EMBODYING THE IMAGE:
SPECT-ACTORSHIP AND VIRTUAL REALITY

JUSTIN BAILLARGEON

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ABSTRACT

Embodying the Image: Spect-actorship and Virtual Reality addresses spectator behavior and emotional engagement across various forms of virtual reality (VR) experiences, including seated, standing, and room scaled setups. Using a comparative methodology, the study addresses the spectatorial shift triggered by VR's resurgence in various cultural contexts, exploring both out-of-home and in-home experiences across artistic, educational, and entertainment objectives.

Central to the investigation is the concept of the spect-actor, drawn from theorist and theatre practioner Augusto Boal, representing individuals who transition from passive spectators to active participants within narratives. Through comparative analysis, the present dissertation showcases VR's evolving affective characteristics and user engagement levels in three different kinds of VR experiences. By focusing on immersion in diverse reality environments, the dissertation aims to address a gap in VR research concerning the artistic, educational, and entertainment aspects of VR spectatorship. Immersion, defined as the extent of a system's ability to create a lifelike illusion of reality, is explored both technologically and psychologically. The dissertation underscores the importance of decision-making interfaces in the amplification of a spect-actor's sense of immersion.

The dissertation argues that less mediated Artistic VR experiences provide greater user agency and spect-actorship, allowing enhanced control and influence over actions and experiences. It situates how Educational VR operates within structured frameworks, investigating the intersection of educational objectives, pre-defined learning outcomes,

user agency, spect-actorship and embodiment. Finally, turning to Entertainment VR, the dissertation focuses on its synthesis of cinematic storytelling, user agency, authenticity, and spect-actorship to understand diverse approaches in delivering emotionally impactful narratives.

This dissertation is the culmination of extensive research and dozens of interviews with VR developers exploring the dynamics of agency and embodiment across three different VR genres developed based on the works that have been selected for this research. Through in-depth comparative analysis of diverse VR works, several key findings have emerged, shedding light on the nuanced interplay between user agency, narrative structure, and spect-actor engagement. The study emphasizes the importance of user agency in fostering immersion and spect-actor engagement within VR experiences. Whether in more open-ended environments or structured educational settings, balancing user freedom with predefined objectives proves essential for maintaining engagement and enhancing the sense of embodiment. In navigating the diverse landscape of VR storytelling, developers must carefully orchestrate the interplay between narrative coherence, user agency, and emotional resonance to create impactful experiences that transcend traditional spectatorship. This dissertation sheds light on the pivotal role of embodiment in eliciting deep emotional responses from users across a range of contexts and genres.

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1 Introduction

1.1. The Road to Spect-Actorship

My first encounter with VR was at the Cinéma Banque Scotia movie theatre in Montreal in 2015. After attending the screening of a film, I noticed a kiosk featuring a VR experience based on the horror film *Insidious: Chapter 3* (Leigh Whannel, 2015) titled *Insidious VR* presented as a marketing and promotion materiel for the film. Even though, at that time, VR was increasingly discussed in technology magazines and academic journals, it still had not reached the mainstream status it has currently attained. For this reason, I had never tried an immersive experience before this one. Presented on an Oculus Rift DK2 with no controllers involved, *Insidious VR* featured the character of Elise Rainier, a psychic and family friend of the main protagonists' family whose role was to bring their son who was being terrorized by an evil entity that tried to gain his physical body. Later, she is once again called by the family because they need help to get their son back from the Further entities. In *Insidious VR*, Elise is sitting on a chair located in a living room saying you are vulnerable staying in this room after living an out of body experience because you left an empty vessel. The user is sitting across a table in front of her. Elise is telling you that evil forces want to use that empty vessel to live again. "Focus on me. Listen to my words!" as she says while some cued virtual elements start to appear in the 360° environment such as silhouettes behind blinds, a tea cart moving by itself, and the front door that opens suddenly, among other things. You are being told to stay strong no matter what will happen. In other words, to keep the HMD strapped on to your face and go through

the entire experience, which lasts for a little bit over 3 minutes. *Insidious VR* ends with the film's antagonist, the Bride in Black, who appears suddenly in front you as a final jump scare.

Screenshot of *Insidious VR*

Although the 360° short film is not an interactive one, *Insidious VR* was quite an experience for a first-time user. I remember being surprised by how realistic these effects were, and most importantly, how visually immersive it was. Wearing the HMD, which helped plunging me instantly into the film's setting, with the help of realistic sound effects and being talked to directly by this famous horror character of Elise Rainier, made me feel like I was truly transported into the film's narrative as a character in the story. However, I was also frustrated that my virtual self was forced to remain seated and unable to physically interact with my environment.

At the time of experiencing *Insidious VR*, I was in the final stages of writing my Master's thesis on motion and performance capture in film. Being a gamer myself, I was, meanwhile, playing the video game *Heavy Rain* (Quantic Dream, 2010), an interactive drama based on the conventions of the choral film and thriller genres. *Heavy Rain* is almost entirely composed of cinematic sequences acted in performance capture by real performers, in which the player is prompted to make decisions that will influence the course of the game's storyline. In order to progress the narrative, the game offers various interactions in the form of contextual quick-time event actions presented through icons that appear on the screen, indicating possible interactions based on the virtual environment of the level. Playable and non-playable characters, portrayed by real actors whose photorealistic appearance is reproduced through performance capture techniques, also enhanced the identification process during gameplay. Although the game was quite engaging in terms of gameplay, it became even more so due to the freedom it granted me when allowed to make decisions that would influence the course of the story, and even the fate of its characters. As I progressed through the game, I felt like an integral part of the story. I was a spectator in the game with acting abilities that allowed me to navigate the game and make narrative choices that ultimately had significant consequences in the storyline. I had become a *spect-actor*.

Despite the pleasure I found in playing with the many freedoms it gave me, I still believed something was missing. That lack had now morphed into a problematic I was eager to find answers for when experiencing *Insidious VR*: could the combination of an interactive piece with a decision-making interface such as the one seen in *Heavy Rain* coupled with the physical immersion brought by VR possibly achieve a complete immersive experience? While writing

my M.A. thesis, I considered incorporating this embryonic concept into my conclusion. However, my supervisor, Prof. Viva Paci, advised me to briefly mention a potential avenue for an eventual doctoral dissertation on the subject, and I followed her suggestion. In my earlier research on motion and performance capture, I see VR as a logical extension of interactive dramas such as the video game *Heavy Rain* (Quantic Dream, 2010),

> Although they are still in the prototype stage, these devices seek to revolutionize video games and cinema by offering an interactive and total virtual immersion experience [...] By presenting a vision of cinema in which multiple intermedial platforms are juxtaposed, and in which the viewer becomes active by becoming the hero of a story, virtual reality devices, on the path to democratization, imply a certain gamification of cinema. Cinema is no longer confined to a single format. Virtual reality implies the interdependence between live-action cinema, animated cinema, and video games where motion capture technologies are central. This cinematic concept, which was until now not or scarcely conceivable due to technological limitations, is revolutionizing the cinematic world today by creating what we propose to call—at this stage of our reflection—an "absolute cinema[1]. "

While rudimentary by today's VR standards, *Insidious VR*, and even *Heavy Rain*, despite not being VR proper, served as crucial starting points in shaping my judgment for subsequent VR experiences. They played a defining role in influencing my perception of interactive and immersive qualities in VR narratives. These experiences profoundly influenced

[1] Baillargeon, « Corps simulacres et virtualisation du réel : la capture de mouvement et d'interprétation au cinéma », 114. 2024-08-28 15:12:002024-08-28 15:12:00

my overall artistic appreciation and laid the foundation for evaluating VR works, which this dissertation will seek to present.

Screenshot of *Heavy Rain*

My dissertation project analyzes spectator behavior and emotional involvement during various types of virtual reality (VR) experiences whether seated, standing or room-scaled. In order to carry out this research, my program focuses on a completely underexamined area: VR and its distinct forms of spectatorship. In this research, I will examine VR content within a first-person autoethnographic framework following Patricia Leavy (2020) and Jocene Vallack's (2021) research methodologies which I will discuss in detail in Chapter 2. This dissertation will focus on a first-person audience-centered perspective in current VR experiences whether fiction or nonfiction based. The scope of this research will cover VR experiences that do not try to influence the users within a landscape of predetermined choices. I believe these factors provide to the users a direct participation, involvement, and pleasure – as subjective as it is – in the narrative. This will help me frame my main research object: the spect-actor. Borrowed from

theater practitioner and drama theorist, Augusto Boal, the spect-actor is a contraction of the two words "spectator" and "actor"; someone who witnessed a story and who has become, through an active involvement in a narrative, a protagonist[2]. A comparative analysis between room-scaled VR experiences and location-based VR experiences will provide for this research project much needed insight into the affective characteristics of VR as a constantly evolving medium, as well as the different involvement of the users, especially when it comes to their degrees of freedom. In the same line of thought, this dissertation will be focusing on the spectatorial shift caused by the mainstream resurgence of VR in various types of out-of-home and in-home experiences whether seated, standing or room-scaled.

For my dissertation, I selected VR experiences that tie-in to my framework in different cultural contexts defined by artistic, educational, and entertainment objectives. I define the different genres –Artistic VR, Educational VR and Entertainment VR, through different case studies. While they are not finite genres, I developed them based on the VR works I selected. Consequently, these VR experiences will be observed and analyzed from this perspective. I intend for this dissertation to fill in a knowledge gap in VR research that is at the beginning of research in this underdeveloped area by focusing on user experiences of immersion in different kinds of virtual environments, as well as setting up a comparative analysis. It is also important to mention that I am not claiming the different pieces analyzed in the forthcoming chapters are representative of the work that is going on in these different areas –Artistic VR, Educational VR and Entertainment VR. However, I have made the decision to choose the following VR experience based on the fact that I could gain access to both the developers and the technology

[2] Boal, *Theatre of the Opressed*, xxi.

in order to complete my research, as I believe they align with my concept and the angle I take in my dissertation.

After Dan Graham, the first VR experience focusing on Artistic VR, is an experimental piece that offers users a chance to actively shape the narrative, merging technology with self-perception and narrative creation. Participants inhabit a virtual environment within a physical space, experiencing a first-person perspective that allows them to influence the narrative, thus challenging traditional storytelling paradigms. Developer David Han's innovative approach transforms participants into spect-actors, encouraging them to engage with and shape the evolving narrative through their decisions and interactions. *ArtGate VR*, developed by Justin O'Heir and Brendon McNaughton, functions as an immersive art gallery within the metaverse, emphasizing exploration and freedom for users to navigate the space at their leisure. This approach fosters a therapeutic and personalized art encounter, aligning with current research advocating for a balance between guided and exploratory experiences within VR museum settings. *Belongings VR* is an interactive VR experience developed by Carol Silverman, immersing users in the life story of her mother, Ellen Rauh, a Holocaust survivor. Divided into nine chapters, users explore significant periods of Ellen's life, interacting with her personal items, photographs, documents, and artwork. Through timed chapters and interactive engagement, users gain insights into Ellen's experiences, including her childhood in Germany, internment camp survival, and later years, culminating in a representation of her cognitive decline into dementia. The VR experience offers a unique exploration of memory and interactivity, allowing users to create speculative narratives and deeply engage with Ellen's life through immersive storytelling.

The first VR experience of the present dissertation focusing on Educational VR is *MLK: Now is the Time*, an immersive educational piece honoring Dr. Martin Luther King Jr.'s legacy and delving into themes from his "I Have a Dream" speech. Produced by Time Immersive and developer Limbert Fabian, it addresses housing, policing, and voting issues within a racial context through interactive storytelling. Hand tracking technology enhances user engagement, enabling physical interaction with the narrative, while the metaphor of collecting pieces of the "Stone of Hope" structures the experience. Divided into three segments, it employs role-play scenarios and simulations to convey systemic inequities, including a housing board game, a tense traffic stop scenario, and a virtual civic duty exercise. The experience aims to educate users about social issues and foster understanding by allowing them to inhabit different perspectives, utilizing immersive storytelling, hand tracking, and interactive elements to create a unique educational VR experience. The second Educational VR experience explored is *Anne Frank House VR*, developed by the Anne Frank House and Project Manager Charlotte Bosman, offering users a virtual tour of the secret annex where Anne Frank and her family hid during World War II. The experience provides insights into Anne Frank's thoughts and living conditions, supporting multiple languages for global accessibility. With a focus on educational use, it serves as a virtual compromise for those unable to visit the museum physically. The piece offers two modes: story mode, featuring guided narration by Anne Frank from her diary, and tour mode for free exploration. Users can interact with virtual objects, challenging traditional museum rules. The third and final VR experience in this chapter is *The Battle of Vimy Ridge*, situated at The Royal Canadian Regiment (RCR) Museum in London, Ontario and developed by Dr. Georgiana Stanciu. Created to mark the 100th anniversary of Vimy Ridge in 2017, users are immersed in the tunnels behind the battle lines. The piece encompasses various scenes,

including trenches and the battlefield, with historical context provided through floating texts. Despite technical challenges and hardware changes affecting performance, *The Battle of Vimy Ridge* prioritizes educational value, aligning with the museum's narrative and emphasizing historical accuracy over artistic and narrative elements.

Founded and developed in 2015 by Ken Bretschneider and Curtis Hickman, *The VOID*, the first Entertainment VR experience explored, revolutionized VR by blending digital and physical environments, creating a groundbreaking hybrid experience. This location-based virtual theme park allowed groups of up to four users to embark on shared virtual narrative adventures. By incorporating multi-sensory elements, *The VOID* blurred the lines between virtual and tangible, prioritizing user involvement and social interaction to deliver immersive, engaging VR experiences. The second experience of the Entertainment VR genre is *The Thrill of the Fight*, a VR boxing simulation developed by Ian Fitz, that emphasizes authenticity and freedom in gameplay. Users engage in physical activity within a 6x6 foot virtual ring, facing opponents of varying sizes and styles to adapt and improve their skills. Unlike other VR boxing games, it avoids imposed stamina systems, allowing user stamina to influence gameplay flow. Its success lies in simplicity, aligning with user expectations, and offering both challenge and skill balance, providing a gratifying sense of achievement and physical exercise enjoyment. The final Entertainment VR experience *Stay Alive My Son – Chapter 1 & 2*, developed by Victoria Bousis, immerses users in a 45-year odyssey inspired by Pin Yathay's memoirs during the Cambodian genocide. Users embody an 80-year-old Yathay, navigating his mental prison and confronting regrets through interactive storytelling. The emphasis on user involvement and spect-actorship is evident as users shape the narrative through exploration and interaction with

Yathay's environment. With interactive elements like handling objects and reading documents, the experience offers a personalized journey, blurring the lines between cinema and gaming for a unique storytelling experience.

Embodiment in VR can be defined as “the sensations of being inside, having, and controlling a body. In virtual reality, it is possible to substitute a person’s body with a virtual body, referred to as an avatar. Modulations of the sense of embodiment through modifications of this avatar have perceptual and behavioural consequences on users that can influence the way users interact with the virtual environment[3].” In most instances, virtual bodies, also known as avatars, are utilized in virtual environments to represent users. Various communities approach the study of embodiment from different perspectives (Longo et al., 2008b; Blanke and Metzinger, 2009; de Vignemont, 2011; Kilteni et al., 2012). In neuroscience, for instance, the focus is on understanding the neural mechanisms associated with body ownership and agency (which form the basis of accountability in human societies) (Haggard, 2017), whereas philosophy and cognitive science delve into concepts of the self and bodily self-awareness (Gallagher, 2000). The VR community also investigates the extent to which individuals can emotionally connect with a virtual body, akin to their connection with their biological body (Kilteni et al., 2012). While people are typically taking for granted our sense of ownership over our physical body, except in cases of certain pathologies (Hassan and Josephs, 2016), VR presents unique opportunities to manipulate this sense within controlled environments. According to Kilteni et al. (2012a), widely recognized in the VR community, embodiment encompasses[4]." Embodiment is characterized by three sub-components: the sense of agency,

[3] Guy et al., “The Sense of Embodiment in Virtual Reality and Its Assessment Methods”, 1.
[4] Kilteni and Groten, “The Sense of Embodiment in Virtual Reality, p. 374-75.

which is the feeling of being the cause of our actions; the sense of body ownership, which is the feeling that the virtual body is the source of our sensations (akin to our real body); and the sense of self-location, which is the spatial experience of being inside a body. Nonetheless, the definition of embodiment continues to evolve, with new categories continuously being proposed for its understanding.

We can define immersion as the "extent to which computer displays can provide a comprehensive, expansive, enveloping, and lifelike illusion of reality[5]" (Slater & Wilbur, 1997). This encompasses the exclusion of physical reality, the diversity of sensory experiences, the scope of the surrounding environment, as well as the resolution and precision of the display[6]. The technological features of VR, such as frame rate and display resolution, play a crucial role in determining the user's level of immersion[7] (Bowman & McMahan, 2007). In contrast, the psychological perspective defines immersion as a mental state wherein the user perceives a detachment of their senses from the real world[8] (Witmer & Singer, 1998). According to this viewpoint, the perceived level of immersion varies individually, with technological attributes exerting minimal influence[9] (Mütterlein, 2018). Many studies since the late 1990s have concentrated upon very general sense of immersion, virtual production, and interactive storytelling. In what follows, I use the notion of the ‘spect-actor’ to develop insights around user experience (UX). At its core, UX embodies the emotions and experiences individuals go

[5] Slater and Wilbur, « A framework for immersive virtual environments (FIVE): Speculations on the role of presence in virtual environments », 603-16
[6] Slater and Wilbur, « A framework for immersive virtual environments (FIVE): Speculations on the role of presence in virtual environments », 603-16
[7] Bowman and McMahan, « Virtual reality: how much immersion is enough? », 36-43
[8] Witmer and Singer, « Measuring presence in virtual environments: A presence questionnaire », 225-40
[9] Mütterlein, « The three pillars of virtual reality? Investigating the roles of immersion, presence, and interactivity ».

through while engaging with a system or interface. As technologies evolve and integrate into daily life, the interaction between users and these systems molds their overall experiences, as it is the case in VR. The ongoing conversation between a user and their environment through actions lay the groundwork for UX. The research questions I will address are: do a combination of both VR experiences featuring an interactive platform and a decisional-making interface reinforce the spect-actor's immersion defined as previously stated, an individual who has observed a story and, through active engagement in the narrative, has transformed into a protagonist? Do predetermined choices in interactive fiction or sandbox effects in a VR experience help to push and/or to reinforce the boundaries of immersion from a spect-actorship standpoint? How might this approach significantly contribute to the experience of immersion? I will explore these questions through a comparative analysis of different VR experiences defined by artistic, educational and entertainment objectives that do not try to influence the user, but rather encourage a feeling of free choice. It is also important to mention that my research project will not be taking into consideration any type of social and collaborative VR platforms such as *Meta Horizon Worlds*, or streaming apps such as *Meta Quest TV*, as the latter are not meant for interactive entertainment purposes and are beyond the scope of my study.

2. Literature Review and Methodology

2.1. Introduction

Virtual Reality (VR) has emerged as a multifaceted medium, permeating various disciplines such as virtual design, interactive storytelling, and digital media arts. Within the expansive domain of interactive digital narrative, scholars have engaged in probing the psychological, cultural, and ethical dimensions of VR experiences. In the exploration of psychological aspects, studies by Sojung Bahng (2018) and Joshua A. Fisher (2023) have delved into intricate facets like embodiment and empathy. The work of Jonatha Barbara and Mads Haahr (2022) extends this exploration to encompass the nuanced realm of identity within the VR landscape. These investigations contribute to a growing body of knowledge, shedding light on the intricate interplay between human psychology and immersive virtual environments. Cultural heritage and ethical considerations have also found their place in the recent discourses surrounding VR narratives. Scholars such as Barbara et al. and Fisher et al. have navigated the intersection of VR, cultural heritage, and ethical implications, providing valuable insights into the ethical dimensions inherent in crafting and experiencing immersive narratives. Recent publications and dissertations further enrich this evolving field of study. The dissertation titled "IDN for cinematic VR" by Maria Cecilia Reyes Redondo (2019) immerses itself in the creation of virtual environments through 360° video within the framework of interactive fiction. Redondo's work offers a unique perspective on the amalgamation of cinematic elements with interactive storytelling, expanding the possibilities for narrative exploration in VR. A notable contribution comes from Fisher et al. (2022), whose paper on writing for interactive digital narrative in VR explores the intricate challenges faced by writers in scripting non-linear stories

for interactive audiences. This examination serves as a crucial guide for understanding the complexities of branching narratives and freedom of action that are closely linked to spect-actorship, inherent in crafting narratives that transcend traditional linear structures, which is at the core of the present dissertation.

The dissertation "Exploring Narrative Novelties in VR" by Mirjam Vosmeer and Christian Roth (2021) provides a comprehensive analysis of four key concepts—identification, parasocial interaction, breaking the fourth wall, and spatial and narrative presence. Through this exploration, Vosmeer and Roth offer valuable considerations for the development and understanding of interactive digital narrative in VR, presenting a nuanced framework for narrative exploration. Adding depth to the understanding of immersive experiences, the study "Who am I that acts" by Barbara et al. scrutinizes the impact of second-person voice and levels of interactivity on immersion in VR. This examination underscores the significance of narrative elements in shaping the user's sense of presence and engagement within virtual environments.

In the exploration of narrative dynamics within the digital realm, VR stands as the focal point, representing not only a digital medium but a transformative and immersive environment. This study draws on four distinct affordances of digital media—'procedural,' 'participatory,' 'spatial,' and 'encyclopedic.' Additionally, it incorporates the aesthetic dimensions of agency, immersion, and transformation, forming the theoretical foundation for the research. These affordances and aesthetics, as elucidated by Janet Murray (1997, 2017), underpin the study's focus on branching narrative and agency within the context of VR.

2.1.1. Augusto Boal and Spect-actoship

As previously mentioned in the introduction of the present dissertation, when I commenced my research at York University, I sought a theoretical framework that could effectively capture the interactive and participatory nature of VR experiences. Augusto Boal's concept of the "spect-actor," originally developed within the realm of theater, is a compelling lens through which to examine user engagement in VR. Boal's theory challenges traditional spectator roles by empowering audience members to actively participate and influence the narrative unfolding before them. Applying this concept to VR provides a robust foundation for analyzing how users interact with and shape immersive experiences across artistic, educational, and entertainment contexts.

Augusto Boal introduced the concept of the spect-actor in his seminal work, *Theatre of the Oppressed*[10], as a means to democratize theater and transform it into a tool for social and political change. In Boal's framework, spectators are no longer passive observers but active participants who can intervene, propose alternatives, and enact changes within the performance. This transformation blurs the boundaries between actor and audience, fostering a collaborative creation process that reflects and challenges societal structures.

According to Boal, this participatory approach empowers individuals to rehearse real-life situations within a safe and controlled environment, thereby fostering critical consciousness and promoting transformative action. By engaging directly with the narrative, spect-actors can

[10] Augusto Boal, *Theatre of the Opressed*.

explore different outcomes and perspectives, leading to a deeper understanding of complex social issues.

Holger Pötzsch, in his article "Playing Games with Shklovsky, Brecht, and Boal: Ostranenie, V-Effect, and Spect-Actors as Analytical Tools for Game Studies[11]," extends Boal's concept to the domain of video games. Pötzsch argues that players inherently embody the role of spect-actors as they both observe and interact with game worlds, making choices that can alter narratives and outcomes. This active engagement not only enhances entertainment value but also serves educational and emancipatory functions by encouraging players to critically reflect on and question underlying themes and messages within games. Pötzsch's analysis underscores the potential of interactive media to foster critical thinking and social awareness, aligning with Boal's original intent of using theater as a catalyst for change. This intersection between theater and digital media provides a valuable framework for exploring user engagement and agency within VR experiences.

Building upon Boal's and Pötzsch's frameworks, I apply the concept of spect-actorship to VR, a medium inherently designed for immersive and interactive experiences. VR's ability to place users directly within virtual environments allows for a heightened level of engagement, where users can actively participate and influence the narrative landscape. This participatory dimension aligns seamlessly with Boal's spect-actor, positioning VR users as co-creators of their experiences.

[11] Holger Pötzsch, "Playing Games with Shklovsky, Brecht, and Boal: Ostranenie, V-Effect, and Spect-Actors as Analytical Tools for Game Studies."

The application of Boal's spect-actor concept to VR reveals how this medium enables users to transition from passive observers to active participants, a shift that is particularly evident across artistic, educational, and entertainment VR experiences. This transformation in user engagement highlights VR's potential as a tool for deeper interaction and critical engagement, making it a powerful medium for exploration and learning.

In Artistic VR experiences, the concept of the spect-actor is realized through the user's ability to interact with and influence the artwork in real-time. This interaction blurs the lines between the creator and the observer, fostering a co-creative process that mirrors Boal's participatory theater. For example, in *ArtGate VR*, users are not merely spectators of the art but are active participants who navigate virtual galleries and engage with other users. This level of agency allows users to craft their own experiences and interpretations, echoing Boal's vision of art as a means of social and personal exploration. By enabling users to manipulate and influence the digital elements within the artwork, Artistic VR experiences encourage a deeper emotional and intellectual connection to the content. This engagement aligns with Boal's idea of participatory art, where the audience is integral to the creation and evolution of the piece. The freedom to interact with and shape the artwork in these VR experiences reflects the transformative potential of Boal's spect-actor concept in the digital age.

In Educational VR, the spect-actor concept transforms learning from a passive activity into an interactive and immersive experience. This shift aligns with constructivist theories, where knowledge is actively constructed through engagement with the material. VR experiences like *MLK: Now is the Time* illustrate how users can become active participants in

historical narratives, making decisions that impact the outcome and thus gaining a deeper understanding of the material. The role of the spect-actor in Educational VR also extends to fostering critical thinking and empathy. By placing users in scenarios where they must navigate complex situations and make consequential decisions, Educational VR experiences encourage users to reflect on the implications of their choices. This engagement not only enhances the learning process but also aligns with Boal's original intention of using theater as a means to promote social consciousness and empowerment.

Entertainment VR leverages the spect-actor concept to create highly interactive and personalized narratives. In experiences like *The VOID*, users are not just watching a story unfold—they are directly involved in shaping it. This level of interaction transforms the user from a passive consumer to an active co-creator, a dynamic that is central to Boal's idea of the spect-actor. In Entertainment VR, the user's decisions can alter the narrative's direction, leading to multiple possible outcomes. This interactivity enhances the emotional engagement and replayability of the experience, as users are encouraged to explore different narrative paths. By blurring the lines between the audience, the director, and the narrative, entertainment VR embodies the essence of Boal's spect-actor, where the user's participation is critical to the storytelling process.

