the story itself.

Expect increased self-identification with first-person characters.

One surprising finding addressed in Chapter Three was that participants did not feel strongly about the main character, with many stating this is because they saw themselves as the main character due to the first-person viewpoint. While this increased their feelings of transportation, it may not have the desired effect in social justice stories, where the designer is trying to persuade the player to think differently about a people or cause. Discussing embodiment and avatars as a way to act out fantasy identity, Katherine Isbister suggests, "Adding movement to a game can strengthen a player's identification with a character by leveraging physical enactment of the fantasy role of the avatar" (102). However, it appears that, particularly in VR, the fantasy role ends up being the role of the self. Thus, for designers wishing to create stories about diverse communities, it may be beneficial to add some explanation to the story of who the participant is embodying. In the case of *The Price of Freedom*, the main character's true identity was not revealed until the end, and this delay prevented meaningful self-identification for the player and thus also prevented an important point of emotional identification or interaction with the character's desires, fears, motivations, and personality.

Furthermore, recent HCI research indicates that even reducing the realistic quality of the appearance of the participant's hands in VR can lower a participant's feeling of presence in the narrative (Schwinda et al. 507). The authors find that "the feeling of presence was negatively influenced by reducing realistic fingers," (513), which suggests that participants

identify strongly with first-person characters, but that some amount of realism is expected. Participants playing *The Price of Freedom* further supported this, as nine participants either mentioned a birthmark on the hand of the main character during post-study interviews or during gameplay. Because the birthmark tied into the narrative in that it helped the participant deduce the main character's true identity, having it visually represented on a realistic pair of five-fingered hands may have also contributed to the first-person identification.

Keep the edicts of human-centered design in mind.

Richard Buchanan perhaps sums up the need for user-centered design practices across all products and services when he states, "Design is an art of making products that serve people" (34). However, human-centered design is about more than making products people use; it is an important component of social interaction between people. Buchanan continues, observing interaction design, "is about the relationships among people, particularly as human relationships are mediated by all forms of products" (38). Here, Buchanan is a precursor to Koster's previously-discussed view that "When you take up the tools of online world design, you are designing societies" (4). It is important that designers consider the interactions between people and not just the interactions within the game, whether the world is online or self-contained. We can also look to Donald Norman for suggestions on how to ensure we consider the human users of our designs. Norman discusses how complexity in design can be beneficial, as long as the person using the device "has a good conceptual model of how it operates" (40). At this point in the history of VR technology, designers should first recognize that the participant likely does not have a good conceptual model of how the technology operates, either because there are not industry standards for how the VR technology operates, or because it may simply be their first time operating the technology. For example, as

discussed in Chapter Three, some play study participants indicated discomfort using the headset, either because it was blurry, they had to keep their glasses on to be able to see, or the cord was awkward. Future iterations of VR might see lighter headsets, and perhaps custom straps, sizes, or even a way for the participant to adjust the focus so they are able to remove their glasses. In January 2018, the HTC Vive released a wireless adaptor for the headset, eliminating one of the major concerns of study participants, that they would trip over cord attached to the goggles while moving around (Warren). However, Norman's suggestion for good design still holds true when it comes to creating exceptional narratives. He states:

> We need two sets of principles for managing complexity: one for design, one for coping. In the end, the rules all evolve around communication and feedback. The design must include appropriate structures to aid human comprehension and memory as well as tools for learning, and for handling unexpected events. (Norman 224)

Putting aside the difficulties using the technology and peripherals, it is important to consider how participants might cope with new technology. For example, though I did not collect data on this point, I had to reassure some play study participants as they began the game that it was not a horror game. Though the narrative themes were dark, nothing was going to jump out at them to surprise them. Some participants noted in observations and interviews that this was a point of nervousness for them, with one stating in the post-study interview: "I was scared of something jumping out at me maybe or the dead body coming back to life, so I was like worried." Virtual reality games may require a separate set of ratings or genre titles to ensure participants know what kind of environment they are entering and what type of interaction they are agreeing to before they attempt to play. In short, interaction, technology, and narrative must all be equal in the consideration of the designer. As Buchanan puts it, "[Human-centered design] seeks to balance and integrate aspects of the fine arts, engineering,

and the social sciences in the activity of design thinking. It seeks the center of balance among these factors rather than emphasizing one or another as primary" (34).