The integration of Boal's spect-actor concept across artistic, educational, and entertainment VR experiences highlights the medium's potential for fostering active engagement and critical reflection. VR, with its immersive and interactive capabilities, offers a unique platform where users can transition from passive observers to active participants,

shaping their experiences and narratives in real-time. This application of Boal's theory not only enriches the user's experience but also underscores the broader potential of VR as a tool for social and personal transformation. By empowering users to actively engage with and influence the content, VR aligns with Boal's vision of theater as a space for exploration, learning, and empowerment. The spect-actor framework provides a valuable lens through which to analyze and understand VR experiences, offering insights into how this medium can transcend traditional boundaries and create new opportunities for participation and engagement. As VR technology continues to evolve, the application of Boal's spect-actor concept has the potential to remain a critical tool for exploring the full potential of this dynamic and transformative medium.

2.1.2. Interactive Storytelling

The discourse surrounding interactivity and narrative has been shaped by a longstanding debate between narratology and ludology, notably articulated by Frasca (2003). Herman's definition (2002), asserting that narrative transcends a fixed form, gains prominence in the contemporary landscape of non-linear media consumption. This perspective challenges Prince's definition (1987), which constrains narrative within a linear structure composed of time-based 'events.' The implications of this debate, as emphasized by Koenitz (2023), cannot be overlooked.

Hartmut Koenitz's nuanced revision of the definition of Interactive Digital Narrative (IDN) encapsulates the evolving nature of narrative expression in the digital era. Described as

"a narrative expression in various forms, implemented as a multimodal computational system with optional analog elements and experienced through a participatory process[12]," IDN, as articulated by Koenitz, places significant emphasis on the role of interactors. In this definition, interactors wield a non-trivial influence on the progress, perspective, content, and/or outcome of the narrative. Koenitz's conceptualization addresses the evolving relationship between narrative and interactivity, providing a contemporary lens through which to understand the intricate dynamics of storytelling within digital and virtual spaces.

Within the realm of interactive storytelling, the application of branching narratives offers diverse pathways for user interactivity. Key methodologies include the branching tree, dialogue tree, and the foldback scheme, each providing avenues for choices that may lead to different paths and endings (Ryan, 2015). Furthermore, the integration of non-determinative choices, where the story converges back to a common path regardless of player choices, adds a layer of complexity to narrative structures (Crawford, 2012).

As the complexity of branching narratives increases, a pivotal consideration is the impact on the story's depth, shaped by details and minor decisions (Crawford, 2012). The concept of "opportunity magnitude[13]," as proposed by Koenitz (2015), emphasizes prioritizing interactive opportunities over the length of the experience. This principle becomes paramount in guiding the design of branching narratives to balance interactivity and narrative depth effectively. Various engines for branching narratives, such as those based on events, clocks, or plots, provide designers with distinct tools for crafting interactive storytelling (Crawford,

[12] Koenitz, *Understanding Interactive Digital Narrative*, 16.
[13] Koenitz, “Design Approaches for Interactive Digital Narrative”, 55.

2012). The emergence of narrative design approaches, including Emergent Narrative (Louchart et al., 2005; Szilas, 2015), Intelligent Narrative Feedback (Louchart et al., 2015), and Highly Interactive Narrative (Szilas, 2015), introduces additional dimensions to the creative palette, offering unique perspectives on designing interactive narrative experiences.

In industry practices, a simplified form of branching, referred to as branching emotions, focuses on choices influencing how characters feel about the interactor (Darnell, 2018). This approach, while not altering the storyline, introduces a nuanced layer of emotional engagement. The term ‘branching experiences’ emerges to encapsulate choices that impact the interactor's experience without determinatively altering storylines. A notable example is found in the interactive film *Black Mirror: Bandersnatch* (David Slade, 2018), where interactivity is manifested through choices such as selecting between two songs. In this context, branching emotions become integral to branching experiences, as they alter the emotional landscape for non-player characters, contributing to an overall varied experience for the interactor without fundamentally reshaping the narrative arc. In synthesizing these diverse approaches to branching narratives and interactivity, this literature review lays the groundwork for an in-depth exploration within the context of interactive storytelling. By considering the intricate balance between determinative and non-determinative choices, as well as the evolving landscape of narrative design engines, this dissertation aims to contribute to the ongoing discourse on the effective integration of interactivity in narrative experiences.

In the intricate landscape of crafting narratives for Virtual Reality (VR) experiences, the choice of point of views (POVs) plays a pivotal role in shaping user experiences. The

exploration of first-person, second-person, and third-person POVs reveals distinct user engagement dynamics (Bucher, 2017). In the first-person POV, the story unfolds through the eyes of the viewer, providing a unique immersive experience, as discussed by Bucher (2017). Conversely, VR storytelling predominantly embraces the third-person POV, positioning the interactor as an observer rather than a character, a perspective that can be enriched by combining limited third-person with first-person elements—a concept termed "second-person side kick POV" or "diegetic observer" (Larsen, 2018).

Within a Euro-centric storytelling perspective, the conflict between protagonist and antagonist characters centers around external goals in VR experiences (Bucher, 2017). This external goal dynamic aligns with the medium's features, emphasizing compatibility and engagement. The role of the interactor in VR can vary from embodying established or customizable characters to the unique category of ‘themselves,’ with the degree of authenticity contingent on the level of scripted identification (Barbara et al., 2022). In contrast, bulk or audience characters offer dynamic identities shaped by interactions and decisions, contributing to the narrative progression. Non-player characters (NPCs) introduce further complexity, representing varied types and roles controlled by artificial intelligence (AI) or programming code and animation. The distinctions between supernumerary characters, bulk characters, and NPCs underscore the diversity of character dynamics within VR storytelling.

The concept of "breaking the fourth wall," traditionally associated with acknowledging the audience in theatrical experiences, takes on new dimensions in VR (Bucher, 2017). When the interactor is an observer and characters acknowledge their presence, it parallels traditional

theater, despite the interactor being physically immersed within the experience. However, when the interactor actively participates, acknowledgment is viewed as part of the feedback package rather than breaking the fourth wall. Immersion and presence, integral components of VR storytelling, are closely related yet distinct. Immersion encompasses the technological aspects, including displays and tracking, while presence reflects the human reaction to immersion (Slater, 2003). These concepts find application in psychological experiments, leveraging specific phobias to enhance narrative engagement and create more compelling VR stories. The illusion of owning a virtual body and experiencing sensations comparable to the biological body contributes to the evolving nature of VR experiences. The integration of hand interactions further immerses users into their virtual bodies, enhancing the impact of stories within VR spaces. The feedback package, comprising auditory, visual, and haptic elements, emerges as a critical aspect influencing the interactor's experience of presence, immersion, and embodiment in VR projects. Studies demonstrate the effectiveness of incorporating multiple models of feedback to enhance these elements, providing valuable insights into creating more immersive and engaging narratives.

2.1.3. Memory and Presence

Memory as inventory, a concept introduced by Koenitz (2023), introduces an innovative dimension to VR narratives. Allowing interactors to save options for later creates generative backstories based on previous choices, transforming their decisions into narrative elements, and highlighting the dynamic potential of VR storytelling. VR allows the viewer to experience both sensorimotor and cognitive aspects: they see, they hear, they can move, and sometimes even

touch. The viewer has the ability to perceive and physically interact with entities and elements in the virtual world, creating a simulation of certain aspects of the real world. The use of the term 'virtual reality' can indeed lead to several confusions, especially regarding the oxymoron of this appellation, as it suggests a blending of the concrete and the intangible, the actual and the virtual. However, as highlighted by Elise Lallart, Camille Voisin, and Roland Jouvent,

> Its exact meaning presents no contradiction with the definition of the real. On the contrary, the virtual indicates what is within the realm of possibility. Virtual reality is thus defined as a realistic representation (through computer techniques) of an imaginary world, of course, but equally real. In the end, virtual reality is nothing more than a product of simulation that reproduces, in real-time and as faithfully as possible, a part of the physical world, but it does not oppose it[14] .

The appearance of more accessible VR setups circa 2016 has shifted the terrain both technical and aesthetic, linking VR to common media forms such as video games and cinema with new VR experiences defined through “VR games” and “VR cinema.” The immersive feeling in a media experience allows a user to live and be in contact with it. Film and other photographic productions often require an emotional involvement from the audience, which is made possible through cognitive immersion without requiring physical interaction. As Slater and Wilbur suggest, immersion, “is a description of a technology that describes the extent to which the computer displays are capable of delivering an inclusive, extensive surrounding, and

[14] Lallart, Voisin, and Jouvent, “La Réalité Virtuelle : Un Outil de Réalisme”, 83. Freely translated.

vivid illusion of reality to the sense of a human participant[15].” Accord to them, factors affecting immersion include the isolation of the physical environment, the perception of feeling included in the virtual environment, the 'natural' state of interactions and the perception of control as well as, and the perception of movement in a virtual environment[16].

After a number of analyses on these concepts, Slater returns (this time without Wilbur) with an article simply titled 'A Note on Presence Terminology,' in which he identifies the conceptual differences between immersion and presence. As he clearly indicates, we then speak of significant confusion surrounding the notion of 'presence in virtual environments.' This confusion is hampering progress in the field. There can be no advancement simply because when people talk about presence, they are often not talking about the same underlying concept at all[17]. The author further clarifies that the term 'immersion' should specifically be used to describe what technology objectively provides. The degree of 'immersion' in a system increases as it delivers displays (across all sensory modalities) and tracking that maintains fidelity with their real-world counterparts[18]. Presence, according to the author, is a human response to immersion. When exposed to the same immersive system, individuals may undergo varying levels of presence. Conversely, different immersive systems could evoke similar levels of presence in distinct individuals. While presence and immersion can be logically distinguished, empirically, they are likely closely interconnected[19]. Also, the author stresses that achieving a strong sense of presence requires a careful consideration of both experiential and technological

[15] Slater and Wilbur, “A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments”, 606.
[16] Ibid.
[17] Slater, “A Note on Presence Terminology”, 1.
[18] Ibid, p. 1.
[19] Slater, “A Note on Presence Terminology”, 2.

immersion. Essentially, the individual must be deeply engaged by the virtual environment to foster the emergence of a psychological sense of presence. Yet, if the user becomes distracted or remains connected to the external world, the feeling of presence may either not arise or fail to develop robustly[20].

On their part, Yellowlees Douglas and Andrew Hargadon lean towards a more psychological definition of immersion, referring specifically to the field of literature , as does Janet Murray, who describes immersion as

> a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus[21].

According to Murray's definition, immersion is a concept where physical and cognitive functions are engaged when using technology whose primary goal is to envelop the user so that they feel as if they are in a virtual universe, 'the desire to be in the picture[22],' as Oliver Grau himself says. This metaphor of diving, of being surrounded by another reality, as Murray points out, is so intoxicating that one forgets the medium that makes such an experience possible.

[20] Ibid, p. 2
[21] Murray, *Hamlet on the Holodeck*, 97-8.
[22] Grau, *Visual Art: From Illusion to Immersion*, 141.

Concretely, the immersion effect felt during a successful virtual experience becomes so present that it can make the user forget the 'real' environment around them outside the VR headset.

As previously noted, the concept of immersion introduces a certain terminological conflict, particularly in its definition, which seems to vary from author to author. For Douglas and Hargadon, as well as Murray, the term 'immersion' refers to a human sensation, namely a bodily immersion. Authors like Slater and Wilbur, mentioned earlier, as well as Jaron Lanier, considered one of the pioneers of VR, speaks of this concept in terms mostly related to the technological capabilities of a device that allows one to experience such an immersion:

> When you put your head-mounted display on, you suddenly see a world that surrounds you—you see the virtual world. It's fully three-dimensional and surrounds you, and as you move your head to look around, the images that you see inside the eyeglasses are shifted in such a way that an illusion is created that while you're moving around the virtual world is standing still[23].

In their article "A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments," Slater attempts to clarify the terminological pitfall arising from the terms 'immersion' and 'presence' due to their usage in entirely disparate domains. Indeed, the author also notes that the terms 'immersion,' 'presence,' and 'engagement (involvement)' are used in discussions related to VR and video games, but also

[23] Jaron Lanier cited in Ryan, *Narrative as Virtual Reality. Immersion and Interactivity in Literature and Electronic Media*, 53.

in non-ergodic[24] media such as painting, literature, and cinema. For Calleja, the effect of presence in a virtual environment goes hand in hand with the user's involvement with the subject. In his analyses, Calleja identified four conceptual challenges to better understand immersion:

> (1) Researchers in game studies have used the term immersion interchangeably to mean absorption or transportation; (2) the qualities and affordances of non-ergodic media need to be taken into consideration when understanding immersion; (3) immersion is not determined solely by the qualities of the technology being used; and (4) various forms of experience that make up immersion need to be considered as located on a continuum of attentional intensity[25].

More precisely, immersion could be considered a subjective feeling that varies depending on the person who lives it . The advent of new media experiences such as virtual environments has also allowed artists to expand their creative scope. According to Calleja, two terms have been formulated to articulate this empirical phenomenon:

> Technologists, media psychologists, and human-computer interaction researchers, among others, refer to this experience as presence, while humanists and, later, social scientists adopted the metaphor of immersion. The terms have both suffered from

[24] Slater and Wilbur, "A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments."
[25] Calleja, *In-Game: From Immersion to Incorporation*, 167.

varied applications, and their use has generated a number of debates, primarily relating to the breadth of experiential domains they cover[26].

Notably, as Wijnand Ijsselsteijn and Giuseppe Riva astutely observe, the sense of 'being there,' known as presence in the realm of user experience, is not inherently tied to any technology; it is a product of the mind. In our typical daily lives, we seldom consciously consider our sense of presence in the world. As conscious and alert individuals, we typically have unwavering confidence in the visible three-dimensional world before us and our connection to this space. It often takes an altered psychological state (such as a dream or hallucination), a leap of the imagination (as seen in Dennett's thought experiment), or a mediated perception (through mediums like cinema) to bring awareness to this 'default' experience[27]. Despite the fact that the user becomes increasingly present in the adventure, they do not truly find themselves within the story as we wish to incorporate them, given that they "manipulate (rather) certain main characters of the story" without physically embodying one themselves. As Calleja rightly points out, it is the alliance between the player/user and the virtual environment that creates the effect of inhabiting the space represented on the screen, a phenomenon he associates with feelings of presence and immersion, both closely linked to VR[28]. This sense of presence, as highlighted again by Calleja, is essentially a state experienced when one finds themselves inside a virtual environment[29].

[26] Calleja, *In-Game: From Immersion to Incorporation*, 43.
[27] IJesselsteijn and Riva, "Being There: The Experience of Presence in Mediated Environments", 5
[28] Calleja, *In-Game: From Immersion to Incorporation*
[29] Ibid.

The ideal of immersion would be to eliminate awareness of the medium, or as Renée Bourassa suggests, to achieve "the sensation of non-mediation in a mediated experience[30]." In her article "Immersion et présence dans les dispositifs de réalité mixte," Bourassa further develops this idea, stating that "by pushing this rhetoric further, the ideal immersion device would create such a strong illusion that it would lead to forgetting the very condition in which the subject is immersed[31]." Highlighting the transparency of the medium during embodiment in a VR device, it is also worth exploring the concept of the "illusion of presence" developed by Matthew Lombard and Theresa Ditton in their article "At the Heart of It All." According to the authors, "An illusion of non-mediation occurs when a person fails to perceive or recognize the existence of a medium [...] and responds as if the medium were not there[32]."

2.1.4. Avatars

In order to better understand VR, it is necessary to put forward what Jean-Marie Burkhardt and Philippe Fuchs have nicknamed the two constituent elements of VR, namely interaction and immersion[33]. For a human, becoming a digital avatar and being able to move in the virtual environment of an immersive game or a 360° video through 'incarnation,' contributes to their own immersion. In his book *L'espace cinématographique : esthétique et*

[30] Bourassa, "Immersion et Présence Dans Les Dispositifs de Réalité Mixte." Freely translated.
[31] Ibid.
[32] Lombard and Ditton, "At the Heart of It All: The Concept of Presence."
[33] Fuchs and Burkhardt, *Le Traité de La Réalité Virtuelle*.

dramaturgie, Antoine Gaudin proposes interesting concepts of *corporality*[34] and *corporeity*[35] of the human body. The author's case studies focus on virtual mobility in 'traditional cinema,' exploring the relationship between the physical body and filmed corporeality. This aligns with the present dissertation's theme, as it closely relates to spect-actorship and explores how HMDs, when worn by users, enable physical navigation in a virtual universe, simulating a first-person filming perspective. According to the author, because of moving camera techniques such as the tracking shot "inside cinematographic experiences, the spectator's body is imaginatively projected to the precise spot where the camera is[36]". On the one hand, as Gaudin argues, the corporality of the camera movements signifies that the body has performed them, while the corporeity of these movements is about connecting the body with the apparatus along with the corporeal presence in the represented space.

This same presence is even more amplified through the possibilities VR offers in terms of sensory design conception and perception. Juhani Pallasmaa, Finnish architect and former professor of architecture, discusses phenomenological aspects of kinesthetic, haptic and the multisensory perception of the human body into architecture theory (1996). As defined by Aristotle in De Anima, perception relies on five senses: sight, hearing, touch, taste, and smell[37]. As Tomoko Tamari has pointed out, Pallasmaa "critically argues that living with modern technology flattens our multi-sensory capacities. More precisely, digital or computer rendered images tend to weaken our main sensory modes (except for sight), which together are vital for

[34] From French word 'corporalité'. The corporality of camera movements signifies that a human body has executed them.
[35] From French word 'corporéité'. The corporeity of these movements is their capacity to link our body to the represented space.
[36] Gaudin, *L'espace Cinématographique : Esthétique et Dramaturgie*, 122. Freely translated.
[37] Aristotle, *De Anima (On the Soul)*.

our capacity to develop the imagination and creativity[38] (Casanova and Hernandez, 2014; Holl, Pallasmaa and Perez-Gomez, 2008; Pallasmaa, 2018).” Pallasmaa argues that our relation to technologies such as digital images create a distance between the designer (the user) and the object since no contact is possible except with the eyes that are scanning an image. This affirmation can be associated with the virtual environments encountered in VR experiences where the user is driven to physically explore, thus “put[ting] the designer in skin-contact with the object [and] ultimately the object becomes an extension and part of the designer’s body[39]”.

VR allows, if we look back at the analysis made by Gaudin, to literally ‘embody’ the main protagonist of a narrative through our own body movements and “to link our body with the represented space[40].” The ‘presence’ effect as Gordon Calleja underlines is a state of feeling when we find ourselves into a virtual environment[41]. When it comes to the immersion, it is a term that is seen quite frequently when discussing interactive experiences, video games and VR. According to Calleja, immersion is a subjective feeling that varies depending on the person who lives it. It is inevitable to discuss about immersion since it is one major promotional method in the gaming industry with technologies such as motion controllers and other apparatus allowing a stronger ‘presence’ feeling, or an ‘osmotic penetration,’ as suggested by Oliver Grau[42].

[38] Tamari, “The Phenomenology of Architecture: A Short Introduction to Juhani Pallasmaa”, 91-92.
[39] Pallasma, *The Thinking Hand: Existential and Embodied Wisdom and Architecture*, 97.
[40] Gaudin, *L’espace Cinématographique : Esthétique et Dramaturgie*, 121 (freely translated).
[41] Calleja, *In-Game: From Immersion to Incorporation*, 21.
[42] Grau, *Visual Art: From Illusion to Immersion*, 165.

While embodying this role, the spect-actor both observes and creates dramatic meaning and action in any performance with the possibility to progress with the story step-by-step as with an "open work of art […] a work in movement[43]" as theorized by Umberto Eco. The concept of "open work" suggested by Eco in his book The Open Work is very useful in the comprehension of interactive fiction and spect-actoriality. As the author presents it, an open work, in any type of media, distinguishes itself from its mobility, allowing to his/her 'performer' – as Eco names it himself – to give him/her all its greatness. The author brings important trails on the relation between creator and spectator of this type of artwork, as well as the disparities between cinematographic and interactive. According to Eco in his chapter "The Poetics of the Open Work":

> The invitation offers the performer the opportunity for an oriented insertion into something which always remains the world intended by the author. In other words, the author offers the interpreter, the performer, the addressee a work to be completed. He does not know the exact fashion in which his work in question will still be his own […] The author is the one who proposed a number of possibilities which had already been rationally, organized, oriented, and endowed with specifications for proper developments[44].

For Georges Barboza, the open work of Eco takes the form of a 'hyperfiction' in which the spectators are asked to make choices. Moreover, the author borrows the term 'spect-actor'

[43] Eco, *The Open Work*, 20.
[44] Ibid, p. 20.

that he chooses to write 'spec@ctor' (without giving any explanations behind his choice to add an 'at sign') to reference the narrative's addressee[45]. In his article, Barboza uses the spect-actors like a hyperfiction catalyst. Generally unchanged in its structure, the spect-actors evolve here for the first time since their first appearances, notably in their ability to move a narrative forward. It is described by the author as:

> An operator which functions is to move the story forward step by step. In manipulating certain main protagonists of the story, he can move freely in the environment where the story takes place and make some intentional actions: he is in a 3D environment and has a total moving freedom[46].

Even though the spectators become more and more present in an adventure, they are not really inside the story, as I wish to incorporate them physically and emotionally. As emphasized by Barboza, they manipulate certain main protagonists of the story without literally embodying one.

In his article, "Character Simulation and Emotion," Torben Grodal examines the case of the relation of the human with an avatar as the extension of the self by reinterpreting numerous spectator theories, most notably Noel Carroll's 'theory of emotions' featured in his 1996 book Suspense: Conceptualization, Theoretical, Analyses and Empirical Explorations. According to

[45] Barboza, "Fiction Interactive, 'Métarécit' et Unités Intégratives", 1.
[46] Ibid, p. 8 (freely translated).

the latter, emotions felt when watching a film are uniquely based on an observer's point of view. Carroll mentions that:

> We do not become the character or acquire her goals. The character's emotion does not transmigrate into us. Rather, our pre-existing dispositions to certain values and preferences are mobilized by the text's providing an affective cement that fixes our attention to the text and shapes our attention to ongoing situations[47].

Consequently, according to Carroll, the spectator rarely shares the goals, the emotions and the character's perspective on the screen. He rejects the notion that spectators reproduce the character's emotions, only making them a distant observer, and as a matter of fact, reduces the rise of emotions that emanate from a first-person immersive experience such as love or fear. Grodal, as for him, distinguishes this gap with what he calls "the simulation of action-moving emotions[48]", which is the way to perform a character's actions to favor his/her identification with it. According to the author, "the question of action is central to our understanding of emotional responses, both to film and to real-life phenomena, because emotions represent action tendencies and dispositions[49]." It is the user who is at the center of this fictional immersion through emotional gratification transmitted by the narrative which is a much more conclusive immersion vector than mere visual tricks that, for instance, just recreate a human face. A game setting seems to explain the user's propensity to be drawn into emotional universes despite their potentiality and to live real emotions. Video games such as Quantic Dream's Heavy

[47] Noel Carroll cited in Grodal, *Character Simulation and Emotion: Evolution, Emotion, Culture and Film*, 231.
[48] Ibid, p. 182.
[49] Ibid, p. 182.

Rain (2010), Beyond: Two Souls (2013), and Detroit: Become Human (2018) that integrate pre-determined decisional possibilities, contribute to provoking a stronger empathy from the player. According to Therrien, the player's identification with playable characters does not depend entirely on more or less convincing audiovisual tricks, but rather on soliciting and on proposing to the player a series of manipulations with the fictional actions of the protagonist[50]. The relation with the avatar is in this case the identification climax to the character or of self-extension.

The language of cinema is disrupted with the coming of the earlier mentioned immersive viewing experiences and may ultimately require rewriting. As for the spectators, they are called upon to adapt to those changes. Film grammar, as we the audience know it, is antiquated, and calls for a redefinition of terms and techniques. As Bolter and Grusin mention:

> Finally, the new medium can remediate by trying to absorb the older medium entirely, so that the discontinuities between the two are minimized. The very act of remediation, however, ensures that the older medium cannot be entirely effaced; the new medium remains dependent on the older one in acknowledged or unacknowledged ways. For example, the genre of computer games like Myst or Doom remediates cinema, and such games are sometimes called "interactive films[51].

In this way, we are often mentioning "VR video games" or "VR films." Moreover, VR introduces a spectatorial shift. Other works often referred to as "interactive fiction" necessitate

[50] Therrien, "Illusion, Idéalisation, Gratification : L'immersion Dans Les Univers de Fiction à l'ère Du Jeu Vidéo", 243 (freely translated).
[51] Bolter and Gruisin, *Remediation - Understanding New Media*, 47.

from the spectators an active involvement or a real-time manipulation of narrative information in order to further the story. With VR, the active involvement multiplies tenfold since it requires from the spectators a direct participation in the narrative, typically not present in other traditional media. The latter becomes an actor inside a story; someone who witnessed a story and who has become, through an active involvement in a narrative, a protagonist[52]. In addition to being immersed in a VR experience, spect-actors' pleasure in the narrative is then heightened through its interactivity, as they enjoy their ability to take situated action and to savor the results of their agency[53]. Also, a decisional-making interface helps reinforce the spect-actor's implication, which contributes significantly to attain a higher level of immersion. The spect-actor takes pleasure in the way, as Janet Murray mentions, "navigation unfold[s] a story that flows from our own meaningful choices[54]." The VR spectator who now takes the actor' place within the story is a prelude to an eventual spectatorial shift (Chan 2014, Lanier 2017, and Fuchs 2018). On the other hand, 360° videos' spectator could be referred to as an "oper-actor" since these experiences are mostly of a contemplative nature, and do not require any interaction from the viewers.

Spherical experiences such as those directed by Félix and Paul Studios only suggest head movements from the spectators to direct their angle, similarly to a camera "operator." Positioned at the center of the scene, the 360° camera offers an all-around view where any notion of framing is over. This camera must capture both the action and the emotion at the same time in the most precise way in order to transmit to the spectators a maximum amount of

[52] Boal, *Theatre of the Opressed*, xxi.
[53] Douglas and Hargadon, "The Pleasure Principle: Immersion, Engagement, Flow."
[54] Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*, 133.

information. It is simultaneously imperative to capture and maintain the attention of the spectators to guide them through the continuity of the story since they have the freedom to look in all directions. The mise-en-scène and the narrative of a 360° film now revolves around a single spectator. As Philippe Fuchs states:

> Talking about virtual reality when watching 360 degrees videos of real filmed environments, observed through a head-mounted display, is exaggerated since the user remains a spectator with no sensory-motor activity even if he/she feels an intense corporeal immersion […] virtual reality allows one to extract from physical reality to virtually change time, space and/or interaction: an interaction within environment simulating reality or interaction in an imaginary or symbolic world[55].

2.1.5. Emerging VR Paradigms

With the arrival of the new and improved VR technologies that are focusing more on multisensorial and locomotive interfaces, it becomes clear that it is the place of users that prevails in this insatiable race for the more precise virtual simulation possible: the one that is the closest to reality as we perceive it. A reality championed by André Bazin in his article "Myth of Total Cinema," several decades before VR was even considered:

[55] Fuchs, *Théorie de La Réalité Virtuelle - Les Véritables Usages*, 24-6 (freely translated).

> The guiding myth, then, inspiring the invention of cinema, is the accomplishment of that which dominated in a more or less vague fashion all the techniques of the mechanical reproduction of reality in the nineteenth century, from photography to the phonograph, namely an integral realism, a recreation of the world in its own image, an image unburdened by the freedom of interpretation of the artist or the irreversibility of time. If cinema in its cradle lacked all the attributes of the cinema to come, it was with reluctance and because its fairy guardians were unable to provide them, however, much they would have liked to[56].

One of the main subjects discussed in the VR industry at the time of writing this dissertation is the usage of immersive technology in education. The term "metaverse" is a combination of the prefix "meta" (meaning "beyond" or "transcending" in Greek) and the word "universe." Together, “metaverse” could be interpreted as meaning "a universe beyond" or "a transcendent universe." One of the earliest notable uses of the term "metaverse" can be found in Neal Stephenson's science fiction novel "Snow Crash[57]," published in 1992. In this literary work, the metaverse is portrayed as a virtual reality where individuals interact through avatars. While the concept of virtual universes existed before this novel, "Snow Crash" played a pivotal role in popularizing both the concept and the term itself. The metaverse emphasizes the concept of an "always online," immersive, persistent world with avatars and a digital experience. It is crucial to understand that these stereoscopic virtual worlds and environments can be experienced synchronously (in groups) and offer experiences with limitless themes. The

[56] Bazin, “The Myth of Total Cinema”, 21.
[57] Stephenson, *Snow Crash*.

metaverse thus enables users to undergo an immersive experience, socially interact, conduct business, educate themselves and create alongside others through their virtual avatars.

VR, with its non-immersive and immersive forms, has undergone significant development. Non-immersive VR allows users to interact via screen devices, also known as desktop VR, while immersive VR provides a more engaging experience, blurring boundaries between real and digital worlds. Early works, such as Pauline A. Smith and John R. Wilson's in 1993, highlighted the usability advantages of VR in hypertext databases[58]. The evolution continued, with the advent of all-in-one VR HMDs in the 2010s, bringing users closer to immersive virtual worlds. Traditional education faces challenges such as single teaching methods and outdated curricula. Immersive VR in education addresses these issues by creating rich contexts, replacing textbook content with dynamic virtual images, enhancing student interest, and breaking through traditional teaching limitations. In her 2014 article discussing VR on students' learning outcomes, Zahira Merchant and colleagues favored VR-based game-based learning for its effectiveness[59]. During the COVID-19 pandemic, the Ministry of Education in China, for instance, endorsed the use of augmented reality (AR) and VR to overcome limitations in experimental teaching[60]. Alec Bodzin's 2021 study on an interactive VR game for high school students demonstrated positive attitudes, turning abstraction into a concrete, enjoyable educational experience. As discussed by Ziwen and Man regarding this study, "IVR (interactive virtual reality) technology can turn abstraction into concrete, enriching

[58] Smith and Wilson, "Navigation in Hypertext through Virtual Environments."
[59] Merchant et al., "Effectiveness of Virtual Reality-Based Instruction Onstudents' Learning Outcomes in K-12 and Higher Education: A Meta-Analysis."
[60] Gao, "Efforts to Innovate Practical Education for Experimental Teaching in Primary and Secondary Schools in the New Era - Understanding of the Opinions of the Ministry of Education on Strengthening and Improving Experimental Teaching in Primary and Secondary Schools. Science and Technology Education in China", 10–1.

the form of science teaching resources, helping students to observe and analyze things from multiple perspectives, giving them a comprehensive understanding of knowledge and hands-on solutions to difficult problems[61].” In the Greater Toronto Area, Sheridan College adopted VR in some of their programs, such as Athletic Therapy, Practical Nursing, Regulatory Affairs and Clinical Research Programs, as well as Police Foundations. In the latter, they are currently using Axon's VR HMDs and have developed a course specifically for VR. The course will be running for the first time in the Fall 2024 semester. They have been providing Empathy Based VR training to external partners including Peel Regional Police Cadets and Auxiliaries. Students will receive training in Non-Violent Crisis Intervention which serves to provide a foundation for recognizing varying levels of crisis an individual may experience. Students will also analyze the appropriate level of intervention and maintain care, welfare, safety, and security throughout the intervention. Students will explore empathy and practice the steps of applying empathy to a variety of situations. They will finally appreciate vulnerabilities and behaviours and apply empathy to manage and de-escalate the situation. VR will be incorporated to engage the students in real-world scenarios where they assess and intervene with empathy to provide the best care for the individual and prevent any potential for escalation[62].

The advent of the Metaverse era brings opportunities for modern education, enriching learning resources and transcending regional constraints. Ramesh Sharda's 2004 concept of computer-supported collaborative learning (CSCLIP) based on immersive presence exemplifies the integration of collaborative systems, immersive technology, and human-machine interface

[61] Wei and Yuan, “Research on the Current Situation and Future Development Trend of Immersive Virtual Reality in the Field of Education.”
[62] Information provided following a correspondence with Jessica McLean, Program Coordinator and Professor at Sheridan College.

principles[63]. Statistics identified 200 journals publishing literature on immersive VR in education. Top 10 journals, including *Computers Education and Virtual Reality*, highlighted the academic boom in this field. More precisely, according to Ziwen and Man, of all the journals published by the SSCI (Social Science Citation Index), the top 10 were *Computers Education*, *Sustainability*, *Clinical Simulation in Nursing*, *Virtual Reality*, *Applied Sciences Basel*, *IEEE Transactions on Learning Technologies*, *BMC Medical Education*, *Journal of Science Education and Technology*, *Nurse Education Today*, and *International Journal of Human Computer Interaction*[64]. Literature and research have proven that advancements in educational technology provide students with diverse learning resources. The use of VR in online learning motivates students, enhances the learning experience, and provides rich perceptual cues and feedback[65]. As stressed by Peixoto et al., utilizing VR in online learning not only boosts students' motivation and enjoyment but also enhances the overall learning experience[66]. This technology offers students rich perceptual cues and multi-channel feedback, fostering situational learning. In the realm of changing learning approaches, innovations in learning methods lead to superior learning outcomes. With the rise of the information age, traditional teaching styles, such as indoctrination and lectures, no longer suffice for grasping the essence of knowledge. Immersive learning is increasingly becoming the norm, with scholars comparing students' understanding of relative motion in immersive virtual environments (IVE) and non-immersive desktop virtual environments (DVE). The results indicate that IVE facilitates a better

[63] Sharda, Romano, and Lucca, "Foundation for the Study of Computer-Supported Collaborative Learning Requiring Immersive Presence."
[64] Wei and Yuan, "Research on the Current Situation and Future Development Trend of Immersive Virtual Reality in the Field of Education", 5.
[65] Jovanović and Milosavljević, "VoRtex Metaverse Platform for Gamified Collaborative Learning", 317.
[66] Peixoto et al., "Immersive Virtual Reality for Foreign Language Education: A PRISMA Systematic Review."

grasp of abstract scientific phenomena[67]. In the current era of information, smart education is at the forefront of driving change and innovation in educational informatics.

According to Kye and colleagues, the metaverse roadmap categorizes the metaverse into 4 types: augmented reality[68], lifelogging[69], mirror world[70], and virtual reality. However, according to the authors,

> Among the 4 types of the metaverse, the most diverse and actively used technology in education is virtual reality. In particular, the recent non-face-to-face (untact) era has been characterized by the frequent the utilization of virtual reality, which can be accessed from anywhere regardless of distance or space […] The recent metaverse craze has started again, according to the transition to an untact society due to the COVID-19 pandemic[71].

Unlocking a heightened level of freedom for creation and sharing, the metaverse extends beyond the misconception of being confined to online games. Unlike traditional online games where users are constrained by predetermined missions set by the platform provider, the

[67] Peixoto et al., "Immersive Virtual Reality for Foreign Language Education: A PRISMA Systematic Review."
[68] A form of technology that expands the real physical world outside an individual by using a location-aware system and interface with added and layered networked information on spaces we encounter daily. Definition taken from Kye et al., "Educational Applications of Metaverse: Possibilities and Limitations. Journal of Educational Evaluation for Health Professions", 32.
[69] Technology to capture, store, and share everyday experiences and information about objects and people. Definition taken from Kye et al., "Educational Applications of Metaverse: Possibilities and Limitations. Journal of Educational Evaluation for Health Professions", 32.
[70] It reflects the real world as it is, but integrates and provides external environment information. Definition taken from Kye et al., "Educational Applications of Metaverse: Possibilities and Limitations. Journal of Educational Evaluation for Health Professions", 32.
[71] Kye et al., "Educational Applications of Metaverse: Possibilities and Limitations. Journal of Educational Evaluation for Health Professions", 32.

metaverse empowers users with unparalleled freedom. Users can indulge in a myriad of real-world experiences, such as studying, shopping, attending performances, visiting exhibitions, and exploring tourism destinations, all driven by their individual preferences. In the metaverse, users transcend physical restrictions, enabling them to share events that would be challenging to experience in the real world, like soaring in the sky or venturing into space. Alternatively, users can escape the hustle and bustle of daily life, embracing a leisurely existence—whether it's fishing, harvesting fruits, or spending the entire day on a friend's virtual island—without the constraints typically associated with metaverse tasks. The user's choices dictate every aspect of their metaverse experience[72].

Leveraging the unique attributes of the metaverse presents an opportunity to design learning activities that exponentially expand students' freedom and experiences. This approach fosters self-directed learning, empowering students to explore their inquiries autonomously. With access to ideas from countless individuals across time and space, students can take the lead in discovering original answers to their questions. The metaverse has emerged as a compelling alternative to address the constraints inherent in conventional 2D-based online and remote classes. Its unique appeal lies in delivering a differentiated experiential value, distinct from the current internet era, owing to its sophisticated integration of diverse technologies. Moreover, the metaverse opens avenues to craft novel experiences that go beyond the limitations of time and space. Education in the metaverse in VR harnesses the potential of

[72] Dwivedi et al., "Metaverse beyond the Hype: Multidisciplinary Perspectives on Emerging Challenges, Opportunities, and Agenda for Research, Practice and Policy", 102542.

limitless space and data, offering the distinct advantage of fostering interactions comparable to face-to-face education[73][74].

2.2. Methodology and Limitations in Research

Many studies since the late 1990s have been articulated around immersion, virtual production, and storytelling. For this reason, I intend with the notion of 'spect-actor' concept to supply insights and thinking that will contribute to the growing field of VR studies. The research questions I will address are: do a combination of both VR experiences featuring an interactive platform and a decisional-making interface reinforce the spect-actor's immersion?

Following scholar Carolyn Ellis, Tony E. Adams and Arthur P. Bochner's (2011) approach on autoethnographic research as a self-study approach where the researcher is considered a reliable data source, situating their personal experiences within a broader cultural context[75], my research into emerging VR spectatorship will be defined through a comparative methodology focusing on VR experiences in artistic, educational, and entertainment contexts. I will provide my subjective first-person analysis for each VR experience. Gibb's "Reflective Cycle[76]", developed by Graham Gibbs in 1988, will offer a theoretical framework for examining the experiences. This model of reflection which covers six stages, will be partially used to assist in this first-person analysis: description of the experience, feelings and thoughts

[73] Dwivedi et al., "Metaverse beyond the Hype: Multidisciplinary Perspectives on Emerging Challenges, Opportunities, and Agenda for Research, Practice and Policy."
[74] Zhang et al., "The Metaverse in Education: Definition, Framework, Features, Potential Applications, Challenges, and Future Research Topics",13.
[75] Ellis, Adams, and Bochner, "Autoethnography: An Overview."
[76] Gibbs, *Learning by Doing: A Guide to Teaching and Learning Methods*.

about the experience, evaluation of the experience, both good and bad, and analysis to make sense of the situation.

Using Allan Blum's comparative analysis method from *The Imaginative Structure of the City*[77], I critically examine VR experiences across different contexts, emphasizing user agency and narrative engagement. This approach explores how these experiences embody the spect-actor concept, where users shift from passive observers to active participants, shaping narratives through interaction. Blum's comparative methodology, which emphasizes the analysis of cultural and social structures through a comparative lens, can be effectively applied to VR experiences.

I have listed six different themes in embodiment science, which will be taken into consideration while analyzing the different VR projects I will be experiencing myself: 1) body ownership, 2) agency and motor control, 3) tactile sensations, 4) location of the body, 5) external appearance and 6) response to external stimuli (Kilteni et al., 2012, 2015; Maselli and Slater, 2013, Maselli and Slater, 2014). Proprioception also plays a significant role in enhancing the immersive aspect of a VR experience. It is defined as "the awareness of the position and movement of our body in space and results from the processing of information from muscle, joint, tendon, and skin receptors. It arises from static (position) and dynamic (movement) information and is crucial to the production of coordinated movements[78]." Proprioception is a component of the somatosensory system, which is responsible for processing proprioceptive,

[77] Blum, *The Imaginative Structure of the City*
[78] Valori et al., "Proprioceptive Accuracy in Immersive Virtual Reality: A Developmental Perspective", e0222253.

thermal, touch, and pain information from the body surface and internal tissues[79], and is conventionally described as the "awareness of the spatial and mechanical status of the musculoskeletal framework[80]." This encompasses the sensations of position, movement, and balance as well.

The VR experiences explored in the forthcoming chapters explore different avenues associated with embodiment, interaction and proprioception, whether from using the controllers to detect arms and hands movements, or using the hands-free mechanics, which is a feature of several HMDs, such as the Meta Quest 3 that has been used for this dissertation. Utilizing devices to trigger proprioceptive sensations, such as different haptic feedback technologies, represents an ongoing and evolving method to enhance sensory immersion in VR or, alternatively, to attain a higher level of engagement. More precisely,

> [in] VR conditions, sensory perception of reality only through the visual analyzer does not provide the formation of a complete sensory sensation, identical to physical interaction with objects, and cannot be used to implement explicit interaction. It is precisely because of the difficulty of achieving such a quality of proprioceptive sensations, which would be identical to the sensations received in the physical world, that modern VR systems are mostly implicit, and control in them is implemented in surrogate ways that are not identical to the natural richness of object sensations and the complexity of manipulating them[81].

[79] Prescott and Ratté, "Chapter 23 - Somatosensation and Pain."
[80] Stillman, "Making Sense of Proprioception: The Meaning of Proprioception, Kinaesthesia and Related Terms."
[81] Zakharov, "Proprioception in Immersive Virtual Reality."

When working in conjunction with VR, "[t]he use of devices for activating proprioceptive sensations as a way to increase sensory immersion in VR or, in another way, to achieve a greater degree of immersion[82]." As observed in discourses about proprioception in VR, some experiences have difficulties replicating complete sensory sensations due to certain limitations associated with technology. However, I argue that proprioception is a key factor in the sensation of immersion in VR experiences, especially in the context of spect-actorship. Despite acknowledged difficulties in replicating complete sensory sensations within VR experiences, particularly pertaining to technological constraints, I argue that proprioception emerges as a pivotal element in the immersive nature of VR, especially within the unique framework of spect-actorship. As discourses on proprioception in VR highlight the existing technical limitations, it is crucial to recognize and emphasize its significance as a key factor influencing the spect-actor's sensation of immersion. This recognition serves as a foundation for unfolding the intricate relation between technology, proprioception, and user engagement within the virtual environments explored in the upcoming chapters.

It is important to mention that none of the VR experiences analyzed in the present dissertation will be based on the photorealism of their graphics. Concretely, I argue that photorealism is not an important contributor to immersion. Based on the research I have conducted in the past in computer graphics, more precisely motion and performance capture animation in moving images, such as films and video games, the more a designer attempts to make a computer-generated character look photorealistic, the fewer audiences will connect with it. Scott McCloud's seminal book *Understanding Comics* helps us to understand the mechanism

[82] Ibid. p. 2.

behind this process. McCloud discusses the level of abstraction in visual representation, which affects the audience's ability to connect with characters. He argues that as a designer attempts to make a character look increasingly photorealistic, they may inadvertently reduce the audience's ability to empathize or relate to that character. McCloud's argument also implies that audiences often find it easier to project themselves onto characters with more simplified or abstract designs, allowing for a greater degree of identification and emotional engagement. This idea has implications not only for comics but also for other forms of visual media, including computer-generated characters in film, animation, and video games[83]. Unlike what happens with synthetic characters found in film productions such as *Final Fantasy: The Spirits Within* (Hironobu Sakaguchi and Motonori Sakakibara, 2001) and *The Polar Express* (Robert Zemeckis, 2004), whose 'human' character faces seem frozen, the identification with a character whose facial traits appear to be non-humanlike is more easily achieved. Indeed, characters whose appearance differs from that of humans, being more stylized and more caricatured such as the ones featured in *The Adventures of Tintin* (Steven Spielberg, 2011), distance viewers from the discomfort and unease felt in the presence of a human simulacrum[84].

In a VR setting where users have the freedom to explore their virtual environment, audio cues can effectively guide their attention toward crucial points (Eames 2019; McArthur et al. 2017; Ulsamer et al. 2020). These cues provide a continuous flow of information for understanding the spatial features of the surrounding (Nordahl and Nilsson 2014). Additionally, sound, with its persistent presence (Larsson et al. 2010; Nordahl and Nilsson 2014), can convey spatial characteristics, including reverberation – a rumbling sound and/or vibration from a loud

[83] McCloud, *Understanding Comics*.
[84] Baillargeon, *Entre Réalité et Virtuel - La Captation de Mouvement au Cinéma*.

sound somewhere else that provides more dimension and scale to the virtual environment (Larsson et al. 2010), and possesses an omnidirectional quality (Jørgensen 2006; Turner et al. 2009), independent of the constrained visual field in devices like VR HMDs (Collins and Kapralos 2012)[85]. As research states, audio plays an important part in immersing users in VR contexts. However, the experiences that will be discussed in the forthcoming chapters focus more on physical interactions and 6doF than immersive audio, except for specific experiences. These exceptions will be mentioned when relevant, as the experiences are explored since sound design is outside of the scope of the present research.

In exploring VR experiences within artistic, educational, and entertainment contexts, the research takes a personal and reflective journey. My own encounter with VR becomes the focal point, prompting a deep dive into the emotions, perceptions, and evolving understandings shaped by these immersive encounters. The research unfolds as a series of detailed stories, not just recounting the VR experiences, but delving into the immersive qualities inherent in each interaction. The narratives of these pieces capture the essence of stepping into, for instance, a virtual art gallery, the impact of educational simulations, and the emotional resonance within VR entertainment, with a focus on spect-actorship. A critical component to this dissertation is reflexivity—acknowledging personal biases and background. This awareness is pivotal for maintaining transparency in the research process. By scrutinizing the influence of my personal experiences, cultural background, and preconceptions, I ensure a balanced and objective interpretation of VR encounters in all three categories.

[85] de Villiers Bosman et al., "The Effect of Audio on the Experience in Virtual Reality: A Scoping Review."

Integrating semi-structured interviews with developers adds a valuable layer to this research, providing insights into the motivations, challenges, and intentions behind the creation of VR experiences in artistic, educational, and entertainment contexts. Before writing this dissertation, I had secured interviews with the developers in order to integrate their perspectives. Some of them were conducted in person (David Han, Justin O'Heir, Dr. Georgiana Stanciu, Thomas Wallner), others were interviewed online through Zoom (Limbert Fabian, Curtis Hickman, Mohamed Elfarargy, Victoria Bousis and Carol Silverman), while Ian Fitz for *The Thrill of The Fight*, as well as Charlotte Bosman and Menno Metselaar for *Anne Frank House VR* were interviewed through e-mail.

It is worth noting that I primarily focused on VR experiences that are widely accessible to consumers. Specifically, I engaged with VR projects that I could access through my own Meta Quest 3 headset, which is a consumer-grade technology. This choice allowed me to examine experiences that are becoming increasingly available to the general public. However, I also explored VR projects that are exclusive to out-of-home venues, utilizing the devices provided for these experiences. These included *After Dan Graham* (experienced at the 2019 edition of FIVARS), *The VOID* (experienced on-site in Toronto in 2018), *The Battle of Vimy Ridge* (experienced at the Royal Canadian Regiment Museum in 2023) and *Stay Alive My Son* (experienced at the 2023 edition of FIVARS). To offer a more comprehensive analysis, I conducted interviews with the developers to gain insight into how they integrated VR into their experiences.

In conducting this research, I have chosen to examine nine distinct VR experiences across artistic, educational, and entertainment contexts. These selections were not made out of convenience but were carefully curated based on specific criteria that align with the objectives of my study. The experiences were selected for their accessibility to me, given the technological resources I have, and because they provide a diverse representation of interactive narratives, which are central to my research.

The VR experiences were chosen for their ability to exemplify the interplay between narrative and user interactivity—elements that are crucial to understanding the concept of the spect-actor within VR. I specifically avoided including labor simulators or other purely functional simulations in the educational category, as my focus is on experiences that integrate a narrative with which users can interact. This emphasis on narrative-driven interactivity is key to my analysis and reflects the core of Boal's spect-actor concept, where the participant is not only a passive observer but an active shaper of the experience.

While my study includes a limited number of works—nine in total—this selection still allows for a productive exploration of the overlapping categories within VR. These categories—artistic, educational, and entertainment—are context-dependent, meaning their classification can vary based on the specific themes, purposes, and design of each experience. For example, a VR work might be categorized as educational because of its narrative content, but its immersive and interactive qualities might also align it with entertainment or artistic contexts. This fluidity indicates that these categories are not rigid and often entangle with one another. The preliminary efforts to establish these categories within my research have provided

a solid foundation for understanding the degree to which each experience relies on the unfolding of a narrative, a critical factor in my comparative analysis.

The limitations of my research lie in the fact that the nine works I analyze do not represent the full spectrum of the VR industry and art sector. Nonetheless, these selected experiences were selected with intention and purpose, ensuring that they align with the goals of my research, and they serve as a valuable starting point for understanding the intricate relationships between narrative, interactivity, and user agency in VR. Future research will expand upon this foundation, exploring a broader range of VR experiences and refining the criteria for categorization to capture the evolving landscape of virtual reality more comprehensively.

In undertaking this doctoral dissertation, a critical component of the research process involves a thorough acknowledgment of the inherent biases and limitations that may influence the interpretation and generalizability of findings. As the principal investigator of this study, I find it imperative to provide a comprehensive examination of my own positionality and the potential impact it may have on the research outcomes.

2.2.1. Cultural and Identity Considerations

Of Québécois origin, it is important to note that my mother tongue is French, and English is my second language. I am acutely aware that my own identity as a white, male, straight, and able-bodied individual may inadvertently shape the lens through which I perceive

and analyze the VR experiences under scrutiny. It is crucial to recognize that this perspective may not fully encapsulate the rich diversity of viewpoints inherent in individuals from, for example, diverse cultural backgrounds and proprioceptive thresholds. To mitigate this limitation, efforts have been made to engage with literature and perspectives that represent a broad spectrum of cultural and identity contexts. Additionally, the inclusion of diverse voices in the form of participants interviewed in the present dissertation aims to enrich the depth and nuance of the study.

2.2.2. Limited Pre-Existing Research

The landscape of VR research is ever-evolving, yet my exploration has unveiled a significant gap in existing literature specifically addressing the artistic, educational, and entertainment facets of VR spectatorship. This scarcity posed a unique challenge, as the absence of a robust foundation of prior research necessitated a creative and adaptive approach. To fill this void, extensive interviews with VR developers were conducted, providing invaluable insights into the intricacies and intentions behind the creation of the experiences under investigation. This qualitative exploration serves as a foundational aspect of the study, compensating for the paucity of pre-existing scholarly discourse on the subject.

In the course of conducting interviews with VR developers as part of this doctoral dissertation, a surprising and enriching outcome emerged—the creation of a bilingual (English and French) academic podcast show titled ‘Dr. VR.’ This unanticipated venture not only served as a chronicle of the present research journey, but also provided a platform to share insightful

discussions with a broader audience. The inception of ‘Dr. VR’ was an organic evolution spurred by the immersive conversations with VR developers. Originally documented using the voice memo app on my iPhone 13 Pro for the initial interview with David Han, the realization of the inherent value in these dialogues prompted a gradual transition towards more professional recording equipment. What began as a means to document and supplement my dissertation research metamorphosed into a fully-fledged podcast dedicated to exploring the multifaceted realms of virtual reality. I conducted these interviews with developers in the context of my 'Dr. VR' podcast as part of my doctoral research, but also as a part of public engagement, as the theoretical framework, theorizing, and discourse around VR are evolving. The transcriptions of these interviews are accessible in the Appendices section of this dissertation.

While the primary motivation for starting ‘Dr. VR’ was to encapsulate and extend the research process, my podcast's growth in popularity and resonance with the audience catalyzed a strategic decision to continue beyond the dissertation phase[86]. Although the interviews with VR developers for the dissertation have concluded, the momentum and interest garnered by the podcast have prompted a commitment to ongoing exploration and engagement with leading voices in the VR industry globally.

This unforeseen podcast endeavor, born out of the research journey, not only contributes to the dissemination of scholarly insights but also underscores the dynamic and iterative nature of academic exploration. It stands as a testament to the uncharted possibilities that may unfold

[86] As of May 2024, people from 41 countries have listened to my ‘Dr. VR’ episodes, with Canada being the country where it most popular with 38% of total listeners. In total, 647 plays have been counted by the Spotify for Podcasters app so far.

when delving into unexplored realms of research. My ‘Dr. VR’ podcast can be accessed through this link: https://spotify.link/osXzjiJG5Ib

2.2.3. Practical Constraints and Access to VR Experiences

The practicalities of accessing VR experiences introduced tangible challenges to the research process. In recognition of these constraints, collaborative efforts were initiated with a colleague at the Université de l'Ontario français. Through her assistance, my Meta Quest 2 and 3 headsets were transitioned to "developer mode," facilitating the crucial task of uploading experiences that were sent to me from developers such as Carol Silverman. Additionally, inclusion in the Université de l'Ontario français developers account became a pivotal step in overcoming hurdles that would have otherwise impeded the exploration of specific VR pieces.

In disclosing these considerations, transparency and reflexivity remain at the forefront of this research endeavor. While every effort has been made to navigate and mitigate these limitations, readers are encouraged to approach the findings with an understanding of the contextual constraints and the researcher's unique positionality.