In regard to what this type of design practice actually looks like in VR narrative game design process, it might include narrative inquiry as part of the activity of design itself. When combined with human-centered design, narrative inquiry is a methodology in which, “data collection, analysis, and reporting all rest on a focus on participants’ telling of narratives (participants’ voice), the co-construction of the meaning of narratives by the participant and researcher, and the presentation of findings in a narrative form” (Jones 479). Furthermore, by incorporating stories throughout all portions of the research process, narrative inquiry “has the potential to provide a counterview to traditional design scenarios by addressing the needs and contexts of users who may not be the typical and idealized user, and most importantly, users who may be marginalized and oppressed” (Jones 489). Narrative inquiry thus foregrounds social justice as a central goal of design, rather than attempting to incorporate social justice into design practices that were not created with participant voices in mind.

Reduce the possibility of motion sickness.

A 2017 study by Munafo, Diedrick, and Stoffregen, which includes two separate experiments, finds women are more susceptible to simulator sickness, or motion sickness induced by the VR headset. In their study, Munafo et al. tested the responses of 36 university students to the Oculus Rift VR headset. The headset was configured as recommended by the manufacturer and, as in the study conducted for Chapter Three of this dissertation, participants played publically available games. Following the first experiment, Munafo et al. state, “The overall incidence of motion sickness was 22% (8/36). Two of 18 men (11.11%) and six of 18 women (44.44%) stated that they were motion sick” (893). To identify whether

certain types of games are more likely to cause motion sickness, Munafo et al. conducted a second experiment using a first-person game in which the player moves through buildings and hallways. Using this second game, they found, "The overall incidence of motion sickness was 56% (20/36), which was greater than in Experiment 1 (22%), $\chi 2 = 8.42$, $p = .004$. Six men (33.33%) and fourteen women (77.78%) reported becoming motion sick" (895). The high incidence of motion sickness using the first-person game is itself an issue, as first-person is a common perspective used for simulators and VR games and, as suggested above, may be the most effective perspective when considering the possibilities of stories for expanding social justice. The finding is further a problem when considering the gender gap in the frequency of motion sickness. On the positive side, the severity of motion sickness did not vary based on the participant's gender. Further, Munafo et al. chose participants who had no previous experience in using a VR headset, so they could not be said to have acclimated to the experience, as some people do. Interestingly, an additional 2017 study on VR motion sickness conducted by Iskenderova et al. found that, "alcohol intoxication at a blood alcohol level of approximately 0.07% significantly reduced symptoms of cybersickness among individuals in the experimental treatment group and did not worsen symptoms among all participants" (561), which is not to suggest that players who want to experience VR should get drunk and play, but that there may be additional measures, externally or otherwise, that could reduce motion sickness in participants who are prone to it. As mentioned in Chapter Three, no participants who played VR in the study conducted as part of this dissertation indicated that they felt motion sick at any time, but they also did not fill out a specific motion sickness questionnaire, as that was not the aim of the study.

It is important, however, for designers to consider this gendered reaction to VR games and film as the medium becomes more widely used, and to continue study in this area.

Further study could include a deeper investigation of the types of games and movement that tend to induce motion sickness, as well as an exploration of whether different VR headsets encourage motion sickness to varying degrees within participants.

Don't create content with two-dimensional games in mind.