2.2.4. Historical Contexts

In this dissertation, I will analyze nine VR experiences. Crucially, three of these experiences within each genre deal with historical subjects (*Belongings VR* in Artistic VR, *Anne Frank House VR* in Educational VR, and *Stay Alive My Son* in Entertainment VR). Despite their

genre differences, these experiences share a common thread—the treatment of history. This shared aspect needs acknowledgment and analysis based on the motivations behind their development. Each of these experiences draws from historical narratives, and despite their connection through the spect-actorship context, a certain limitation on freedom, movement, and identification renders them historical. This limitation arises when the information being imparted is not actively transformed by the user. As Peter Morris suggests in his essay 'The Specious Past – Reflections of a Film Historian in Canada' (1999), these experiences prompt 'questions of point of view and, most importantly, the perspective of the historian[87].' In other words, they reflect the developers' viewpoint on 'history as discourse, history as a process of narrative, history as necessarily filtered through the perception of the historian[88].' In each following chapters, I will delve into the historical content conveyed and the methods employed on the VR platform, exploring the portrayal of the Holocaust in *Belongings VR* and *Anne Frank House VR*, as well as the depiction of the Cambodian Genocide in *Stay Alive My Son*.

2.3. Chapter Summaries

As previously mentioned, I will examine VR spect-actorship content within a first-person autoethnographic framework presented through a comparative methodology focusing on experiences in artistic, educational and entertainment contexts. My research will more precisely follow Patricia Leavy (2020) and Jocene Vallack's (2021) research practices. This dissertation project will focus on a first-person audience-centered perspective in current VR

[87] Morris, "The Specious Past: Reflections of a Film Historian in Canada", 159.
[88] Ibid, 160.

experiences whether fiction or nonfiction based. The scope of this research will cover VR experiences that do not try to influence the users with pre-determined choices, which attach importance to the users' intentions being captured. I believe these factors provide to the users a direct participation, involvement, and pleasure – as subjective as it is – in the narrative. This will help me frame my main research object: the spect-actor. I will be discussing and describing the VR experiences I have selected for my research to provide data collection from them. As it is vital readers understand the VR experiences as they were experienced, I will provide my subjective first-person analysis for each VR experience.

The first part of the threefold study addresses the question of VR in an artistic context. I refer to artistic as VR experiences that are not narrative oriented, but that rather transcend storytelling boundaries and that focus on immersive sensory exploration and user interaction. These pieces could be seen as digital canvases where users become active participants while their actions become, in a way, the narrative. They are a journey into the abstract and the experimental where the boundaries between the virtual and the real are blurried, and also where users are free to interpret and engage with the art shown in these experiences in their very unique ways. One could see these Artistic VR pieces as a playground for creativity that invite users to explore the limitless possibilities of VR. In this regard, I have selected three VR pieces that correspond to my definition of Artistic VR in relation with spect-actorship.

The first one, *After Dan Graham,* was developed by Toronto-based digital artist David Han in 2019. In this experimental VR installation, users are present in a virtual environment located inside a physical environment. Inside the virtual environment, a single user is presented with an embodied first-person perspective. The user's movement inside the virtual world is

recorded and fed back into the system in the form of an endless stream of virtual agents to actively shape the narrative by deciding their actions. Inspired by artist Dan Graham's video installation "Time Delay Room 1," the VR piece explores how technology mediates self-perception by extending Graham's use of video feedback to VR. Participants outside the virtual environment are able to observe events inside the virtual world through a series of screens mounted around the room. *After Dan Graham* offers a unique VR experience where users actively contribute to the narrative, exploring the intersection of technology, self-perception, and narrative creation. The second Artistic VR experience, *ArtGate VR* is an art gallery in the metaverse, founded in 2018 by Torontonians Brendon McNaughton and Justin O'Heir. The gallery aims to simplify the exhibition process for artists globally, providing customizable spaces for fully interactive, social VR art events. The experience offers various locomotion options, including walking, joystick movement, and teleportation. When entering the lobby, inspired by the Pantheon, users connect to 54 galleries, allowing them to explore through doorways or a virtual catalog. The importance of location in this VR art gallery is emphasized by replicating the traditional museum experience. *ArtGate VR* prioritizes immersion through exploratory freedom, allowing users to navigate the space at their own pace, creating a therapeutic and personalized art experience. The user's ability to customize their visit aligns with the present research suggesting a compromise between guided and exploratory experiences in VR museums. More precisely, every gallery has its own curatorial narrative that is to be interpreted by the users. Finally, the VR platform aims to showcase innovative curatorial approaches, offering artists and curators the flexibility to push creative boundaries within the virtual space. Finally, the third Artistic VR experience is *Belongings VR,* a 6DoF interactive piece directed by Carol Silverman, focusing on the life story of her mother Ellen Rauh, who

was also a Holocaust survivor. She was deported by the Nazis at a young age, endured internment camps, and eventually settled in New York City. Despite surviving traumatic experiences, Ellen led a quiet life, became a mother and an accomplished artist, keeping her painful past a secret. After her passing, she left her belongings to her children without revealing the meaning behind them. The VR experience serves as an immersive memory box for these belongings, allowing users to interact with Ellen's personal items, photographs, documents, and artwork. Divided into nine chapters, each representing significant periods in Ellen's life, users explore and interact with objects triggering narrations by Carol Silverman. The experience covers Ellen's childhood in Germany, the internment camp, the boat trip to New York, and her life in the 1940s through the 1990s. Users can physically interact with objects using controllers, triggering narrations that provide insights into Ellen's life. The experience is guided by timed chapters, emphasizing the passage of time in Ellen's life. The final chapters reflect her cognitive decline into dementia, symbolized by a gradual disappearance of personal items in a white void. The VR experience stands out for its strong interactive activities, allowing users to engage deeply with Ellen's personal items. The success of the piece relies on user interactions and feedback, enhancing the sense of presence and immersion. The narrative is described as a speculative autobiography, as Silverman was not aware of the significance behind her mother's belongings. Users, like Silverman, explore and interpret Ellen's life through interactive engagement. *Belongings VR* provides a unique perspective on memory and interactivity, allowing users to create new memories based on speculative narratives. The use of VR is justified for its immersive and interactive capabilities, providing a lasting and impactful medium for artistic storytelling.

The second part of my dissertation addresses the question of VR in an educational context. I refer to Educational VR as experiences that bring the feeling of stepping into a environment where learning is hands-on and engaging. Instead of just absorbing information in a classroom, you're interacting with it. These VR experiences could be compared as having a personalized tour guide through knowledge, where you can explore, experiment, and truly understand concepts through interactions while being immersed. It is, in a way, like turning education into an adventure or a journey by immersing yourself in a subject and coming out with a deeper understanding because you have lived it.

The first experience discussed in this second chapter is *MLK: Now is the Time.* It is an immersive educational VR experience that commemorates Dr. Martin Luther King's legacy and explores key themes from his "I Have a Dream" speech. Developed by Time Immersive and filmmaker Limbert Fabian, the piece delves into issues such as housing, policing, and voting in a racial context through interactive storytelling. The use of hand tracking technology enhances user engagement, allowing them to physically interact with the narrative. The experience is structured around the metaphor of collecting pieces of the "Stone of Hope" to rebuild Dr. King's memorial and ultimately hear the full speech. The experience is divided into three segments that address different aspects of systemic inequities, utilizing role-play scenarios and simulation to convey lived experiences. The housing segment introduces a board game called "Redlined!" to illustrate the inequalities and historical impact of redlining. The policing segment immerses users in a tense traffic stop scenario, offering a perspective on the challenges faced by people of color. The voting segment encourages users to participate in a virtual civic duty, highlighting the complexities and obstacles in the voting process. The experience is designed to be educational, aiming to educate users about social issues and foster understanding by allowing

them to inhabit different perspectives. It utilizes immersive storytelling, hand tracking, and interactive elements to create a unique and impactful educational VR experience. Anne Frank House VR, the second Educational VR experience discussed in this chapter, provides users with a virtual experience of the secret annex where Anne Frank and her family hid during World War II. Released in 2018 on Oculus Go and in 2019 on Meta Quest, the VR experience aims to offer insights into Anne Frank's thoughts and the living conditions in the annex. The piece supports multiple languages and is used by museums globally for educational purposes. Consequently, accessibility is a key aspect of this experience, enabling people worldwide to experience the Anne Frank House virtually, serving as a compromise for those who cannot physically visit the museum due to various constraints. *Anne Frank House VR* offers two modes: story mode (exposition) and tour mode (exploration). In story mode, users follow a guided path, interacting with visual cues to trigger voiceovers of Anne Frank reading from her diary. The exploration mode allows users to navigate freely and to interact with the environment at their own pace. Also, the VR experience allows users to touch and interact with virtual objects, challenging the traditional "do not touch" rule in museums. The third and final VR experience to be discussed in the second chapter is *The Battle of Vimy Ridge* located at The Royal Canadian Regiment (RCR) Museum in London, Ontario. The piece, which was created to commemorate the 100th anniversary of Vimy Ridge in 2017, is presented in a booth where the user is wearing a Meta Quest 2 HMD. They are then transported into the tunnels behind the Vimy battle lines, experiencing the sights and sounds of the historical event. The VR experience takes users through various scenes, including the trenches and the battlefield, providing historical context through floating texts. *The Battle of Vimy* includes interactions with virtual characters, although there are limitations in movement and tracking. serving as an immersive

educational tool. The location of the VR app within the museum is strategically chosen to create an immersive experience for visitors. Despite technical challenges, equipment obsolescence, and changes in VR hardware impacted the performance of the piece, *The Battle of Vimy* emphasizes on its educational nature, aligning with the museum's narrative and focusing on historical accuracy rather than artistic and narrative elements, which are minimal.

The final chapter is dedicated to Entertainment VR. These experiences could be described as a physical journey into a story where users actively shape the narrative through their interactions. They are conceived to make users feel as though they are stepping into a movie or a game, but they are not just a spectator – they are a participant influencing the unfolding events: a spect-actor. These experiences prioritize user engagement, allowing them to touch, manipulate, and influence the virtual world around them. The narrative takes center stage, drawing them in with compelling storylines, characters, and environments. It is an interactive adventure where choices matter, blurring the lines between the digital and physical realms. Whether it is exploring fantastical landscapes, solving mysteries, or experiencing dramatic narratives, Entertainment VR experiences put users at the heart of the action, making the virtual world feel not just immersive but truly alive.

The VOID, founded in 2015 by Ken Bretschneider and Curtis Hickman, introduced a groundbreaking approach to VR by merging digital and physical environments, offering users a unique hybrid experience. It functioned as a location-based virtual theme park, allowing up to four users to immerse themselves in a shared virtual adventure, interacting with each other and the environment. Equipped with advanced gear, including a backpack computer, HMD helmet, haptic vest, and a motion-tracking gun, participants engage in a "hyper-reality" venture,

physically interacting with virtual objects. *The VOID*'s initial attraction, *Ghostbusters: Dimension*, situated in Madame Tussauds, integrated elements of phantasmagoria, using pre-show techniques reminiscent of the 19th-century ghost shows. *The VOID*'s strategy involves creating "aliefs," blending mental and physical states to enhance the conviction of the virtual experience. The experiences incorporate sensory elements like vibrations, air pressure, heat, and scent, blurring the boundaries between the real and virtual. As previously discussed, the concept of the "spect-actor" emphasizes user involvement, allowing them to shape the narrative through freedom of movement and choices, which is at the center of the *The VOID*. The social dimension is crucial, encouraging users to communicate and collaborate in the VR environment. The shared experience amplifies engagement, making VR more than an individual encounter, addressing concerns about potential social isolation associated with new technologies. *The VOID*'s success lies in its ability to balance cutting-edge technology, narrative immersion, and social interaction to deliver a truly compelling virtual reality experience. Next is *The Thrill of the Fight*, a VR boxing simulation experience created by Ian Fitz, a self-taught programmer with a background in web development. Despite no prior experience in game production or business, Fitz focused on authenticity and freedom in the game. It is a room-scale VR experience where users can throw various punches and defend against opponents. The piece emphasizes physical activity, falling into the category of "exergames," although it was not developed as such. Users goes through matches against progressively challenging opponents in a confined 6x6 foot virtual ring. The simplicity of the game mechanics, relying on the users' motor skills, contributes to a psychologically and physically motivating experience. The solo campaign introduces opponents of different sizes, shapes, and fighting styles, requiring users to adapt and improve, which contributes the the VR experience's ability to balance challenge

and skill for player engagement. *The Thrill of the Fight* also stands out from other VR boxing experiences such as *Creed: Rise to Glory* by avoiding imposed stamina systems and allowing users' stamina to determine the flow of the game. This approach enhances user immersion and engagement. The VR experience's success is attributed to its total immersion through simplicity, aligning with the users' expectations and offering a balance of challenge and skill. Finally, *The Thrill of the Fight*'s authenticity and freedom of action contribute to a sense of achievement and player gratification. It also touches on the unintentional physical benefits of the game, turning it into an enjoyable and pleasurable form of exercise. The last VR experience discussed in the dissertation is *Stay Alive My Son – Chapter 1 & 2*, developed by Victoria Bousis, which delves into a 45-year odyssey inspired by Yathay Pin's memoirs during the Cambodian genocide. Users step into the shoes of an 80-year-old Yathay, exploring the haunting consequences of his decision to abandon his 6-year-old son during the Cambodian genocide to ensure his family survival. The narrative unfolds through first-person view, physical interactions, and embodiment, allowing users to navigate Yathay's mental prison and confront his deepest regrets. The emphasis on user involvement and spect-actorship is evident as users interact with Yathay's environment, choosing to explore or skip elements. The freedom of action is a key feature, with users given agency to shape the narrative, especially during the piece's prologue. *Stay Alive My Son* incorporates interactive elements, such as handling objects, reading documents, and watching TV, creating a more immersive and personalized journey. The significance of Yathay's house as a warm, detailed environment allows users to engage with the narrative at their own pace. Users can explore additional details, akin to 'side quests,' deepening their understanding of the story. The concept of "walking into someone's home" is emphasized, fostering a connection between users and Yathay's life. The turning point occurs

when users, as Yathay, are handed his prayer beads, signifying a shift in agency and the start of a transformative quest for redemption. This moment, reminiscent of Lewis Carroll's Alice in Wonderland, propels users into Yathay's inner self, unlocking memories and revealing the purpose of his resilience—to reclaim all that was lost, culminating in a reunion with his son. The VR experience blurs the lines between cinema and interactive film, as well as challenging the dichotomy of cinema and video games, incorporating cinematic elements with gaming mechanics, opting for an "interactive film" label. The convergence of cinematic and gaming logics creates a unique storytelling experience. Ultimately, *Stay Alive My Son* offers an emotionally immersive journey, allowing users to navigate the Yathay's quest for redemption, explore his past, and contribute to the healing process. The combination of freedom of action, interactive elements, and user agency creates a personalized and engaging VR experience while stepping into the protagonist's shoes.

3 Artistic VR

3.1. *After Dan Graham* (David Han, 2019)

3.1.2. Introduction

This chapter embarks on an exploration of *After Dan Graham*, an innovative and Artistic VR piece created by Dan Han, a prominent Canadian media artist, scholar, and educator. Within the realm of this virtual creation, Han ingeniously positions participants as spect-actors, breaking away from conventional narrative structures and inviting them to shape the unfolding

narrative through their choices and actions. Inspired by Dan Graham's influential video installation, "Time Delay Room 1," this VR experience extends the boundaries of Graham's groundbreaking work by intertwining video feedback with the corporeal data collected by the VR apparatus. In this homage, technology becomes a mediator of self-perception, fostering a profound investigation into the intersection of art, technology, and human agency. As Han articulates, this project is driven by a desire to delve into the poetics of VR, exploring its creative potential to evoke affective kinesthetic experiences and drawing inspiration from structuralist art approaches that emphasize the material aspects of time-based media.

3.1.3. Description of the Experience

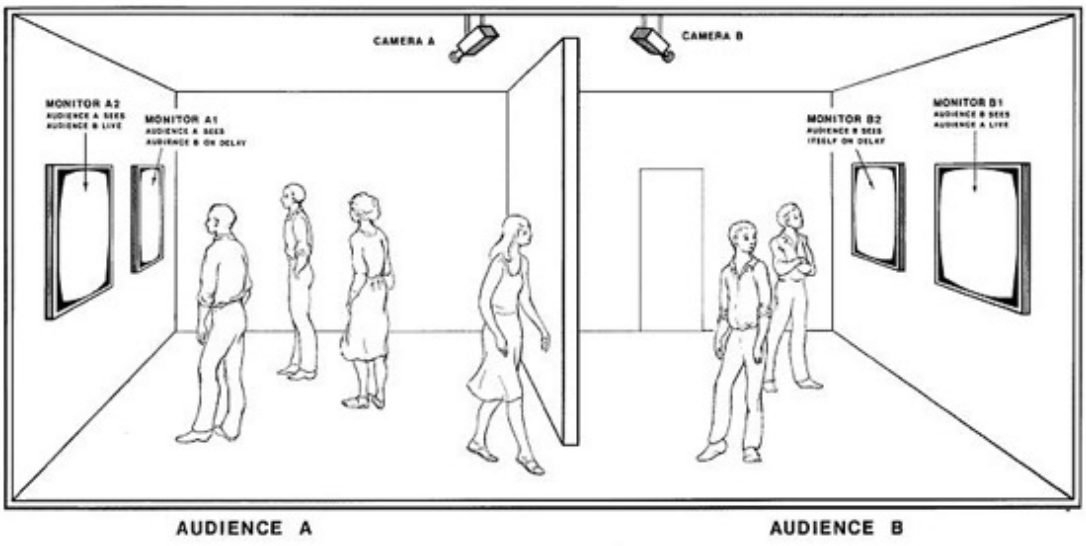
Encountering *After Dan Graham* was a pivotal moment during my On-Site Doctoral Field Placement at the fifth edition of the FIVARS festival in 2019. As an intern, I immersed myself in this artistic exploration, and the experience left an indelible mark, earning the People's Choice award for the Best Interactive VR experience. This Artistic VR piece, a manifestation of spect-actorship in its purest form, resonated deeply with me, prompting the initiation of this dissertation. The virtual environment, nested within a physical setting, beckons one or multiple spect-actors to don the mantle of agency. Inside the VR realm, a single participant assumes an embodied first-person perspective, their movements recorded and seamlessly integrated into the system as an endless stream of virtual agents. Onlookers outside the virtual realm observe the events through strategically placed screens, fostering an intricate dance between subject and object. *After Dan Graham* not only extends Graham's exploration of data feedback but also

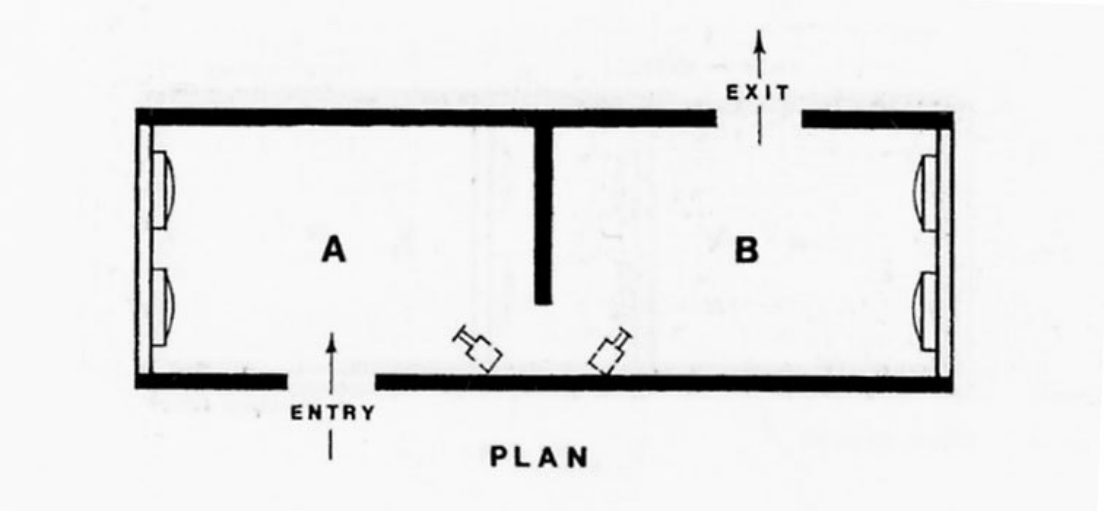
serves as the catalyzing force propelling my research, making it both a touchstone and compass for this academic journey.

3.1.4. Feelings and Thoughts about the Experience

The installation had its own dedicated space at the Toronto Media Arts Center where the FIVARS festival was held. Inside the dedicated space, four mounted monitors – two on each opposite sides of the walls, were facing each other in order to cast what the user is seeing inside the VR app. A single, wireless VR HTC Vive Pro HMD and two HTC Vive hand controllers sit on a small plinth in one corner of the room. A single spect-actor is invited to put on the VR HMD, wear trackers on their feet and waist and carry the two hand controllers. A festival volunteer assisted me fixing the six tracking points on my body: one on each foot and two around my waist. I was also given two hand controllers as the remaining two trackers, which would allow me to interact with the content inside the experience. Finally, the volunteer asked me safety questions before being onboarded into the VR experience, such as if I have ever done VR before and that the trackers are going on my body so they can track my movements for the piece. Space was also very important as there is no teleportation involved in the piece. The user is invited to navigate the space by simply walking around in a perimeter that is delimited by the walls located inside the experience. The user is not prompted to use controllers in order to move around the virtual space. Aside of being used as two independent trackers, the controllers are used for anything other than carrying on with the experience and to interact with the virtual content.

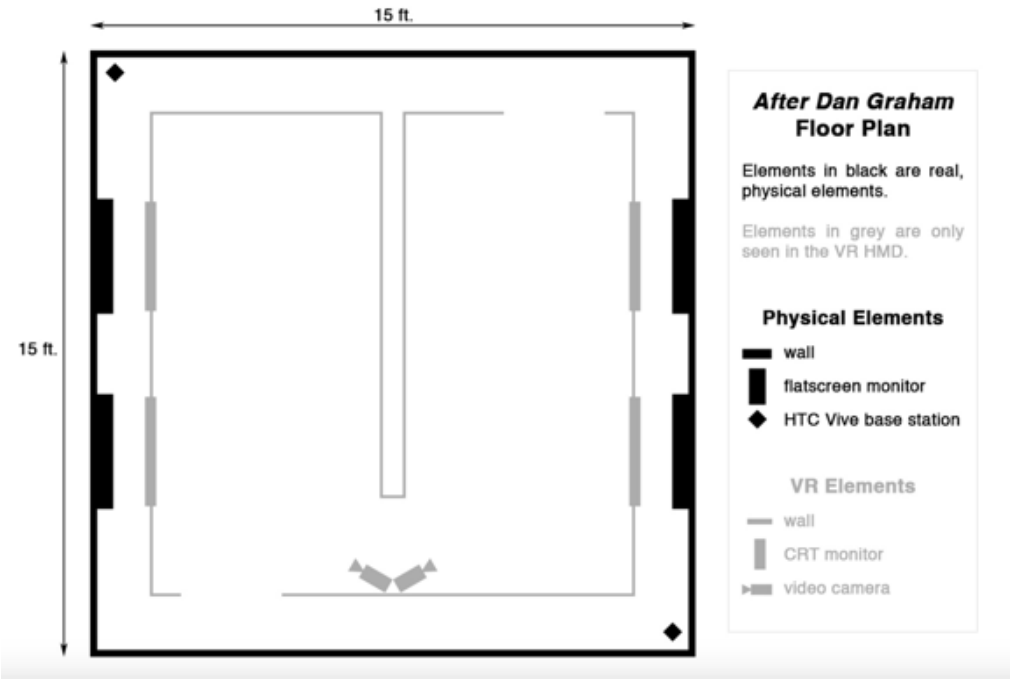
The experience takes place inside a single room with white walls which is empty save for four virtual flat screen monitors – mirroring the same four monitors that are part of the installation in the "real world," two mounted on one wall and the other two mounted on the opposite wall. Inside the virtual environment, the latter is placed inside the body of non-photorealistic featureless humanoid avatar, which facilitates the spect-actor's identification process, whose movements correspond directly to the movement of the participant. Looking around, they see a re-creation of Dan Graham's *Time Delay Room 1* (1974). This VR re-creation consists of two identical rooms, connected through a single passageway, with two doorways on either end.





Photos taken from the "Media Art Net" webpage for Dan Graham's "Time Delay 1"[89]

3.1.5. Evaluation of the Experience



After Dan Graham's floor plan as seen in the VR piece[90]

[89] "Dan Graham "Time Delay Room."
[90] Han and Waite, "After Dan Graham."

As I was transported into the virtual environment, I was able to have a global view of the entire virtual installation. A label is displayed right next to the installation's entrance doorframe describing Graham's original work. The installation is divided into two rooms separated with a wall at its center. Each room is monitored by a video camera which captures the spect-actor in each room along with two televisions mounted to the opposite wall. One of the monitors features the live feed of the camera capturing the adjacent room while the other monitor features the feed of the camera capturing the current room on an eight-second delay.

I walked inside the first room. While looking around, my attention was drawn to these two monitors. I remembered the volunteer telling me that activating the monitors will initiate the whole experiment. The mechanics of the experience were very simple, which was primordial for David Han, its creator.

> In the experience, it was very intentional to have the experience start with this very simple instruction of turning these TVs on. There are four TVs in the room, and you turn them on by just pushing the power button and it's recording you the entire time. So, it takes you about a few seconds to turn walk around and turn them on, but in that moment the person is, 1) familiarizing themselves with the physical environment. 2) they're doing this very simple action of like walking around and pushing the buttons. 3) they're providing the system with something to record, and so by the time they hit the 4th button, the system has already gotten their information recorded. After that last monitor turns on, the experience begins[91].

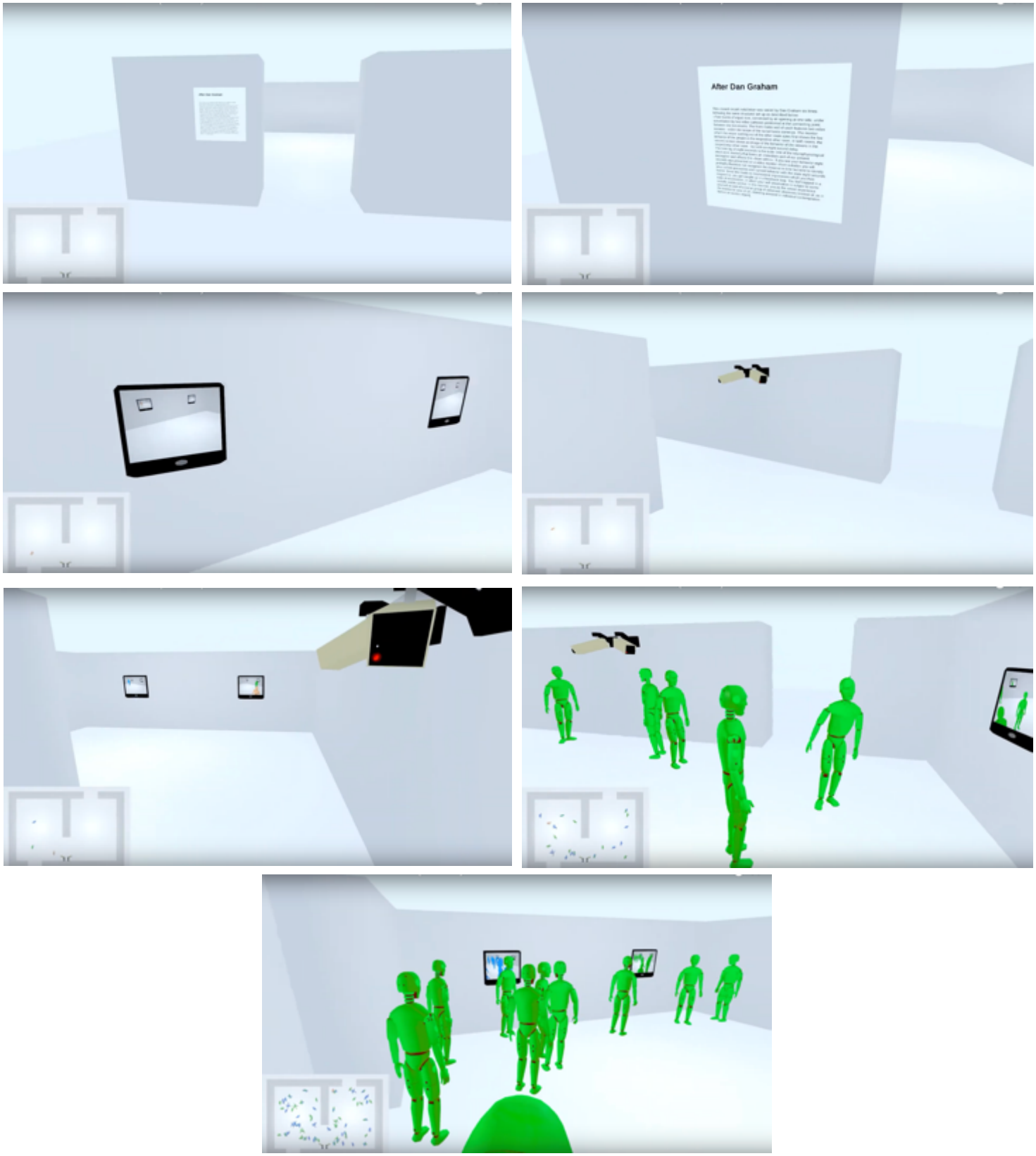
[91] Baillargeon, "Experimental VR and Curation with David Han."

Eight seconds after turning that last monitor on, I was surprised to see a new virtual agent spawns in the same location that I first appeared. The anthropomorphic virtual agent obviously did not look like me at all with its featureless face, crash test dummy like appearance and green color. But its movements were based on the movement I made eight seconds prior. Over time, the room became populated with a crowd of virtual agents, all echoing my movements[92].

Other people who participated in the experience were dancing with themselves, others were talking or mimicking some kind of story they would connect to. My main objective was to avoid my precedent self every time another avatar would pop in, until it became chaotic, overwhelming, and impossible. The experience was quite surprising and disorienting, especially knowing that a whole space was filled with past versions of myself.

What surprised me the most, I remember, was how much freedom of action I was given. Seeing myself being tracked, my feet and my body, everything. Of course, I was not wearing a tracking suit, but I really had the impression that everything was tracked enough. It felt like I was truly inside the experience. I felt like it was an actual sandbox where I could do whatever I wanted.

[92] Informations taken from Friend Generator's website: https://friendgenerator.club/?page_id=5



Screenshots of *After Dan Graham*, David Han (Friend Generator), 2019.

3.1.6. Analysis of the Experience

After Dan Graham continues an important experiment in looking at ourselves across time, displaced from our sense of the now, creates a narrative through spect-actorship. Memory is something we are still trying to understand and the way that we piece together our life stories come from this displacement effect[93]. *After Dan Graham* begins innocently enough, and then, as users become aware of the ruse, tends quickly to form a playful, curious relationship with the version of themselves, separate only by time. With the spect-actors' hands, feet and head being tracked, there is sufficient behavioral data to engage in a crude but also nuanced interaction. As Keram Malicki-Sanchez stated during the 2019 FIVARS awards ceremony in which *After Dan Graham* won the People's Choice Award for Best Interactive Experience:

> The biggest scope is that we can also consider the implications of our past actions and makes that will affect our future. Of course, by the time we encountered enter and engage our future selves, we have already changed. In this experience it is quite Derridean; always writing from a moving platform, but also it is an astute representation of how immersive and interactive media affords us new ways of using our agency as an authorial tool, with immediate recursive and visceral input modulating our creative choices. The user now understands that this sousveillance, a term coined by Steve Mann that denotes bringing the camera or other means of observation down to human level, physically with mounting cameras on people for instance, of themselves is an

[93] According to the psychology put forward by Sigmud Freud, the displacement theory coins the idea of the mind mechanism of keeping or disposing of information in human mind to underscore the fact that psychic energy can be redirected from one idea to another. Akhtar, Comprehensive Dictionary of Psychoanalysis, 82.

> opportunity to cast forward a performance, a narrative, if you will, built from the various ideas that the user understands they can interweave, through the consistent instantiation of a new version of the self[94].

Even though the virtual location of the experience and its environment were completely asepticized and unstimulant – full white walls with nothing on them except monitors, I had the profound feeling that I could do everything I wanted. The only limits would be self-imposed ones. This feeling while experiencing *After Dan Graham* easily evokes Henry Jenkins' "environment storytelling" theory. In his article "Game Design as Narrative Architecture," Jenkins elaborates on four different types of narratives that create the precondition for an immersive narrative experience: evocative spaces, enacting stories, embedded narratives, and emergent narratives[95]. Evocative spaces have the ability to evoke stories heard or experienced in the past in a media while physically entering the space they have previously visited in their fantasies, such as an escape room or an amusement park attraction based on an intellectual property. Enacted stories provide narrative elements that are built around characters. Embedded narratives convey a story through by hypothesis and by assembling on the basis information that is been given in order to develop a narrative with multiple clues and textual cues, much like what is experienced in a detective story. Finally, the Emergent Narratives focus on how narrative possibilities might be developed through the game space while being "unstructured, chaotic, and frustrating as life itself[96]." Here, Jenkins uses the video game series *The Sims* (2000) created by Will Wheaton as the perfect example for this fourth model. *The Sims* is known

[94] Keram Malicki-Sánchez. Personal interview. December 19th, 2019.
[95] Jenkins, « Game Design as Narrative Architecture ».
[96] Ibid. p. 13.

as game with open-ended gameplay with unlimited replay value where players can create their own storylines, objectives, and obstacles. Players are prompted to play indefinitely and there is absolutely no way to truly win or finish the game. As mentioned by Eric Boland in his self-published book about the famous video games series, *The Sims* cemented its creator's reputation more as a designer of "software toys – games that cannot be won or lost[97]." This life/social simulation video game, as described by Jenkins, "[is a] sandbox or dollhouse game, suggesting that it should be understood as a kind of authoring environment within which players can define their own goals and write their own stories[98]." Adding to this statement, Jenkins mentions, "[…] in the case of emergent narratives, game spaces are designed to be rich with narrative potential, enabling the story-constructing activity of players[99]."

After Dan Graham clearly belongs to a type of experience that is completely sensory deprived: white walls, featureless humanoid avatars, no music or sound effects, no haptic effects such as vibrations. However, the user is quickly prompted to react to this lack of stimuli by creating their own since the form of interactions were easily intuited, so authentically close to what they experience in the everyday life, which is a major component regarding presence in VR. In this regard, David Han compares his piece to the VR app "Walkabout Mini-Golf" on the Meta Quest,

> One of my favourite VR experiences is "Walkabout Mini-Golf." It's just mini-golf! Like, everyone knows what mini-golf is, that's all it's about. They do environmental

[97] Boland, *The Sims: The Complete Guide*, 157.
[98] Jenkins, « Game Design as Narrative Architecture », 13.
[99] Ibid, 14.

> storytelling. The environment gives you clues as to like little bits of narrative. And one of the reasons I like it is because you don't have to explain it to someone. They have a very simple like "this is how you play," but your grandmother can play it. I think that's really important. Our existence in the real world is so rich with experiential, with data, with interaction with the natural world. I don't think we need to add more on top of that and that's enough to explore and create an experience that allows us to reflect on that. For *After Dan Graham*, one of the things I was interested in was this idea that when you see yourself outside of your body in the way that closed-circuit TV did, in the way that it happens in *After Dan Graham*, is learning about yourself. Learning about your own interactions, your own way of perceiving and moving through the world. Because you get this view from yourself, not only from outside of your body and from outside of time. Even though it's not your physical body, it's so much information or knowledge from the way that representation moves through the world. I do think that I created that experience so that it relies on sort of our natural way of moving and interacting with the world. It does have a certain sense of authenticity because you don't have to explain anything[100].

Although *After Dan Graham* is completely deprived of any interactive stimulus, the experience stands out for its proprioceptive faculties, hence the spect-actor's "awareness of the spatial and mechanical status of the musculoskeletal framework[101]" in the VR experience. As previously mentioned, the user's limbs are individually tracked and are faithfully transcribed in the virtual environment – with the exception of the movement of hands and fingers, which

[100] Baillargeon, "Experimental VR and Curation with David Han."
[101] Stillman, "Making Sense of Proprioception: The Meaning of Proprioception, Kinaesthesia and Related Terms."

enhances the immersion, and at the same time, the spect-actorship effect. The success of *After Dan Graham* lies in the virtual presence of virtual agents based on the spect-actor's movement that are rendered through accurate and precise tracking, even though the user is constantly reminded of the artificiality of the setting. In the same line of reasoning, it is also possible to make connections with *After Dan Graham* to German dramatist Bertolt Brecht's concept of "alienation effect". This dramatic theory, first introduced in his 1936 essay "Alienation Effects in Chinese Acting," is known to involve the use of techniques designed to distance the audience from emotional involvement in the play through jolting reminders of the artificiality of the theatrical performance[102]." More precisely, when put in conjunction with Han's piece, Brecht's concept could be seen as a "handing over of the rein" from the artist to the spectator in order for the latter to become the artist themselves. As a result, the distancing effect between the spectator and the object is achieved by the way "the artist never acts as if there was a fourth wall besides the three surrounding [them] […] The audience can no longer have the illusion of being the unseen spectator at an event which is really taking place[103]." In fact, in *After Dan Graham*, once the user makes the choice of activating the monitors, the latter becomes a "spect-actor," an actor in their own story. The artist/creator of the experience could be relegated in this precise case to the position of "World Builder," in other words, an individual responsible for the conceptualization, design, and development of the universe or setting in which a narrative or creative work takes place. In his article about the architecture as a world-building element, Atlıhan Onat Karacalı argues about the different criteria employed to craft a "world" like the one in *After Dan Graham*, "Some of the features may be explained in detail, some others may be mentioned superficially, or some may be left (consciously or not) to the imagination of the

[102] « alienation effect ».
[103] Brecht, « Alienation Effects in Chinese Acting », 91-92.

audience. The features are perceived through the real-world experiences since the designers make decisions based on their real relationships in the physical world. Simon Provencher states the "Golden Rule" of world-building as "unless specified otherwise, everything inside your world is assumed to behave exactly as it would in the real world[104]." When discussing about how freedom of action creates "more impactful and meaningful VR experiences, David Han weighs up the pros and cons, saying that,

> that you could potentially make the argument that it actually removes you from the experience a little bit. That interactions or having things that are not so expositional can remove you from the experience a little bit. Because It's like, oh I don't know what's going on here. There's a moment of "I don't know what to do right now," and I think that can interrupt your sense of flow or presence, but I don't think that's necessarily a bad thing[105]."

While questioned if it is something he witnessed with people experiencing his VR piece, he confirmed,

> Absolutely, yes. Because you go into it knowing that you're being tracked in an ascepticized environment. And that was very intentional to have this thing to be very sort of minimal. Everything is super minimal, the décor, the avatar representations are minimal. Everything is minimal. So, the idea that you are constantly being tracked and

[104] Karacalı, « Fictional vernacular architecture as a worldbuilding element: Structure samples from the World of Warcraft video game », 111-112.
[105] Baillargeon, "Experimental VR and Curation with David Han."

that the movements of the avatars, while they are based on you, there are also moments where tracking isn't 100% right. It's only tracking six points on your body. You had your hands, your feet and your waist. Six points of tracking. So, everything else is being inferred from those six points based on human physiology. So, the way that the avatars are animated are being informed by those six points, but everything else like elbows, shoulders, knees, where all those positions on the avatar are being inferred. For example, humans can't get their arm the other way, so the avatars are not going to do that, but as a result it's not perfect. And often, things kind of get weird, it doesn't quite work. So, you can see the system if you watch the average, you can see the system not quite doing the things that you wanted that look like you. So, there is always this sort of moment of tension between what you remember doing and what you think it should look like, and then what it actually looks like on the avatar[106].

As David Han mentioned, his VR piece situated midway between expositional and explorational lead users to perform any types of movement or behaviour in a virtual environment where they are in total control: talking, dancing, running, walking or playing around.

3.2. *ArtGate VR* (Brendon McNaughton and Justin O'Heir, 2018)

3.2.1. Description of the Experience

[106] Baillargeon, "Experimental VR and Curation with David Han."

ArtGate VR is an art gallery located in the metaverse that was inaugurated in 2018 by Brendon McNaughton, a multidisciplinary contemporary artist, and Justin O'Heir, an innovative technology entrepreneur and technological consultant. The objective behind the creation of this immersive art gallery in VR developed in Toronto was to simplify the lives of artists who wish to exhibit their arts, or access international art events, regardless of their location. Also, *ArtGate VR* offer customizable gallery spaces for exhibitions taking place in a fully interactive, social VR art market. This VR art gallery is open to visitors from around the world where it is possible to experience different artworks, such as paintings and sculptures, as well as connecting with other artists, art enthusiasts, as well as art investors and collectors to buy and sell art internationally through VR. Before being created as an immersive art gallery, *ArtGate VR* was first and foremost envisioned, as Justin O'Heir stated in an interview I conducted with him, as "a social experience, an educational experience and an entertainment experience, all melted into one[107]." The VR art gallery is available in the App Lab section in the Meta Store.

3.2.2. Feelings and Thoughts about the Experience

Moving through space in *ArtGate VR* is done in numerous ways. The user's presence is instant since their regular movements are here considered to provide them with a good immersive experience. The user is suggested to either physically walk around the space within the perimeter defined by the HMD, use the controllers' joystick to move into the space, or to use teleportation. I personally chose the teleportation option, as the dizziness caused by this

[107] Baillargeon, "VR Art Galleries and Museums in the Metaverse."

mode is negligible since I simply must select a point in the environment with the controller's joystick, and then moves do it. Even though Justin O'Heir specifically mentioned his dislike for teleportation in VR as "it kills the authencity[108]." The co-founder chose to add this option, so people primarily feel comfortable during the exploration, but also for them to be able to customize their experience. This customization not only tackles the locomotion aspect of the gallery visit, but also the architectural approach of the experience. More precisely, the developers chose to give users the option to let them adjust the brightness of the color since a lot of work was done around the colors of the art gallery walls. As is the case for most art galleries, white colored walls are predominant. The reason for the adoption and democratization of white walls in art galleries goes back to the late 1930s in New York City in its Museum of Modern Arts' 1939 opening show designed by Philip Johson known as the 'International Style.' This practice was then carried on in the 1940s with various installation experiments reminiscent of the Surrealist artworks created during wartime. As states by Walter Grasskamp,

> In post-war Germany, the white wall/single-row hanging constellation appears to have been standard, even in galleries, from the very beginning. Although undoubtedly an emergency measure directly following the cessation of hostilities, it soon became the universally accepted language of the commercial exhibition space[109].

[108] Baillargeon, "VR Art Galleries and Museums in the Metaverse."
[109] Grasskamp, « The White Wall - On the Prehistory of The "White Cube" », 88

Although the architectural side of *ArtGate VR* was created in ways to replicate a traditional museum or art gallery experience, the decision to move away from pure white was made because, as O'Heir explains,

> actual pure, bright white walls, hurt your eyes, and you shouldn't be in it long because you've got this thing on your face […] so we actually do like an off-toned white even in like our branding, we changed the white to be an off-toned white. It's a lot easier to digest for your eyes and a lot more comfortable. For longer periods of time. And we've noticed correlation between usage, people were not checking out as early because it was easier on their eyes from changing the colors[110].

In the realm of art exhibitions, the location is just as integral to the gallery experience as the displayed artworks, if not more so than the curation aspect. When I entered *ArtGate VR*, I was transported into a modern minimalist off-white colored lobby, which was based on the Pantheon[111], where there are 10 doorways which give you access to different galleries. You can either walk into the door frame under the designated art gallery of your choice or browse the different art galleries through a virtual catalogue. At the time of writing this chapter, there are 54 galleries. Although the entirety of the galleries is accessible through this virtual catalogue, the developers chose to prioritize a more traditional way of accessing the featured galleries for authenticity's sake:

[110] Baillargeon, "VR Art Galleries and Museums in the Metaverse.".
[111] Ibid.

> walking through the doorways was like a more authentic experience for people, they feel like they're in the museum, they can go everywhere […] We also wanted to offer people premium galleries. A space where people are going to access it and see them a lot quicker. And a lobby just made a lot of sense, just like when you go to a cultural institution. You go to a museum, you go to things like that, they have this like Grand Lobby that's always intricate whatever way they have it. And we wanted to replicate that experience. But we also wanted to make it inviting and allow these artists and galleries to be showcased in a specific way. And that's kind of how that came to be[112].

The freedom provided to users in *ArtGate VR* to choose and walk into different gallery doorways serves as a prominent manifestation of the spect-actor concept. By offering users the agency to select and explore various galleries within the virtual space, the platform aligns with the spect-actor framework, emphasizing the active participation and engagement of users in shaping their own experiences. This freedom of choice allows users to act as both spectators and actors within the virtual environment through the act of simply walking into a specific gallery doorway that instantly transforms users into active participants, deciding the trajectory of their virtual art exploration. The platform's adherence to the more traditional approach of replicating the experience of walking through physical doorways when entering an art gallery in the tangible world, adds an authentic layer to the spect-actor engagement. The decision to prioritize this traditional method, as mentioned by Justin O'Heir, fosters a sense of authenticity and immersion. Users, when entering through doorways, perceive the experience as akin to navigating a physical museum or gallery, contributing to a more genuine and familiar encounter

[112] Baillargeon, "VR Art Galleries and Museums in the Metaverse."

with artworks. This intentional design choice acknowledges the importance of spatial layout in guiding user attention and facilitating meaningful engagement, aligning with the spect-actor's role in actively shaping their encounter with the art that is displayed. Furthermore, the sheer number of available galleries, currently standing at 54, which exponentially surpasses the number of galleries accessible in a tangible art gallery, amplifies the spect-actor experience by giving them a wide array of choices. Users are not only given the freedom to choose which gallery to enter but are presented with a diverse array of artistic spaces to explore. The diverse range of galleries in *ArtGate VR* aligns with the spect-actor concept by acknowledging user preferences and allowing them to curate their unique journey through the virtual art landscape, fostering individualized experiences without predetermined paths set by an art gallery or a museum curator. The intentional design choices and freedom of action further enhance the authenticity of the encounter, emphasizing the importance of user agency and engagement in the appreciation of art within the metaverse, as seen in the images below.

However, it is important to acknowledge the lack of proprioceptive possibilities in the experience. Although *ArtGate VR* bestows users a great amount of exploratory freedom and the possibilities of physically entering a gallery, the interface does not allow much in terms of physical interactions. Although users have the possibility to personalize their avatar’s color and they are being given virtual hands, the opportunities to use them inside the virtual environment are quite limited. Conversely, in the gallery, users can interact with each other in speaking and give virtual handshakes, which makes the experience much more physically and socially immersive in terms of presence.

Screenshots taken from the lobby in *ArtGate VR*

3.2.3. The Importance of Location in a VR Art Gallery Setting

Location is indeed a particularly important aspect of art exhibitions. As we have seen since the inception of the digital era, more precisely since the rise and democratization of Internet and the development of various viewing devices such as high-definition and 4K computers, smartphones and VR headsets, people are now able to experience art from the comfort of their homes. Especially in the time of the Covid-19 pandemic, art institutions such as museums have taken the digital path in creating virtual museums that would allow people from around the world to visit and to provide new access to their collections through digitization[113]. Moreover, as Shehade and Stylianou-Lambert state,

> technologies, such as VR, have created tremendous opportunities for museums on many levels, offering alternative ways for museums to interact with their visitors. VR has been used for reconstructing historical environments, for interpretation and experience enhancement both on-side and off-side, for increased visitor engagement and education [9], and for creating interactive, engaging, and immersive experiences in museum environments. All these applications created new avenues for experimentation with many museums around the world incorporating such technologies in an attempt to democratize and open up their collection to allow multiple interpretations[114].

[113] Rice, « The Necessity of the Arts in a Time of Pandemic: How the University of Wisconsin–Madison is Responding ».
[114] Shehade et Stylianou-Lambert, « Virtual Reality in Museums: Exploring the Experiences of Museum Professionals », 1.

Being aware of the exhibition space is crucial in creating an art exhibit to maintain the public's visual attention. A visitor's experience is primordial in the success of an art exhibit, yet it is important that the curator facilitates this task in presenting the exhibited art pieces with the space that is made available to them. As stated by Jakub Krukar, "where spatial layout is one of the most powerful curatorial tools available, attention and memory can be measured as a means of establishing whether or not the gallery fulfils its function as a space for contemplating art[115]." This visual attention, Krukar mentions, could be described as the way our visual perception is being guided and the mechanisms that guide our exploration within the gallery space. On a similar vein of thinking, Krukar explains that,

> even during a free exploration of an art gallery, visitors must still use their spatial abilities to orientate themselves in space. If this was not true, their movement would be random, with no mechanisms helping them to avoid revisiting rooms, to explore new spaces, and to find one's way out. Viewing art in a museum must be inextricably bounded with acquiring knowledge about spatial location of certain objects and the gallery's layout.[116]

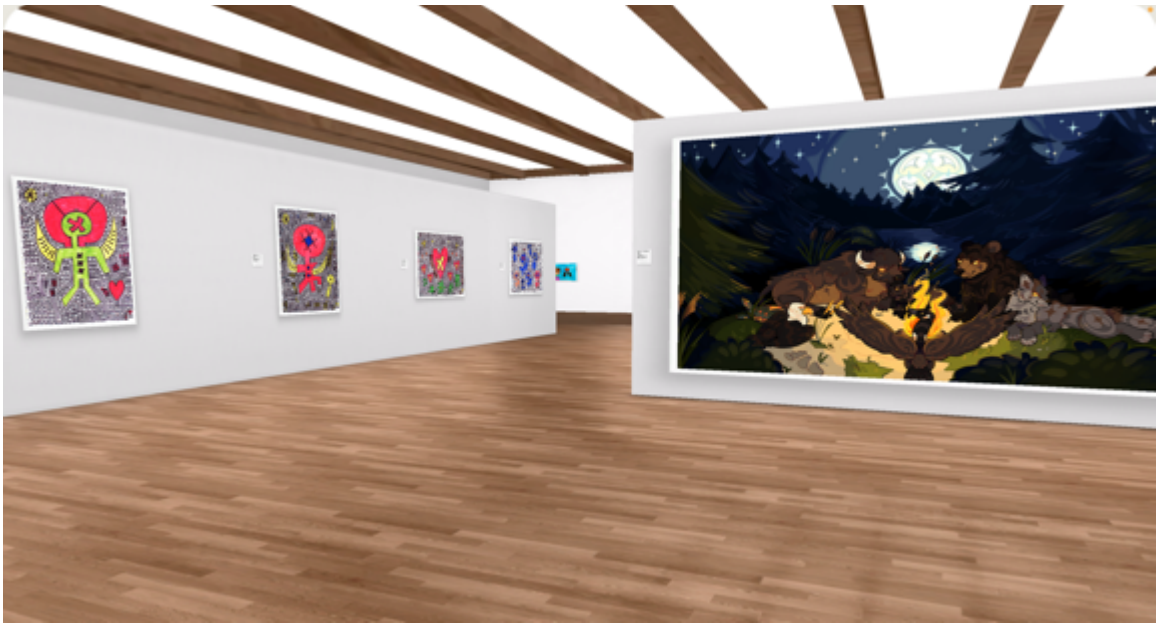
When it comes to creating a gallery space in the metaverse, the artists and curators are not only involved in its layout, but also in the ways in which it is convenient for users to move around. However, this freedom is attained in many ways, such as offering artists a certain flexibility in the customization of their exhibition environment. It is important here to consider

[115] Krukar, « Walk, Look, Remember: The Influence of the Gallery's Spatial Layout on Human Memory for an Art Exhibition », 181.
[116] Ibid, 181.

the absence of rules of physics in virtual galleries, which takes away the limitations usually imposed on curators and artists in exhibition contexts. In art galleries in the metaverse, sculptures can float in mid-air as they do not require the need to be attached to a fixture attached to the ceiling. More precisely, as O'Heir states it,

> […] there are no rules. So, artists and curators that work in the platform make Art Gate shine. Those are the ones that are going beyond the normal mediums and thinking outside the real IRL. I would say from a curation standpoint, it's the curators and gallery owners that are in Art Gate that really stand out. They push our game beyond normal ways. Like some people will just like upload an image and put a video on the wall or something like that. That's a video. But we've had galleries that make a video like 1000 feet tall. So, they have this giant video playing on the wall. And it feels more and more interactive and exciting, and it really makes the artwork feel large, and it brings the room together[117].

[117] Baillargeon, "VR Art Galleries and Museums in the Metaverse."




"Angel"
Edward K. Weatherly
2001
55" x 70"
poster board, markers, pencil crayons, and wax crayons

Screenshots taken from the ‘Alien Realities’ by Edward K. Weatherly

However, although artists are given some creative freedom, it is also important for the developers to balance this sense of freedom in a templating system for a matter of performance. 3D virtual world platforms such as *Roblox* or *Sandbox* offer users the possibility of creating and building worlds where the only limitation is their imagination. Such a practice obviously cannot be possible in an app like *ArtGate VR* where there is a polygon limit, in accordance with the capabilities of the game engine and the hardware at hand. Nevertheless, as discussed by O’Heir, the developers found a solution to address this growing desire for personalized creation on the part of artists.