As evidenced by the results of Chapter Three's play study, participants in VR are expecting something different from the medium than they might find in a 2D game. In the post-study interview, one participant stated about *The Price of Freedom*, "The storytelling was great in that we had to look around for it. Especially since it's a VR narrative game we can actually look for as much intel as we want but it's still available to us." In a 2D game, the participant might get frustrated at an inability to find the story, but in VR the opportunity to explore the world, as discussed above, appears to be a welcome diversion. With this in mind, the removal of participant choice, a key feature of many activist or experimental games, may not be the best option for creating narratives in VR. However, there are times when a lack of control can further the narrative, as when *The Price of Freedom* forces the participant to murder Cathy's father. One participant noted:

> And I don't know, it felt a lot like you had no control over what you were doing, you just had one thing to do. But it was very nerve-wracking because you were forced to kill someone, like you were just told to do it. You had no idea who the person was. So you just did it anyway.

In this case, as is discussed in Chapter Four, that moment of losing control fit the progress of a narrative in which the main character was being mind-controlled. Thus, the single path the player was allowed to take could be construed as part of the narrative action, rather than simply a deficiency in design. Since Construct Studios plans to release more episodes of *The Price of Freedom*, it will be important to see whether they maintain the convention of

providing the participant with only one way out, or if they begin to build in more narrative choices. Currently, there are no games in the role-playing genre available for VR, and development in that area may lend itself better to narratives with a higher amount of social interaction between characters, and a greater degree of creativity on the part of the participant.

Concluding Thoughts

With these five recommendations in mind, this dissertation seeks to identify the ways in which designers can create virtual reality narrative games in support of social justice causes. These recommendations first require that, as argued in Chapter One, we understand that VR narrative games are dramatic interactive simulations that incorporate meaningful procedural choices designed to advance the story and transport the participant. Secondly, we must add activist messages, as argued in Chapter Two, to these narrative games. Thirdly, we must understand how transportation functions within VR, as explored and discussed within the Chapter Three play study. Fourthly, as discussed in Chapter Four, we must be cognizant of the potential for VR, like any technology, to be used for nefarious propaganda purposes. As Kevin Slavin states: "We can build software to eat the world, or software to feed it. And if we are going to feed it, it will require a different approach to design, one which optimizes for a different type of growth, and one that draws upon—and rewards—the humility of the designers who participate within it" (Slavin). Whether virtual reality technology eventually feeds the world or eats the world has long been hypothesized by scholars like Murray, Baudrillard, and Ryan and fictional media like *Ready Player One* and *Black Mirror*. Perhaps now more than at any point in the past, the game and film industries are in a position to realize some of the hypotheses put forth by scholars and popular media, and consumers are

ready to strap on headsets and venture into and explore virtual worlds. Based on participant responses to *The Price of Freedom*, a recent VR narrative with social justice themes, I find that virtual reality narratives may indeed have a stronger effect on participant beliefs than non-VR digital games and stories, and it thus becomes even more important for digital humanists and designers concerned with creating software to feed the world, and to monitor our technological progress in the VR space to ensure our moral progress and the critique of our moral goals follows suit. Perhaps then the virtual worlds we create can begin to level the inequalities we still battle in the physical world.

APPENDIX: IRB APPROVAL OF HUMAN RESEARCH LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Sara Raffel** and Co-PIs if applicable:

Date: **August 18, 2017**

Dear Researcher:

On 08/18/2017 the IRB approved the following modifications / human participant research until 08/17/2018 inclusive:

Type of Review:	UCF Initial Review Submission Form, Expedited Review This approval includes a Waiver of Written Documentation of Consent and an Alteration of Consent
Project Title:	A Play Study Exploring the Effects of Virtual Reality Narratives on Participants' Transportation
Investigator:	Sara Raffel
IRB Number:	SBE-17-13306
Funding Agency:	Texts and Technology Dissertation Award
Grant Title:	N/A
Research ID:	N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu .

If continuing review approval is not granted before the expiration date of 08/17/2018, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

All data, including signed consent forms if applicable, must be retained and secured per protocol for a minimum of five years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained and secured per protocol. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Renea C Carver on 08/18/2017 09:08:32 AM EDT

IRB Coordinator

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