> We have customers that want to have a fully custom space. And they want to be able to put a wall here and modify the space. And we’ve kind of set a bit of a balance where we have a template system. But you know, things are starting to get more and more open […] Recently, we’ve started to accept custom spaces and our team will

customize it for them and they pay us to do it. And we're slowly building out the tools to it a lot easier. But we still want to keep things within balance[118].

Following these comments made by O'Heir, it is interesting to notice a certain propensity to give users (and artists, in this case, due to their creative involvement) a somewhat guided sense of freedom. This tendency is also further explored in guided tours and also in choices. Indeed, O'Heir's acknowledgment of the need for performance-oriented guidelines demonstrates a nuanced understanding of how to balance user autonomy with technical constraints. The spect-actor concept comes to the forefront as the developers prioritize providing a certain guided sense of freedom in specific areas. This intentional approach recognizes that users, while seeking individualized experiences, may benefit from a curated framework that guides their exploration. The platform's commitment to customization within defined parameters aligns with the spect-actor features, allowing them to shape their virtual experiences while maintaining an overarching structure for coherence and performance optimization.

3.2.4. Immersion Through Freedom of Action

The *ArtGate VR* experience aligns with the spect-actor concept to a considerable extent, as it allows users to actively engage with the virtual art gallery space. However, it's essential to examine whether simple exploration of a space is sufficient to constitute a spect-actor experience. As previously discussed, regarding spect-actorship, freedom of action is a

[118] Baillargeon, "VR Art Galleries and Museums in the Metaverse.".

particularly important aspect of the concept I am suggesting in the present dissertation. In fact, exploratory freedom is at the center of the *ArtGate VR* experience. Upon entering the lobby, the user is neither guided nor prompted to follow a specific planned visit, as mentioned earlier. The user is invited to roam around and browse the different choices that are offered to them. When entering the lobby, as shown in the screenshots below, I found myself finding pleasure in the simplicity of spending time standing, looking and walking around the environment while listening to the relaxing Zen music and contemplating the displayed art pieces through individual exploration and interaction. While not explicitly discussed, ArtGate VR aligns with the spect-actor concept by considering different visitor types. Understanding casual, cursory, and examining visitors highlights the importance of tailoring the virtual art experience to diverse user preferences. In this regard, the developers wanted to focus on such a habit for the user experience.

> So, in a gallery context, I think, you need to have as much freedom as possible, because everyone experiences art in their own ways. We are also having the ability to experience it on your own, experience it with others, choose who you want to experience it with... it's really important, because everybody defines their own experience with what is their joy, right? Like, I sometimes will go into ArtGate just by myself and like, don't want to time anybody around and I just want to experience the artwork. Because it's therapeutic[119].

[119] Baillargeon, "VR Art Galleries and Museums in the Metaverse."

In the same train of thought, studies and research have recently been made regarding the question of whether users prefer being guided or having exploratory freedom in a VR context. The literature indicates that active exploration in VR coupled with exploratory freedom increases agency and user engagement and presence, and as well through personalization of their own experience[120]. However, it is important to mention that having guided tours in museums and art galleries is key to a more pedagogical approach[121], but it is also important to consider the different categories of visitors attending exhibitions. The range of individuals who visit museums is incredibly varied, and there isn't a one-size-fits-all classification that universally applies, as seen from several research conducted in the field (Hooper-Greenhill, 1999; Dean, 1994; Serrell, 1996; Veron and Levasseur, 1991; Umiker-Sebeok, 1994; Gardner, 1996 and McCarthy, 2006). The categories defined by David Dean seems to align more with the VR art gallery research object presently studied. Dean classifies museum visitors in three simple categories:

- Casual visitors: they are visitors who are there to pass the time and move into an art gallery very quickly. They are also not particularly involved in an exhibition and do not show particular interest in seeing details.
- Cursory visitors: they will stop and examine and artwork very closely if it triggers their curiosity and interest.
- Examining visitors: A minority of visitors who will examine exhibitions with much more detail and attention. They are learners who will spend an abundance of time in

[120] Cairncross et Mannion, « Interactive Multimedia and Learning: Realizing the Benefits ».
[121] Najbrt et Kapounová, « Categorization of Museum Visitors as Part of System for Personalized Museum Tour ».

> galleries to gain knowledge by reading the text and labels, and closely examine the artworks. They are also regular art exhibition visitors[122].

As previously discussed, it is important not only to consider the different types of visitors attending art galleries, but also to give them the opportunity to customize the way in which they want to experience their visit. In recent research on the question, Andrea Bonsch studied users' preferences of either being guided by an embodied conversational agent or having exploratory freedom in an immersive virtual museum environment without considering the exhibition's theme. Results concluded that a compromise between both represents the most judicious and promising direction to pursue in this context. As stated,

> Companion needs an improvement by optimizing walking as a 'with.' More group formations in addition to abreast are required while developing strategies to reintroduce the ECA when being temporarily out of sight. Considering visiting styles of users might support anticipating the route to be taken[123].

More precisely, regarding the possible solutions to consider in relation to the user experience and the nuances pertaining to the amount freedom being given,

> users should be able to influence the structure of their experience to a certain degree, while the ECA ensures that no critical information is missed. In the case of the

[122] Dean, Museum exhibition theory and practice.
[123] Bönsch et al., « Being Guided or Having Exploratory Freedom: User Preferences of a Virtual Agent's Behavior in a Museum », 7.

museum, users may be guided from room to room by the ECA to deal with the topics in a structured way, while exploring the rooms themselves in an accompanied fashion[124].

These different variations of freedom in VR experiences and the changes they cause to the type of personal agency that may result in higher user investment, involvement and engagement is worth considering while studying VR experiences based on their spect-actorial approach.

3.3. *Belongings VR* (Carol Silverman, 2021)

3.3.1. Description of the Experience

Told from the perspective of her daughter – Carol Silverman, *Belongings VR* is a 6doF interactive VR experience that delves into the story of Ellen Rauh, a young girl torn from her home in Germany at twelve years-old and sent to a Nazi internment camp during World War II. Fortunately, she will later be saved and brought to safety to New York City by her uncle. After living a quiet life in the United States after surviving the horrors of internment camp, this little girl, now a woman, became a mother of two and an accomplished and prolific artist working across mediums who produced ceramic and textile art. After experiencing so many hardships in her early life, she never mentioned a single word about her painful childhood to her own family. After disappearing slowly into dementia in her sixties, the secrets of Ellen were never

[124] Ibid, 7.

exposed to her family, keeping for herself her horrific childhood memories to herself forever. After her passing, Ellen left her belongings to her children without a single meaning behind them. As mentioned by Silverman,

> I made *Belongings VR* as a way to work through the posthumous mystery of my mother, who was deported by the Nazis as a Jew but owned a book called "Keep A True Lent" from 1953. Among her things, I found a silver filigree six pointed star necklace and a tiny statuette of a praying Mary she had kept by her bed. She was my closest relationship in life. I thought I knew her[125].

Belongings VR is directed as an immersive memory box that uses the medium of VR to bring an embodied immediacy to one woman's life story. The user interacts with Ellen's personal photographs, documents, artwork, and possessions in an intimate space where time present and time past coexist in an interactive biography. The piece is described as a speculative autobiography since Silverman was not aware of any of the signification behind her mother's belongings. Her memories were adapted by connecting them to the items displayed in the experience, and by 'speculating' on the meaning behind these family treasures. Her mother's belongings, as described by the director, "became their road map to filling in the blanks of her life[126]," an undertaking that will also be experienced by the users throughout the piece. As users, we learn through an immersive and interactive VR piece, along with Carol Silverman, about the multiple lives and the story of a woman who are just waiting to be discovered.

[125] Silverman, « Artist Presentation ».
[126] Silverman, « Artist Presentation ».

3.3.2. Feelings and Thoughts about the Experience

At first, the setting of *Belongings VR* appears to be very rudimentary, only composed of walls with items inserted in them as if they were resting on shelves in a bookcase. The user is surrounded by these walls that are situated in carefully chosen locations meaningful to the different avenues of the protagonist's life. The user is placed right at the center of these walls in order for them to physically interact with every item. Users are prompted to interact with these personal objects that, once touched, trigger a narration by Silverman. By using the controllers as virtual hands, these items can be picked up, held close, manipulated, and experienced. Some of these items such as projects or radio can play family home videos or music from specific eras. The experience is divided into nine chapters (or scenes), each of which is dedicated to important periods of the protagonist's life, namely her childhood in Germany, the train, the internment camp, the boat trip to New York City, her new life in New York City in the 1940s, up until the 1990s. The time for each of these chapters is limited to around three minutes. After a while, the environment shifts forward in time and the user is teleported the next chapter of the protagonist's life.

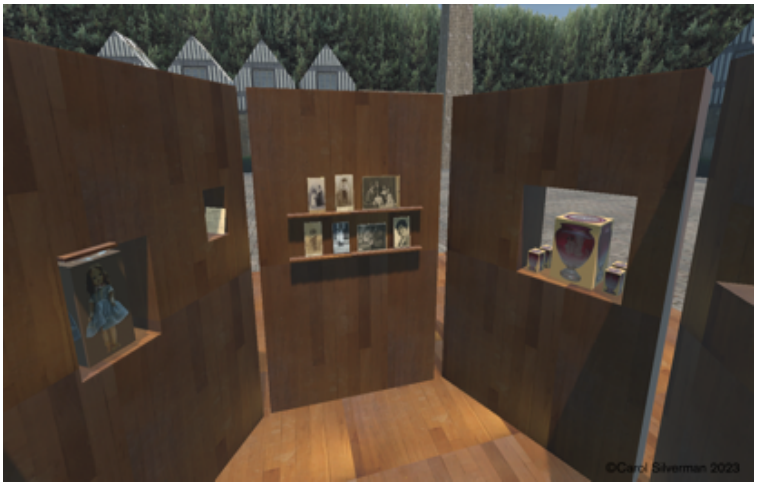
Although *Belongings VR* is designed as a seated/standing experience, the proprioceptive and interactive possibilities of the piece strongly reinforce the sensation of presence and immersion, as well as the spect-actorial position. As I was in the piece, I wanted to interact with every item carefully placed in the shelves to learn more about the protagonist. At first, I thought specific items would trigger that effect and flash forward me in time, which made me choose the items very carefully. However, in an interview I conducted with Carol Silverman, she

confirmed that none of these items influence the time at all because each chapter is carefully timed. More precisely, as Silverman mentioned, “you can pick up anything you want, but you cannot stop time. Just like life[127].” Such an artistic choice sparked in me the desire to revisit the experience in order to interact with as many objects as possible and learn more about Ellen Rauh's exceptional and unique life. Moreover, such an approach gives *Belongings* a very interesting replay value, a characteristic that I would describe as unique to artistic VR experiences that do not rely on a defined and delimited story, at times somewhat confined, but rather on the various forms of user interpretations. In fact, *Belongings VR*’s most important characteristics is that it covers an entire lifetime, Carol Silverman’s mother’s lifetime, in VR. This entire life was carefully divided into different segments,

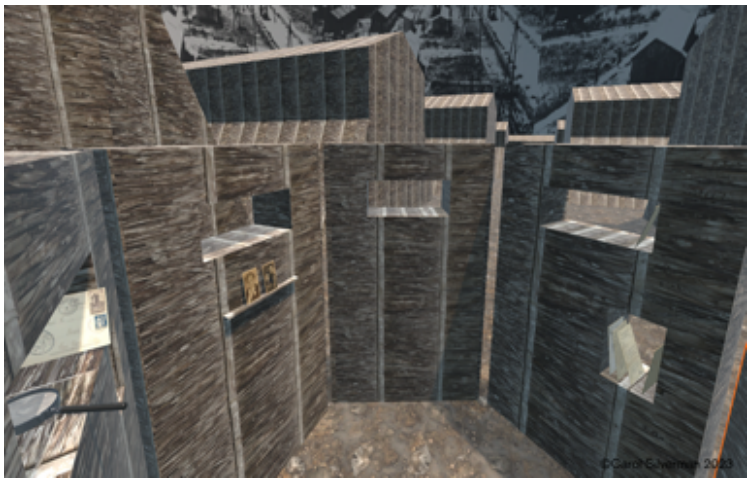
> Well, I chose to kind of divide it into periods. That made sense to me. There's the before: her childhood and before she gets deported, and then I kind of put together coming to New York and up to through young adulthood before she gets married. That's all one chapter. And then getting married, having children kind of growing into herself, starting to make ceramics, which was a really huge part of her life, making art. That's another chapter and then just being a mature person with children growing up and really devoting herself to her artwork. And then the kind of the last chapter where she's mastered her artwork, but then it is also going into decline. So that's kind of how I divided it up. Because those are the important parts of her life[128].

[127] Baillargeon, “Exploring Art, the Holocaust, Memories and Dementia in the Virtual Realm.”
[128] Baillargeon, “Exploring Art, the Holocaust, Memories and Dementia in the Virtual Realm.”

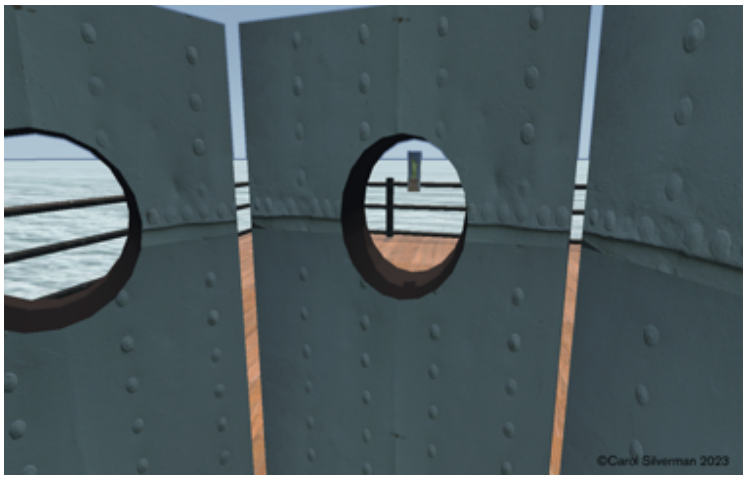
The piece's final chapters see fewer personal items being displayed, as a result of the protagonist's gradual cognitive decline into dementia when she starts to show impairments of memory. As Silverman mentioned herself, her mother's first signs of Alzheimer disease were very subtle, which she chose to translate very subtly in her piece. Contrary to other examples of stories about dementia and Alzheimer's disease as shown in films like the Canadian production *Away from Her* (Sarah Polley, 2006) where the story is told from the person that suffers from it, even though we are unable to truly know how the person feels. *Belongings VR*, on the other hand, tackles the subject from the outside while being told from her daugther's point of view who attempts to describe what her mother might have felt like while experiencing her slow decline. In a very literal way, Silverman chose, at the end of her piece to conclude the narrative by the slow disappearance of all her mother's belongings in a white void environment under a blue sky, leading to a gradual, slow fade to white to maybe symbolize Ellen Rauh's walking towards the light during her passing.



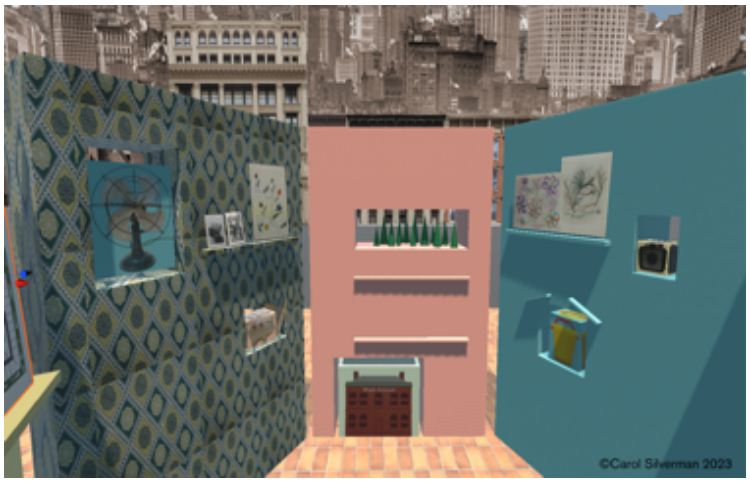
The childhood in Germany



The internment camp



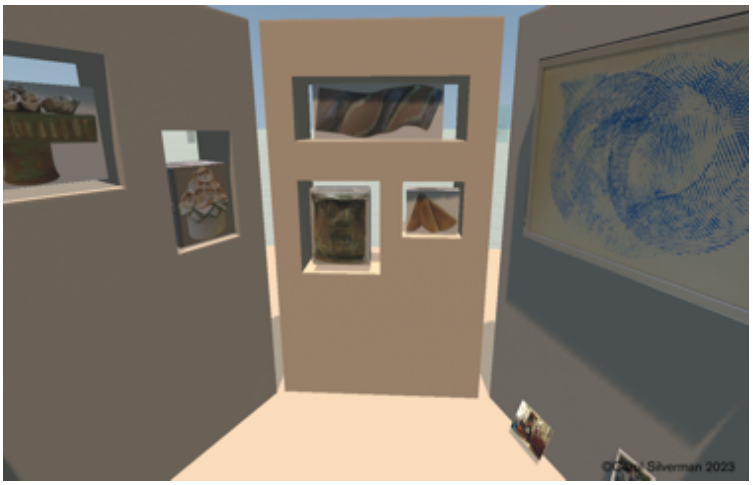
The boat trip to New York City



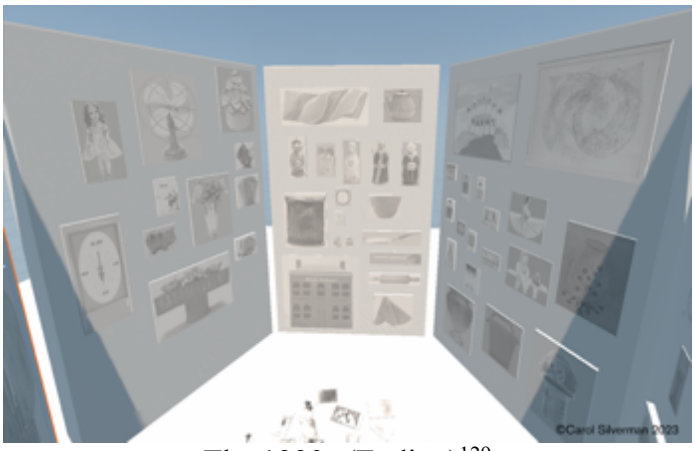
The 1940s

The 1960s (Upstate New York)

The 1970s (Upstate New York)



The 1980s



The 1990s (Ending)[129]

3.3.3. Memory Through Interactions and Feedback in *Belongings VR*

What distinguishes *Belongings VR* from the other artistic pieces I mentioned beforehand in this present chapter is the user's involvement through strong interactive activities. Although there is some interactivity in *After Dan Graham* when the user is prompted only once to activate the surveillance cameras in the Time Delay Room by the pressing of a single button, as well as in *ArtGate VR* when you access the catalogue of galleries or to play certain videos, these interactions do not really engage in more interactivity to stimulate involvement. While not all theories around presence in VR share the same vision, they all provide strong evidence that users must show a significant level of involvement and interactivity for presence to occur (Hartman et al., 2016; Shubert et al., 1999; Witmer and Singer, 1998; Stueur, 1992; Heeter, 1992). According to Witmer and Singer, engagement in a virtual space occurs when users focus their attention on stimuli or actively participate in interactive experiences, leading to a psychological state known as involvement. Moreover, when users invest greater cognitive attention in interacting with stimuli, their involvement in the virtual environment intensifies,

[129] All photos have been used with the permission of Carol Silverman.

resulting in an elevated sense of presence. There are many variants in defining interaction in a VR context. According to Steuer, interaction focuses on the user's action[130], while Heeter suggests that interactivity is better defined through the user's action *and* reaction with the virtual environment. The latter uses the example of users knocking on a door and hearing feedback sounds from their knock within the virtual environment[131]. Even though Heeter's definition of interactivity appears to be quite dated (1992) it nonetheless fits with *Belongings VR'*s direction towards the importance of getting feedback when performing any type of interactivity in its virtual environment. More precisely, the success of Carol Silverman's VR experience lies in user interactions and their feedback, allowing the piece to progress and come to life as it is intended. Without the results of these interactions, Silverman's artwork cannot come to life, and, most importantly, cannot immerse users in the speculative memories of her mother, a great survivor of the Holocaust whose memories are slowly fading like the closing 'fade to white' of the piece.

In *Belongings VR*, users are invited to discover someone's personal items and learn more about someone we don't really know anything about, just like Silverman and her brother – who initially they knew their mother well, who found a considerable number of items that belonged to their mother after her passing. A sense of belongings that was, according to her, taken away during the Holocaust,

> the title *Belongings* applies to both physical belongings and the idea of belonging. Because for all of the Jewish people in Europe, their sense of belonging to a society

[130] Stueur, « Defining Virtual Reality: Dimensions Determining Telepresence ».
[131] Heeter, « Being there: The subjective experience of presence ».

> was taken away. But the Holocaust I mean, that's like a really basic thing. The Jews in Germany, their citizenship was revoked. Legally, there were two different laws which revoked their citizenship. So, that's a big sense of belonging that's lost. And also, I think pretty much any society throughout history, the things that you own your belongings signify your belonging to a group could be an economic group, a social group, your car, your washing machine, your belongings are what makes you belong. So, it's all of those things[132].

Given the absence of information and shared memories from her mother about her past as a Holocaust survivor, Silverman sought to reclaim her mother's lost memory in a way by reenacting an entire life through personal items in VR. Through an abstract virtual and interactive exercise, she attempted to give meaning to the 'history-less' objects bequeathed to her, endowing them with speculative memory. This process allowed her to fill the mnemonic gaps left behind by her mother due in part because of her refusal to talk about her traumatic past, but also because of her dementia. In a more direct fashion, none of the stories we hear in *Belongings VR* of Silverman's mother from her teenage years in Germany are real. Everything that we hear are stories made up by Silverman. Users are, in a way, making new memories based on her speculative past as told by her daughter through interactivity. It is also worth noting that "experiences made in VR […] enter the more complex autobiographical memory, which comprises, inter alia, 'self-reflection, emotional evaluation and semantic process,' and influence body memory. This means that in VR someone else's experiences can become one's own

[132] Baillargeon, "Exploring Art, the Holocaust, Memories and Dementia in the Virtual Realm."

experiences and thereby also one's own memories[133]." In a similar line of thought, several studies have examined interactivity and memory. In 2016, Xu and Sondar found that higher interactivity increased memory recognition and recall of interactive content within digital media[134]. Another study conducted in 2001 that explored spatial memory in virtual environments, assessed participants' performance in scene recognition and path memory recall. While scene recognition showed no significant difference across exploration modes, namely with no guidance, path memory recall increased in active and passive modes. The snapshot mode exhibited greater error scores in total distance and path reproduction compared to active and passive modes. Overall, both studies concluded that higher interactivity correlates with better memory recall. Again, as previously mentioned, users are invited to make new memories based on speculations of past events by interacting with Ellen Rauh's personal items. As she mentions herself,

> Well, this is why I call it a speculative autobiography. Yeah, because I didn't know. And I did as much research as I could into the time. And I'm sure there's still much more research that I could do. But based on what I knew of my mother, and the research that I did, I honestly just made it up […] I think, to say that I made it up maybe sounds a little flip. But I guess I'm telling myself the story I wanted her to tell me[135].

[133] de Jong, « The Simulated Witness: Empathy and Embodiment in VR Experiences of Former Nazi Concentration and Extermination Camps ».
[134] Xu and Sundar, « Interactivity and memory: Information processing of interactive versus non-interactive content ».
[135] Baillargeon, "Exploring Art, the Holocaust, Memories and Dementia in the Virtual Realm."

3.3.4. Virtual Reality and Holocaust Narratives: Ethics, Representation, and Immersive Witnessing

There are some VR experiences that, similarly to *Belongings VR*, deal with the Holocaust such as *Anne Frank House VR*, which will be addressed in the next chapter on Educational VR. Besides *Witness: Auschwitz,* which is an unfinished project, various VR experiences, such as *Virtual Sobibór* (2016) developed for the Dutch Ministry of Health, *Auschwitz VR*, a different Auschwitz-Birkenau model developed by Polish Real Invented Studio used in Nazi trials, and *Journey Through the Camps* by Orta Interactive Studio, are either in development or, like *Witness: Auschwitz*, inactive[136]. As Steffi de Jong mentions in her article, "these VR experiences make users go through episodes that many of them will probably have seen in films or read about. Rather than presenting the memory of one specific witness, the VR experiences present a very generic and abstract representations of the fate of victims in general[137]." The website for *Journey Through the Camps* supports that idea about these experiences being more generic and abstract rather than using a more personal approach, going so far as to question the relevance of using immersive technologies instead of cinema or literature to address this subject:

> In many examples of educational virtual reality and interactive experiences, the content doesn't need to use this technology, and might have been more effective in traditional media. The imperative, therefore, for the production team is to create an experience that leverages the strength of a medium and examine content through this

[136] de Jong, « The Simulated Witness: Empathy and Embodiment in VR Experiences of Former Nazi Concentration and Extermination Camps », 71-72
[137] Ibid, 88-89.

> strength. One of the main draws of using VR is the ability to immerse the user, and allow him/her to feel the space viscerally. We assumed going into this project that these environments of the Holocaust would have their own energy and character, and would ground history with more physicality and understanding than any book or movie could. Our team wanted to bring that same feeling to the users in Pittsburgh, who would learn the history without having the opportunity to visit the camps in person[138].

In order to recreate the virtual extermination camp as authentically as possible, the makers of the then dropped VR project *Witness Auschwitz* have studied photos and construction plans and also spoke with survivors. Books and films would not be enough to understand what Auschwitz was, according to the developers who were also supported by the Union of Italian-Jewish communities. The Auschwitz Memorial, on the other hand, criticized the fact that the project was crossing a border[139]. Moreover, as mentioned by Auschwitz Memorial on Twitter, a person should not be tempted by VR to "feel what victims have felt[140]". Questioned on the reasons why choosing VR as the medium to tell her mother's speculative autobiography and after reflecting on how to tell her mother's story, Carol Silverman opted for VR as the medium to use for its interactive capabilities and also for its permanence. As she herself explains,

> Then when I found out the medium of VR, and being a person who thinks about storytelling in terms of objects like when you dress a set, it's there for the duration of

[138] « Journey through the Camps ».
[139] Gardner, « Does a VR Auschwitz Simulation Cross an Ethical Line? »
[140] Auschwitz Memorial (@AuschwitzMuseum) (2017, October 4) "Using VR to let people 'experience Auschwitz' crosses ethical red line. A person should not be manipulated into "feeling what victims felt," Tweet, October 1, 2017, https://twitter.com/AuschwitzMuseum/status/915553021484048385

> shooting. You could take six months to build a big set, like Chalky's Club in *Boardwalk Empire*, which took months. Or, you know, something that you dress for a day like on *Saturday Night Live*, you get one day, you have to do the oath, whatever it is, you do the whole thing. And then it's done. And then it disappears. And it's gone. And it lives on tape or on film forever, but the thing is gone. So, for me to have a set that endures forever, and where the set is the experience, the audience is inside the set in three-dimensional. All of that is what I thought about in making it and why I wanted to make this in VR. So, I found out about a medium that appealed to me to make it in. And so that's how it kind of came together[141].

As it is already widely known, due to its immersive nature, VR enables the creation of experiences that encourage users to feel a physical and emotional presence in a historical context—in this case, the Holocaust, whether by immersing them in a digital reconstruction of a historical space or by embodying the persona of a historical figure or a deceased person. Regarding Holocaust survivors, as Daniele Azara, the creative director of *Witness: Auschwitz* points out: "Witnesses from Auschwitz are disappearing because of age. Books are not enough, movies are not enough—we have to be there, and with VR we can be.[142]" As Steffi de Jong also stresses, "this remedy is found not in overcoming the focus on the witness in Holocaust memory but in turning the users into witness to the historical events themselves[143]." In the case of *Belongings VR*, users become what Caroline Wake has named a "tertiary witness" which is the notion made to highlight that most individuals (or users) encounter survivor testimonies through

[141] Baillargeon, "Exploring Art, the Holocaust, Memories and Dementia in the Virtual Realm."
[142] Gardner, "Does a VR Auschwitz Simulation Cross an Ethical Line?"
[143] de Jong, "The Simulated Witness: Empathy and Embodiment in VR Experiences of Former Nazi Concentration and Extermination Camps," 72-73.

different media. This concept supplements the conventional categorization of primary witnesses—those physically present at the events they testify to—and secondary witnesses, encompassing those who hear and ideally transmit the testimonies of primary witnesses to those who have not had the chance to listen directly[144]. Building on the concept established by Caroline Wake, it would be justified to propose the notion of 'speculative witness' if taking into consideration the case of *Belongings VR*. This approach could also be supported with the fact that Silverman allows freedom of action in her piece, which is at the center of the spect-actor concept. This freedom will allow users even more to make Ellen Rauh's memory their own, to personalize it, and to create new memories through the piece's speculative narrative. As previously mentioned, it is impossible for users to interact with every object and hear the stories behind them since each chapter is timed, which makes it even more personalized as users must pick the 'right' objects to learn more about Rauh's story. It is also important to mention that the VR experience is guided whatsoever as they would in films or in video games, for instance. Users are never prompted to choose specific objects since none of them are highlighted or feature visual cues. As addressed by Silverman,

> So, I went to Tribeca, we went to Sundance, I got to see a lot of pieces. And as soon as you start to experience a lot of VR, you see what's great about it, and what it has that nothing else has, which is that you're in a real space, and you can move around, and you can have things happening all around you. You know, you have all these opportunities, these affordances that people say, right? And I feel disappointed when I watch something […] like I think a lot of people are coming from film, and that's sort

[144] Wake, "Regarding the Recording: The Viewer of Video Testimony, the Complexity of Copresence and the Possibility of Tertiary Witnessing".

of the way they think about things. And I think when you're directing something in VR, you have to let go of the traditional film directorial impulse of controlling what the viewer is seeing and having complete control over your audience, I think you have to just let that go. Because it doesn't serve as well in three dimensions. So, maybe if your story is all over here, and somebody look back there, they miss part of the story. So, I wanted to make a story that could happen in 360, to give the viewer the opportunity to just be in a space and interact with our space completely. Where I've given them some direction, you know, they have to pick up things, but they could pick up whatever they want. Because I also hate when you're in a room full of stuff and like you're trying to pick stuff up and can't, and you're like saying, 'why is it here?' Or when they're like, 'things will glow.' Like, pick this up now! Okay. It's going to do something![145]

It is also important to mention that historical virtual environments in *Belongings VR* were rendered following observations of their real-life locations, while others were approached in a more abstract way – or maybe a speculative way. As mentioned in my correspondence with Silverman, she took some artistic liberties when creating the virtual sets:

- Scene 1 - Germany – abstracted-German looking town with 4 churches and a dense forest just beyond Tal. I wanted to give it a little stereotypical fairy tale flavor. Jews were not welcome in the fairy tale Germany was telling itself at that time. Ellen's voice-overs in this scene are the most closely tied to the objects themselves. She

[145] Baillargeon, "Exploring Art, the Holocaust, Memories and Dementia in the Virtual Realm."

talks about what the things are and her relationship to them. As the story goes on, she does that less. The objects trigger thoughts and reminiscences not always directly connected to the object you're touching. My intention is to show how she matures by the way she looks at her things and talks about them. Or doesn't.

- Scene 3 - Camp - this is Gurs. I modeled the buildings on the real ones. I took the surround photo from the Holocaust Museum website[146][147].

When discussing the ethics of making a piece about the Holocaust in VR, I believe it is simply important to tell these stories. More precisely, it is important 'to bear witness,' as a Holocaust survivor and author Elie Wiesel assigned himself: "Memory is for me what poetry was for Aristotle: more than History, it is she who holds the Truth. I know that she is indispensable to me. To write. To teach and share. Without her, what would I be? Without her, life has neither meaning nor destiny[148]." In *...et la mer n'est pas remplie*, the second part of his memoirs, Wiesel wonders: "As a Jew, I question the role of the Jewish writer: to be a voice to say what? To urge the reader to shed one more tear into the ocean? What should he express, when, and for what purpose? What story to tell? And to what audience?[149]." One could potentially answer Wiesel's question what Daniele Azara, the creative director of *Witness: Auschwitz*, mentioned that "to know one story is to know them all[150]". The Montreal Holocaust Museum website gives an answer to these same recurring questions about what story to tell and how? "How do we teach about the horrors of war? Why should we continue to pass on this

[146] Information gathered through an electronic correspondence with Carol Silverman on November 12, 2023.
[147] These scenes can be seen in the aforementioned photos included.
[148] Wiesel cited in Wright, « Elie Wiesel: L'écriture de la mémoire ». Freely translated.
[149] Wiesel, ... *et la mer n'est pas remplie*, 63. Freely translated.
[150] Azara cited in de Jong, The Simulated Witness: Empathy and Embodiment in VR Experiences of Former Nazi Concentration and Extermination Camps, 89.

historical knowledge? We could answer that it is simply out of a duty to remember[151].” As Carol Silverman addresses,

> I believe that if someone wants to tell a story that includes the Holocaust, I guess it depends on your piece. For me, I want to just keep it to the personal story of what happened to her. It's her story. And this is what happened to her. And there's plenty of research that anyone can do about Gurs, about that episode of October 22, where they just came and got everyone and took them to Gurs. You know, it's all kind of out there. And that's what happened to her. The thing that’s most successful is to keep to that and not say anything else. About all of the other stories that are not mine to tell[152].

3.3.5. Treatment of History

The Artistic VR experience *Belongings VR* provides a distinctive perspective on the treatment of history by intricately weaving the personal narrative of Holocaust survivor Ellen Rauh into an immersive and interactive VR environment. At the core of the piece is a commitment to personalizing historical narratives, immersing users in the intimate details of Rauh's life. This personalized approach is made possible through the utilization of VR technology, enabling users to actively engage with personal artifacts, photographs, and documents, fostering a profound connection with historical events.

[151] « Why Teach the History of the Holocaust - and How? »
[152] Baillargeon, “Exploring Art, the Holocaust, Memories and Dementia in the Virtual Realm.”

One of the defining features of *Belongings VR* is the concept of a "speculative autobiography," which becomes a pivotal element in the treatment of history within the VR experience. Developer Carol Silverman confronts historical gaps in her mother's life, utilizing speculation as a tool to bridge missing pieces, or as Peter Morris puts it, “Historians do not believe that their work is literally true, and certainly do not believe they are writing an immutable truth. Indeed, most philosophers of history have argued the opposite. As a famous historian pointed out, almost everything in history is a variable[153]” (1999). This approach challenges traditional historical narratives that rely on factual documentation, encouraging a more empathetic and imaginative exploration of the past.

The interactive exploration of history is a key aspect of *Belongings VR*, as spect-actors actively engage with historical elements within the VR environment. The ability to interact with various objects that trigger narrations encourages a dynamic relationship between the user and historical content, offering a personalized understanding of Ellen Rauh's experiences. This interactive dimension contributes to the redefinition of historical engagement within the digital realm through spect-actorship.

While *Belongings VR* affords users a degree of freedom in interacting with historical artifacts, the experience introduces limitations through timed chapters. These constraints mirror the inherent limitations of historical events and their impact on individual lives as Morris refers to them as “fragments that have been left behind[154]” (1999). The delicate balance between

[153] Morris, « The Specious Past: Reflections of a Film Historian in Canada », 162.
[154] Morris, « The Specious Past: Reflections of a Film Historian in Canada », 160.

freedom and limitation in the VR environment reflects a nuanced understanding of how history unfolds, and the constraints imposed by the passage of time.

The VR experience also prompts reflection on history as discourse, echoing the perspectives of scholars such as Peter Morris and his essay on the writing of history. The developers' viewpoint, translated into the VR narrative, shapes the users' understanding of history as a process of narrative construction. By inviting users to actively participate in the construction of historical meaning as spect-actors, *Belongings VR* positions itself as a dynamic contribution to the discourse on history in the digital age.

Beyond addressing historical gaps in Ellen Rauh's life, the VR experience serves as a means for Silverman to bridge generational memory gaps. The speculative nature of the autobiography allows for the reinterpretation and reconstruction of historical events from the past and the present, offering a poignant reflection on the subjective nature of historical interpretation and storytelling within the context of interactive VR technology. As Peter Morris puts it, “history is at least as much in the present and future as it is in the past; that history explores the current field of human possibilities in addition to something which is past[155]” (1999).

[155] Morris, « The Specious Past: Reflections of a Film Historian in Canada », 163.

3.4. Conclusion

Intrinsically connected to VR due to their interactive nature and to the freedom of action these abovementioned experiences possess, it is important to mention, as previously described in the presenter chapter, that they differentiate themselves from educational and narrative-based experiences. VR pieces such as *After Dan Graham*, *ArtGate VR* and *Belongings VR*, although interactive, appear to be 'less mediated', in other words, they include less artificial control over the user's experience. After analyzing the three abovementioned Artistic VR experiences, I argue that less mediated VR experiences offer more user agency, allowing greater control and influence over actions and experiences. Also, I discovered they aim for higher immersion by minimizing interruptions and constraints, prioritizing intuitive interactivity with open-ended environments such as *After Dan Graham* in which the ending of the experience depends on the user's decision and actions. I also argue that realism is further increased by reducing mediation, incorporating realistic physics and dynamic responses since, "inconsistent mediations emphasized the artificiality of the environment and so lessened presence"[156].

Moreover, during the course of writing the present dissertation, I had the chance of interviewing Thomas Wallner, who is a two-time Emmy Award and SXSW Interactive Award-winning developer and creator, as well as the founder of Liquid Cinema VR, a revolutionary gaze-triggered that allows filmmakers, journalists, advertisers and educators to create and distribute cinematic VR, and Jackknife XR, a groundbreaking remote-learning platform in VR and Desktop VR, During that interview, we discussed agency and freedom of action in VR and

[156] Brown et al., « The Effects of Mediation in a Storytelling Virtual Environment », 104.

the distinctions between the action when a user is bodily reacting versus the elements that elicit deep emotions. As Wallner argues,

> I think, perhaps, we elicit deep emotion in that sort of translate state in a linear medium. Because we're not clicking on something, we're not making intellectual decisions. We're not weighing intellectually, you know, should I take path A, should I take path B, or should I take path C? Blue pill, red pill, right? Then the transcendence breaks down, at least for a moment. And if it breaks down more and more, because we have more and more agency, the less and less we'll be in a position to sort of feel those things in a way where it just works upon us[157].

Wallner's point highlights a crucial aspect of Artistic VR: deep emotions are more likely to be evoked when users are fully immersed in the flow of the VR experience. In other words, absorbed or immersed in the content, possibly akin to a state of deep engagement without the distraction of active decision-making, which is at the core of the Artistic VR experiences discussed in the present chapter, and more precisely, *After Dan Graham*, which I defined in the introduction as the "catalyzer of my research." Following that assessment, I argue that in linear, less mediated experiences such as the ones analyzed in Artistic VR, there is a moment of transcendence, where emotional impact can be more profound because the user is not actively making intellectual decisions. However, if there would be an increase in user agency, this transcendence might break down, diminishing the emotional impact, as the audience becomes

[157] Information gathered through my Dr. VR podcast episode with Thomas Wallner on December 19, 2023. Link: https://spotify.link/jXEKUHLNiJb

more focused on intellectual decision-making rather than experiencing emotions in a more passive, linear manner.

As we delve into the realm of Educational VR in the next chapter, a shift in the dynamics of spect-actor engagement is to be anticipated. Unlike the open-ended, less mediated experiences in the realm of Artistic VR, Educational VR often operates within more structured and deterministic frameworks. The questions surrounding spect-actorship will take on a new dimension, exploring how educational objectives and predefined learning outcomes interact with the agency and immersion of the user, and, most importantly, how much they may influence the educational process of users.

The experiences examined in Artistic VR have provided an important foundation for understanding the interplay of agency, immersion, and emotional impact in virtual environments. The forthcoming chapter on Educational VR aims to extend this understanding, shedding light on the unique dynamics that shape spect-actorship within educational contexts. By bridging the insights gained from both realms, we strive to contribute to a comprehensive understanding of the multifaceted nature of VR experiences and their implications for spectator-actor engagement.

4 Educational VR

4.1. Introduction

Inextricably linked to VR due to their interactive nature and the unparalleled freedom of action they offer, Artistic VR experiences, as explored in the preceding chapter, distinguish themselves from their interactive elements as they present a 'less mediated' quality, minimizing artificial control over user experiences, while giving a manifestation of spect-actorship in its purest form. Through an analysis of these artistic VR encounters, it becomes evident that reducing mediation enhances user agency, granting greater control and influence over actions and experiences. Furthermore, the pursuit of heightened immersion in less mediated VR experiences is characterized by minimizing interruptions and constraints, prioritizing intuitive interactivity. Notably, *After Dan Graham* introduces open-ended environments where the conclusion depends on user decisions, fostering a unique form of agency. Realism is heightened by reducing mediation, incorporating realistic physics, and dynamic responses. This departure from inconsistent mediations confirms the idea that excessive artificiality diminishes the sense of presence.

An integral perspective on agency and freedom of action in VR emphasizes the importance of flow for evoking profound emotions in VR experiences. The notion is that active decision-making may hinder the necessary transcendence for a deep emotional impact. This insight becomes particularly relevant as we transition from Artistic VR to Educational VR in the subsequent chapter, a genre often characterized by structured frameworks and predetermined learning outcomes where the dynamics of spect-actor engagement are set to

evolve in a different direction. The forthcoming exploration delves into how educational objectives intersect with user agency and immersion, offering insights into the nuanced interplay within these more structured VR environments. The foundational insights gained from the realm of Artistic VR serve as a springboard for the upcoming chapter on Educational VR.

4.2. *MLK: Now is the Time* (Limbert Fabian, 2023)

4.2.1. Description of the Experience

To commemorate Dr. Martin Luther King's tragic passing in 1968 and his famous speech "I Have A Dream," the Time Magazine's immersive journalism branch called 'Time Immersive' teamed up with two-time Emmy Awards winner filmmaker and developer Limbert Fabian to create *MLK Now is the Time,* a VR experience made for the Meta Quest 2 HMD that tackles the key themes explored in Dr. King's speech and highlights systemic inequities that still persist in today's society. Through first-person stories and virtual interactions, the piece immerses the users you into a thoroughly modern interpretation of a contemporary March on Washington. This highly interactive experience uses a technology that plunge users even more into its virtual environment and that is too often neglected in VR: hand tracking. By letting the controllers aside, users are now able to move their hand freely as they normally would in the tangible world and grab virtual elements in order to physically interact with the story and to further the narrative. The experience examines three topics addressed in Dr. King's speech: housing, policing, and voting. Audio from the "I Have a Dream" speech is layered throughout, culminating in an experience that most importantly educates users, and also depicts the

continued legacy of Dr. King's words through modern-day protests, which also helps to further immerse users in the context the experience.

Artwork by Limbert Fabian that inspired virtual interactions in the VR piece.

4.2.2. Feelings and Thoughts about the Experience

The piece starts with footage of the day of Dr. King’s speech in order to give deeper historical background to piece and its nature. As the newsreels are fading out and as the speech is still being heard in the background, a piece of raw rock explodes into pieces to unveil a bust of Martin Luther King Jr. As the explosion pushes you away from him, as we hear the passage, “With this faith we will be able to hew out of the mountain of despair a stone of hope,” which inspired the creation of Dr. King’s Memorial, a granite statue called the ”Stone of Hope.” As explains Limbert Fabian,

> I thought that one way to start the experience was to actually see Dr. King, you know, his bust, kind of explode out from a raw rock, and the propulsion of the explosion actually pushes you away from him […] And then you're kind of like, you're working your way up to back to the statue. The raw idea was that you've been pushed away and the pieces of him you're collecting along the way to get back to the speech. And that's what we're hoping to do[158].

This moment is the turning point of the piece. From that moment on, the objective of the experience is to collect the pieces of the "Stone of Hope" along the way to get back to the speech Dr. King delivered 60 years ago, and to earn the message by going through history through the stones that can be grabbed to transport the users to these stories. As you move forward in the narrative while traversing the three parts of the experience, the user earns as a piece of stone each time you complete each part in order to rebuild the full statue to get to the reward, which is the full speech. The three parts, built as vignettes, consist of issues pertaining to racist housing, and voting and policing policies to bring attention to the ongoing struggles for justice, equality, and freedom in our modern society and its racial inequalities. It is important to mention that these entry points in conversation in *MLK: Now is the Time* are enhanced in an interactive experience that uses a hands-free mechanic and tracks body gestures to move the player throughout the virtual environments. In order to understand the different subjects that are dealt with in the piece, users are invited to interact with role-play scenarios and simulation experiences to enhance not only the sense of presence, but also to help users understand and

[158] Baillargeon, "VR Documentary, Racism and Embodied Interactions."

“see a point of view of others' lived experience, but as themselves. The takeaway is that your experience is shared[159].”

The first scenario that is being suggested is a board game about racist housing called “Redlined!” The goal of the game that you play with an avatar is to earn as many coins as possible. We both start with the same number of coins, and whoever earns the most coins at the end of the game, wins. The board game, which borrows its layout and rules from Monopoly, is a stock game to show the inequalities and entrenched history of redlining. As users start to play the game, they are being given a black pawn as a metaphor to show that they are ‘embodying’ a black person, while the opponent has a white pawn, in this case, ‘embodying’ a white person. As the board game evolves, your pawn starts to lose points and privileges in the game for being ‘redlined’ while attempting to buy a house or to move to a nicer neighborhood. On the other hand, the white pawn always ends up getting the best results, more privileges, and finally, winning the game. As stated by Fabian in an interview I conducted with him, while taking into consideration the technical limitations of the Meta Quest 2 HMD, which is the platform and the technology for which it was developed for,

> what's the easiest thing the audience can do given the limited range of motion and the limited ability with the headset? We worked around, you know, a board game, for example, that feels like you're playing against another opponent. So, that's a way to sort of learn with that specific subject. That subject happened to be housing. We used, for

[159] Now is the time — LimbertFabian.com (s. d.). https://limbertfabian.com/Now-Is-The-Time

example, the idea of almost like a monopoly, like stock game to kind of show you the inequalities and the entrenched sort of history of redlining. That's a very dense topic to have a conversation about. But through the medium of playing a board game in VR, and having you feel like you're participating in a board game like that, then that felt like a lighter weight to engage that conversation[160].

Screenshot taken from the 'housing' segment in *MLK: Now is the Time*

The second vignette covered in the piece is policing. Of all the segments, this one requires the less interactions, but its content is the most immersive and unsettling. The user embodies a man of color who is sitting in his car while being pulled over on the road by a police

[160] Baillargeon, "VR Documentary, Racism and Embodied Interactions."

officer. As the scene goes, the voice-over narration provided by the character's father the user embodies, which sets the tone for this vignette on policing:

> There will be a time when you get pulled over by a cop. I'm not telling you this to scare you. You are my child and I'm just trying to prepare you for what might happen. You are smart and powerful, and through the wrong eyes, that, and your skin color, can make you appear as a suspect. So, when you do get pulled, remember that you are getting home to me safely is all that matters[161].

As the narration continues, a police officer walks towards the driver's window and starts addressing you, pointing his flashlight directly to your face. As the police officer tells you that he is going to run your license plate, he tells you to keep your hands on the wheel. At that precise moment, the car's steering wheel is highlighted and indicating you that you can now interact with it. There are only two very meaningful possible interactions: to either keep your hands on the steering wheel or to release it. The choice belongs uniquely to the user. While the other officer leaves to run your license plate, another officer is looking at you and blinding you with his flashlight through the passenger's window. If you are to move the slightest bit, the officer will raise his voice asking you what you are trying to reach. As your virtual heartbeat is pounding and accelerating, you can hear the character's father telling you to breathe that your hands are strong, that you got them from your grandfather and that it is important to keep those hands on the steering wheel because they can be seen as a weapon. He is also telling you keep your voice clean and direct, so you do not want to give them any reasons to respond negatively. Once the vignette is completed, the VR experience prompts you to raise your fist, mirroring the

[161] Dialogues taken from the VR experience *MLK: Now is the Time* (Limbert Fabian, 2023)

Black Lives Matter movement, in order not only to move on to the next segment, but to protest against such a situation. As Fabian explains,

> with policing, I thought that it really isn't about showing you the good or the bad. It was just about placing the audience in inside the vehicle and letting your own brain sort of come with an assumption of what it feels like to be in that moment. Even though I was framing it with a conversation, at the end of the day that this is about people. The driver comes from a family, he has a father, he has a mother, she has a mother, she has a father. There is a person inside that vehicle and they're bringing with them their experiences. And even though we have a narrator kind of speaking to you, from that point of view, at the end of the day, I wanted you to feel like what it was potentially, like, whether you had a similar experience or not, whether you ever been in that situation, it's important to see that for a moment, there is a human person behind that wheel, whether or not they have done something illegal. It can be very terrifying for a lot of people. So, again, trying to take that from a place from the inside out where the audience felt like first for a brief moment that they might have been there. Or they might know someone that might have been there, this might have been what they felt like or feel like, but at the end of the day, it's also happening to you because of the experience we crafted[162].

It is important to mention here that, as immersive of a medium VR is, "[it] can't 'put you in' another's body, but it can produce spurious feelings of empathy as knowledge."

[162] Baillargeon, "VR Documentary, Racism and Embodied Interactions."

(Nakamura, 2020)[163] Even though I do not identify as a black man, and I would never pretend that I was able to 'live' the experience of being pulled over by a police officer while 'embodying' a black man, this segment on policing was able to make me understand that I would not want to live such a stressful situation. Most importantly, I really had a strong feeling of seeing a point of view of somebody else's encounter, which was a very powerful experience. In relation to this specific moment in *MLK: Now is the Time*, Limbert Fabian and I discussed the ways in which his VR experience helped me understand the concepts he was trying to convey through spect-actorship,

> **Justin Baillargeon**
>
> Because, you know when you put [spect-actorship] into perspective with documentaries, even though you're being guided into some sort of a narrative, you're also involved, physically involved, emotionally involved. And you're being basically told stories, and you're being given information, vital information for us to understand what the developer is trying to tell, which you have done wonderfully in your experience. But also since you're physically involved, it becomes even more organic, you know. Everything becomes more evident and everything kind of makes sense. And since you're involved in six degrees of freedom, […] I wouldn't go as deep as living it, but more understanding it,

[163] Nakamura, "Feeling Good about Feeling Bad: Virtuous Virtual Reality and the Automation of Racial Empathy." 54.

Limbert Fabian

Understanding it. Yes, yes, I think that's exactly it, to understand. Understanding is way more powerful than going, ‘well, I lived it.” Well, you did a thing that you remember doing. It was a VR thing. But I'm understanding it, it was framed in a way that gives you some tools to understand the material it’s really powerful and useful in this conversation.

[…]

Justin Baillargeon

Yeah, and I think, you know, taking into consideration again, the different backgrounds of people who are going to try the experience, it really, really helps understanding these things. And that's what we need to know and understand. It is for us to try and do our best to change society as much as we can.

Limbert Fabian

Yeah, definitely. You know, I think someone asked me, "Why is there a narrator telling you, as if a parent is talking to you at that moment?" I think it was important to also understand just some simple basics, like, you haven't done anything wrong. We don't know what the officer does, he might have had a bad night. We don't know the situation of the other person on the other end. We're not saying that person is a bad person. We're just saying we don't know the situation. And regarding the situation, know that you, you know, you're okay. Take a moment to breathe and center yourself. Just consider

yourself being there for a moment and letting that sort of play out from that point of view, as opposed to coming in with a litany of ideas like, "I don't like police officers. I don't like the way I'm treated like." And you come loaded with this thing and all of a sudden, the scene plays out very differently because you've got a preset set of ideas. You know, I was trying to strip it down to a moment like this, let's try to do these things as level as they are. But this is the reality of the moment. Just take a moment, and breathe, and just let it sit for a second, and then see what happens.

[…]

Justin Baillargeon

And it was a lot of fun. Not only was it a lot of fun, but it really helped me understand the message you were trying to convey through your experience. And you did it in a very powerful way. And I was really able to really grasp and understand the concepts. You know, even if you say this moment during the voting segment, is like a little over the top video game, I think it was very effective, because I felt I was not only emotionally involved, you know, by trying to understand what the experience was telling me or teaching me rather, but because I was physically involved. And, like you mentioned, voting is also a physical involvement, you have to go there, and sometimes it's a little too far from your house, you know, and waiting in line. Of course, there are some limits to virtual reality, you cannot do these things. But I feel like just prompting the user to have some sort of a physical thing to do really helped.

Limbert Fabian

Absolutely, it completed it, and I think that makes us a successful VR experience. Again, casting the audience and making them feel like they're doing a thing. You know, why is, you know, a plank experience in VR, so thrilling and real is because you completely believe that you are one thousand feet up above the ground, and you may fall. So the simplicity, the simpler we can make that easier, I think it is to have the conversation. And so two things that allowed us to get to there, were, number one, the ability to do hand tracking with the headset. Fully committing to that and getting rid of all devices and all controllers was a really big moment for the project. Now, that really doubled down on the physicality, like, this is me, I'm here, these are my hands, right? This isn't a character replacer or an avatar, something that's happening in space that happened or we animated. I'm causing this and I thought that was really, really wonderful. And the headset really delivered on that ability. And then, you know, as we're having this conversation we're talking about, well, you know, why so heavy handed with policing. And you know, why this conversation about housing, and, you know, this idea of voting, and using Dr. King's voice, as the narration for those moments, or the Keystone for each one of those topics is just to tell you, by the way, he was saying this in his speech. He's actually telling us, 'We need better practices. We won't stop until this change. We can't stop until this change.' And I wanted to say, 'Hey, just waving our hands over here. A lot of these things are still happening.' And we were not going to stop, you know, telling the world and telling the American Hey, that this is not okay. And we won't stop. We won't stop gathering. We won't stop, you know, fighting for the quality that we all deserve. As Americans. I think that was interesting

is that make sure that this wasn't the material wasn't being made up. The material was right in front of us. It was those words by Dr. King that. So that helped us craft those moments[164].

Screenshot taken from the 'policing' segment in *MLK: Now is the Time*

The last segment of the VR piece is dedicated on voting. Immersed in an environment that evokes a courthouse, the user is asked to partake in a 'simple civic duty.' However, *MLK: Now is the Time* challenges the American democracy, while promoting a society where citizens effortlessly fulfill their civic duty in a society free from obstruction or suppression. In this specific vignette, the message advocates for universal civic duty voting, inspired by historical movements to expand voting rights across diverse demographics by calling for legislative and administrative changes. It also addresses the decline in public trust by breaking the cycle of

[164] Baillargeon, "VR Documentary, Racism and Embodied Interactions."

citizen withdrawal, fostering a closer connection between citizens and governing institutions. Acknowledging challenges, the statement highlights positive reforms in certain states, such as automatic voter registration, same day voting, early voting opportunities, and mail ballots, which have successfully increased participation and garnered citizen support[165].

This segment on voting not only proved to be highly engaging because of its immersive qualities, but also significantly contributed to my comprehension of the message the experience was trying to convey. In parallel with the Artistic VR experiences analyzed in the previous chapter, it is important to highlight how Educational VR engages users and provides more freedom to learn, thereby elevating the spect-actorial experience. Similar to how children are more prone to learning while playing (Elkind, 2008)[166],the approach in *MLK: Now is the Time* was notably impactful, allowing me to thoroughly grasp the underlying concepts about voting in the United States based on the circumstances I discussed in the previous paragraph. Even if one might perceive the voting segment as somewhat reminiscent of an exaggerated video game, I found it to be remarkably effective. As a user, you are prompted to try to grab a voting ballot that is floating in the air, a metaphor on how difficult and, often times, inaccessible it is to certain people to access voting services locations. While doing my best to grab the floating ballot in this virtual courthouse that seems to be collapsing, was a very interesting metaphor of a society that is falling apart. The interactive nature of the experience, wherein I was not only emotionally engaged, but also physically involved, mirrored the essence of the voting process itself. As the segment pointed out, voting entails a tangible, physical commitment, often

[165] "Lift Every Voice: The Urgency of Universal Civic Duty Voting."
[166] Elkind, "The Power of Play: Learning What Comes Naturally."

requiring individuals to travel considerable distances from their residences and endure waiting in line. As discussed by Fabian,

> We thought it would be interesting if the simple act of trying to grab a floating ballot that's flying around you to try to grab it and cast it before everything crumbles around you. Even though that feels like an over-the-top game. The metaphor of it is not that easy to just go to vote, and the laws that are sort of being entrenched in our governments, it may be making even more difficult for others to do that. So hey, go make a difference! Go vote! Yeah, I want to, but I can't because of the lines, because of ID issues, because of a million other things that are hindering me to vote. Just kind of feel like that's not as easy to say. So, the simplicity of just dodging your hand just missing the ability to vote felt like a really fun way to say a bigger thing and that's important at the end of the day[167].

Screenshot take from the 'voting' segment in *MLK: Now is the Time*

[167] Baillargeon, "VR Documentary, Racism and Embodied Interactions."

4.2.3. Immersion and Embodied Experience Through Guided Narrative

Although *MLK: Now is the Time* promotes and encourages interactions through its hands-free mechanics coupled with physical involvement, as well as presence, it is important to keep in mind that this piece is first and foremost an educational VR experience and not a game. Indeed, much like *Anne Frank House VR* discussed below, the experience starts with a visual prologue made of newsreel footage in order to set the historical and cultural context of the piece, and also to create a sense of authenticity. In *MLK: Now is the Time,* the heart of the piece being Dr. King's speech "I have a dream" provides relevant background information and key themes by incorporating this real-life event during the entire experience. By doing so, the director anchored the narrative of the piece in a specific time and place by mirroring it to our actual society, which deals with similar social struggles, making the fictional side of the narrative even more relatable and impactful. The genre this immersive and interactive VR experience falls under has been referred to as iDocs – a portmanteau that combines the words 'interactive' and 'documentary,' a term coined by Sandra Gaudenzi[168][169]. The term has been defined as an open-ended term, in other words, "any project that starts with the intention to engage with the real, and that uses digital interactive technology to realize this intention[170]." It is important to mention that the word 'real' is used by Gaudenzi in this definition that this word is used in acknowledgment that it is a shifting and a malleable concept.

[168] "About."
[169] Aston and Gaudenzi, "Interactive Documentary: Setting the Field."
[170] Ashton, Gaudenz, and Rose, *I-Docs: The Evolving Practices of Interactive Documentary*. 1.

Regardless of the origin of the 'documentary' term's inception[171], it is worth highlighting its very meaning that draws its roots from the word "document," originating from the Latin "docere," meaning to teach[172]. Teaching is what *MLK: Now is the Time* is accomplishing by "engaging with the real," following the idocs definition, through emotional involvement and physical interactions, or as Limbert Fabian puts it, "casting the audience and making them feel like they're doing something[173]." However, this engagement with the real can only be accomplished with a certain sense of freedom of action, a very important element of spect-actorship, the concept I use to analyze VR experiences with for this dissertation. While having the freedom to interact with the narrative in real time and shape its course based on thoughts and actions can be empowering and gratifying for users, it's crucial to recognize that in idocs such as *MLK: Now is the Time*, the developer often guides a specific narrative path to enhance the overall experience. The concept of 'time' is also an important aspect that cannot be neglected when experiencing an idoc. Although users are invited to contribute to the narrative by interacting with story elements, developers also must manipulate time and guide users in order for the piece's message and themes to create the intended impact. As Limbert Fabian suggests with many details by giving examples from previous versions of his experience,

> Honestly, I think time is important […] in the experience. How much time you spend with the headset. Yes, exploring and, you know, for example, in the police car, there was a version of this where we wanted you to, you know, pick up and look at and

[171] For more information on documentary history, see Nichols, *Introduction to Documentary*.
[172] "Documentary."
[173] Baillargeon, "VR Documentary, Racism and Embodied Interactions."

examine. And what I quickly found is that the more of those things that we had, the more […] the questioning turned into why am I doing this? Why is this important? Okay, I think I'm supposed to be feeling this. Am I feeling this like it was? It gave a lot of room for to be introspective. I think it was just wonderful. It's fantastic. But also, I think that sort of make lengthens the experience to that point where it's almost you may miss the opportunity to be more deliberate in what you're trying to say. And you know, if it was exciting more than if I had Dr. King's speech in the background, if I had information that was playing in the background, would I stop listening to that so I can go explore? And those things became at odds with each other. The more exploration and self-discovery I was doing might have been at odds with the stuff I want you to go look at and experience. There's a version of this where the Dr. King statue is surrounded by the flowing rocks. That was a metaphor for the stone that his image has been carved out of this, out of this rock and these pieces. And we had a version of this, that in the National Mall, the pieces of rock were floating around you, and you had to find them. And if you need to look around you and kind of like, step through the park, it kind of like wade through the space. And then "Oh, what's this!", and then once you grabbed it, and it started the experience. I think that was cool, but it was taking away from the overall conversation. And we just needed a bit more immediacy and kind of get you directly into the expansion to jump right into what we need to get into. Which I think helped out. But yeah, there was a version of this where it was a bit more exploratory and kind of like discover on your own. But the discovering around sometimes just kind of getting to divorce from the conversation[174].

[174] Baillargeon, “VR Documentary, Racism and Embodied Interactions.”

4.2.4. Educational VR and its Different Categories of Spect-Actorship

As previously discussed, *MLK: Now is the Time* is not a video game, nor is it a film. "It's not a passive experience. And even though it is completely open and free, and you're able to do and interact with the experience, you do have to keep a sense of momentum," as pointed out by Fabian. "And there has to be a plot, I think that move things along, and you just happen to be a character in that story. And that story has to keep moving forward[175]." Depending on the subject matter, a VR experience can be very malleable in terms of spectatorship approach. A piece such as the one explored in the present sub-chapter that explores interactive documentary (i-doc) and embodiment through gaming mechanics, correlates with a statement that William Uricchio made in his chapter dedicated to the possible futures of documentaries, that over time, the term "documentary" has become increasingly flexible. However, as one approaches its 'Griersonian' origin, its applications become more restrictive. From this standpoint, the contemporary advancements in documentary, such as idocs, characterized by interactivity, immersion, and participation, illustrate an ongoing commitment to innovation and experimentation[176]."

In her Ph.D dissertation, Sandra Gaudenzi, who coined the term 'idoc,' discusses the interactive possibilities presented to users in different interactive documentary dispositive[177]. She explores documentary modes developed by Bill Nichols in his 1991 book *Representing Reality: Issues and Concepts in Documentary*, such as linear documentary modes and pre-

[175] Baillargeon, "VR Documentary, Racism and Embodied Interactions."
[176] Uricchio, "Things to Come: The Possible Futures of Documentary… from a Historical Perspective", 193.
[177] Gaudenzi, "The Living Documentary: From Representing Reality to Co-Creating Reality in Digital Interactive Documentary."

documentary, to develop a typology of interaction modes specifically proposed to spectator-users, which I prefer to refer to as the spect-actor, by the web-documentary. The documentary modes Gaudenzi elaborates are 'conversational, hitchhiking or hypertext, participatory and experiential[178].' These modes are made to describe the different types of interactivity proposed by the author-developer to the spect-actor, as well as the degree of participation in its proceedings. The typological modes proposed by Gaudenzi each invite spect-actors to engage in a dialogue — meaning, the ability to influence the ongoing experiential unfolding. Moreover, she establishes her documentary typology based on the possible interactions and relationships that users can have with it, as she believes that interactive documentaries can only come to fruition through user participation, through spect-actorship, as it is the case in *MLK: Now is the Time*. In accordance with Gaudenzi's theory, Fabian mentions that,

> Again, documentaries do have a point of view. It's material that is real and stuff that's happened. But the directors have a point of view that they're taking the said material, and they want to guide you to a conclusion. So, I think that given the type of experience if it's a game, or a documentary, or or a film. You know, in VR, I think it's trying to understand what those things are. So, the audience walks in and go, okay, I get it. I think I understand what I'm supposed to be doing, and then go from there. [Also], I think you should be guided in all of those scenarios, and all of those genres or approaches. I think, at the end of the day, you're still casting the audience […] but [they] also realize that they were part of the story in their unique way. So, the same

[178] Gaudenzi, "The Living Documentary: From Representing Reality to Co-Creating Reality in Digital Interactive Documentary", 21.

thing applies for documentary experiences in VR. It's like, okay, I'm going to have to deploy this information to you in some meaningful way. But you are, "blank," right? Are you an observer? Are you a participant? Are you the speaker? That really does change the dynamic in which you should engage with the material. And I think that's what makes this unique, this medium, so unique, so special, to your subject, is spectator versus participator. Like, you're participating in some way, in one way or another, where I'm being told passively, just sit back and watch this movie. You're being told to do that. And I think that's what's interesting about the medium is to find ways to do that in a very unique way[179].

4.2.5. Brechtian Influence on VR: Alienated Play and the Spect-Actor Dynamic

As described in the preceding chapter on Artistic VR, theatre practitioner and playwright Bertolt Brecht developed a theory he named the “alienated effect,” often referred to as the *Verfremdungseffek*[180]. The latter can be defined as a methodology crafted by the artist to create emotional detachment within the audience during theatrical performances. This is achieved through deliberate interventions that disrupt the illusion of reality, serving as reminders of the artificiality inherent in the theatrical experience. In other words, disrupting the illusion of reality and creating a reflective space for the audience. Such an initiative can be achieved through various techniques such as breaking the fourth wall, a technique often employed in films, a medium in which the illusion of reality serves as a cornerstone. For Brecht, learning is as

[179] Baillargeon, “VR Documentary, Racism and Embodied Interactions.”
[180] “Alienation Effect.”

important, if not more important than entertainment in his plays he calls "epic theatre[181]." More precisely, his concept of this 'alienated' spectator reminds that of the spect-actor in VR. As discussed by Ellen Foyn Bruun,

> In practice, Brecht developed techniques that equally stimulated the intellect of theatre artists and audiences, the purpose being to enable them to see new sides of an argument and so broaden their perspectives. Brecht wanted to reveal contradictions rather than the smoothing over of contradictions and the creation of false harmony of the bourgeois theatre. His epic theatre demonstrates a vision of a new spectator, one that is awakened to action and social engagement. The new spectator is, in brief, able to enjoy the pleasure of learning while being entertained, the comprehensive pleasure of sophisticated entertainment and education seeping the complete works of Brecht and his legacy to this day[182].

However, it is important to mention that Brecht considers emotional immersion as "counter-productive with risk of escapism and passivity[183]," which is a key aspect of VR. Based on Brecht's theory, research by Aeshbach, Opwis and Brühlmann argues that immersion could be detrimental to a critical experience in VR. According to the authors, in order to best represent complexity in interactive digital narratives, developers should turn to the basis of Brecht's 'epic theatre' as an alternative form of engagement they named 'alienated play[184],' which consists for

[181] Brecht, "Theatre for Learning."
[182] Bruun, "Teaching Empathy with Brecht as Prompter", 23.
[183] Ibid.
[184] Aeschbach, Opwis, and Brühlmann, "Breaking Immersion: A Theoretical Framework of Alienated Play to Facilitate Critical Reflection on Interactive Media."

users to observe themselves while evolving in a VR experience and to reflect on their own actions, prompting an 'outsider's perspective,' which could stimulate the questioning in their validity[185]. Also, the gamification aspect in interactive digital narratives should be informative, not persuasive, challenging the conventional belief that immersive experiences are central to positive player experience. The article argues that while persuasive play is useful for teaching specific skills, such as those seen in training and simulation experiences, other VR experiences requires an alienated experience, drawing from Brecht's theory of alienation. Finally, the authors discuss that immersion may not align with the goal of representing complex issues, introducing alienated play as an alternative. The concept aims to engage players critically, allowing reflection on interactive digital narratives without complete immersion.

This concept has undoubtable valuable qualities such as educating users based on their observations rather than trying to emulate a specific circumstance to provoke feelings of empathy. Such "concerns about the use of empathy in discourses about VR," as stated by Philippe Bédard, "are best explained as deriving from issues of proximity and distance[186]." To be more specific, "Where VR might be useful, then, is in its ability to close the gap, so to speak, by generating an illusion of presence. Care must be taken, however, not to erase all traces of the means through which this illusion is created[187]." In his article, Bédard refers to Kate Nash's article "Virtual Reality Witness: Exploring the Ethics of Mediated Presence[188]" who mentions that to foster a proper distance in mediated experience, is "an attempt to draw attention both to

[185] Aeschbach, Opwis, and Brühlmann, "Breaking Immersion: A Theoretical Framework of Alienated Play to Facilitate Critical Reflection on Interactive Media."
[186] Bédard, "Closing the Gap: Storytelling in Nonfiction Virtual Reality", 95.
[187] Ibid.
[188] Nash, "Virtual Reality Witness: Exploring the Ethics of Mediated Presence."

the importance of the media's ability to foster a sense of proximity but also the need to contextualize the suffering of others and recognizing the distance between us[189]." Moreover, Nash argues, while referring to John Ellis, that "being there' constitutes the paradigm case of witnessing. Being there matters, he suggests, because it is precisely the experience of physical and temporal proximity to an event that both attests to its veracity and calls for active response rather than contemplation[190]."

In the case of Educational VR experiences such as *MLK: Now is the Time,* Limbert Fabian uses different interactive and narrative elements to provide commentary and other elements that highlights the artificiality of the experience, which follows Brecht's theory of alienation featured in his 'epic theatre' plays. However, as previously discussed in my interview with Fabian, and as observed in his VR experience, in essence, the latter emphasizes that VR documentaries present a point of view shaped by the directors. Fabian believes that users should be guided in their experiences, whether in games, documentaries, or in VR. However, the unique aspect of Educational VR, or in this present case a VR documentary, lies in the spect-actor dynamic, where users are not just passive observers, but actively engaged in the material. The importance lies here in understanding the audience's role, whether they are observers or spect-actors, and to emphasize the distinct and special nature of VR in facilitating this unique engagement. It is in this case important to reiterate Fabian's comments about making users 'understand' a specific matter:

[189] Nash, "Virtual Reality Witness: Exploring the Ethics of Mediated Presence", 124-25.
[190] Ibid, 121-22.

Limbert Fabian

Understanding it. Yes, yes, I think that's exactly it, to understand. Understanding is way more powerful than going, ‘well, I lived it.” Well, you did a thing that you remember doing. It was a VR thing. But I'm understanding it, it was framed in a way that gives you some tools to understand the material it’s really powerful and useful in this conversation.

Justin Baillargeon

Yeah, and I think, you know, taking into consideration again, the different backgrounds of people who are going to try the experience, it really, really helps understanding these things. And that's what we need to know and understand. It is for us to try and do our best to change society as much as we can.

Limbert Fabian

Yeah, definitely. You know, I think someone asked me, "Why is there a narrator telling you, as if a parent is talking to you at that moment?" I think it was important to also understand just some simple basics, like, you haven't done anything wrong. We don't know what the officer does, he might have had a bad night. We don't know the situation of the other person on the other end. We're not saying that person is a bad person. We're just saying we don't know the situation. And regarding the situation, you know, you're okay. Take a moment to breathe and center yourself. Just consider yourself being there for a moment and letting that sort of play out from that point of view, as opposed to coming in with a litany of ideas like, "I don't like police officers. I don't like the way

I'm treated like." And you come loaded with this thing and all of a sudden, the scene plays out very differently because you've got a preset set of ideas. You know, I was trying to strip it down to a moment like this, let's try to do these things as level as they are. But this is the reality of the moment. Just take a moment, and breathe, and just let it sit for a second, and then see what happens[191].

4.2.6. Conclusion

Thus far, we have delved into the Educational VR experience of *MLK: Now is the Time*, examining its innovative use of hand tracking and interactive storytelling to engage users in the exploration of themes such as housing, policing, and voting. I argue that this Educational VR experience goes beyond traditional forms of learning, providing users with a sense of freedom and agency, ultimately enhancing the spect-actorial experience. The hands-free mechanic and body gestures not only immerse users in the virtual environment, but also allow them to interact with role-play scenarios, fostering a deeper understanding of societal issues.

I would now like to turn to discuss *Anne Frank House VR*, which will foreground issues between exploration and exposition modes in VR, giving users a different kind of spect-actorial approach in Educational VR.

[191] Baillargeon, “VR Documentary, Racism and Embodied Interactions.”

4.3. *Anne Frank House VR* (Anne Frank House Museum/Vertigo Studios Amsterdam, 2018)

4.3.1. Description of the Experience

The *Anne Frank House VR* app offers users a unique and emotional insight into the secret annex where 13-year-old Anne Frank and seven family members and friends were living in hiding in confined quarters and hid from Nazi persecution during the Second World War between 1942 and 1944. Released in 2018 on the Oculus Go HMD and in 2019 on the Meta Quest HMD, the VR experience was made for users to immerse themselves in Anne Frank's thoughts as you visit the house. The real Anne Frank's secret annex is located in the Anne Frank Museum in Amsterdam, Netherlands and is completely unfurnished. Following the raid by the Nazis, the latter completely emptied the house and has remained empty, at the wish of Anne Frank's father Otto, who wanted to maintain this void of not having his family around and their belongings. Because the house is empty, the museum wanted to show people what the house looked like with furniture, objects, and their contexts, while it was inhabited. The museum had originally developed a virtual walk through of the house in a CD-ROM published in 2000, but the institution was now interested to show a new version of the secret annex online. Their main objective was to show the house to disabled people who are not able to climb up the very narrow stairs leading to the three stories of the secret annex, but also to visit the museum due to distance or financial reasons[192]. Developers Force Field Entertainement, branch of Vertigo Games Amsterdam, faithfully scanned, built, modeled, and recreated each room of the secret annex in order for the users to exploration. Every room in the virtual secret annex is furnished according to how it was when occupied by the group in hiding.

[192] As discussed by Charlotte Bosman in *VR Learnings from the Anne Frank House*.

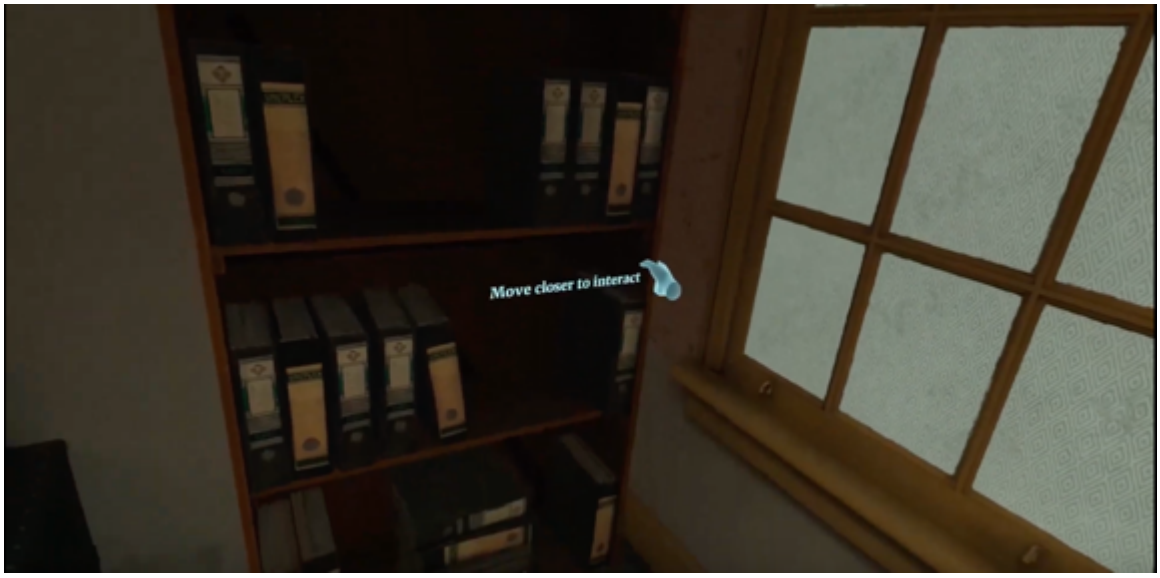
Screenshot of Anne Frank and Fritz Pfeffer's room taken from *Anne Frank House VR*

4.3.2. Feelings and Thoughts about the Experience

As you start the VR experience, the interface is giving users several options, one of them being to choose the language in which you would like. The experience is available in seven different languages: Dutch, English, German, French, Spanish, Portuguese, and Hebrew. As mentioned on their website, the virtual reality tour of the Anne Frank House is used by dozens of museums and institutions all over the world to focus on accessibility regardless of language and distance barriers. In this way, institutions such as the Anne Frank Centre for Mutual Respect in New York, the Anne Frank Centre in Berlin, Centro Ana Frank Argentina in Buenos Aires and the Instituto Plataforma Brasil in Sao Paolo, Brazil use the tour for education purposes. There are also museums in the United States and Asia which use the app as part of their

exhibition[193]. After choosing the language in which you would like to experience it, as in *MLK: Now is the Time*, historical context is put at the forefront. The piece shows a series of newsreels from the era, as well as some images pertaining to the Holocaust and the Second World War, in order to introduce users to subject matter and also to give more context to the VR experience and its narrative. Afterwards, the app gives users the choice to visit the virtual secret annex through a story mode and a tour mode, more precisely, an exposition mode and an exploration mode. Depending on the circumstances of the usage of exposition and exploration modes, these two different immersive avenues "are contrasted as instructional methods[194]," given the fact that they are being offered in an educational context. The story mode (exposition) is expected by the developers to be the first mode users should experience in order to get a grasp of the entirety of the visit. As discussed in a written interview I conducted with Charlotte Bosman and Menno Metselaar, respectfully the Digital Project Manager and the Project Manager Publications & Presentations at the Anne Frank House Museum, "If you don't know the house that well, it could be that you skipped one room and missed, for example, Anne's room. To make sure that you see everything you first must finish the story mode before you can explore the house on your own[195]. In fact, users are given a determined learning path to follow where highlighted marks are shown in order to incite interactions, such as footsteps that shows you were to teleport yourself, and a virtual hand that directs you what to interact with to further the story.

[193] "The Anne Frank House in Virtual Reality."
[194] Mulders, "Learning about Victims of Holocaust in Virtual Reality: The Man, Mediating and Moderating Effects of Technology, Instructional Method, Flow, Presence and Prior Knowledge", 6.
[195] Information gathered through an electronic correspondence with Charlotte Bosman and Menno Metselaar on August 16, 2023.



Screenshots taken from *Anne Frank House VR* (story mode)

As stated by Miriam Mulders, "The implementation of the exposition method is guided by the principle of direct instruction and the design principle of segmentation[196]." Indeed, the

[196] Mulders, "Learning about Victims of Holocaust in Virtual Reality: The Man, Mediating and Moderating Effects of Technology, Instructional Method, Flow, Presence and Prior Knowledge", 6.

more I moved forward into the house, the more I discovered about Anne and her family and friends who were hiding with her. This "principle of segmentation" mentioned by Mulders is based on a principle for managing essential processing in multimedia learning by Richard E. Mayer. The author explains that "people learn more deeply when a multimedia message is presented in learner-paced segments rather than as a continuous unit[197]." In exposition mode, the *Anne Frank House VR* experience gave me instructions that guided me through a determined learning path. I was prompted to point and click – as seen in the screenshot abovementioned, whenever a visual cue would appear on the screen. Clicking it would start a narration provided by a voiceover actress as Anne Frank directly reading from her famous diary. These voiceover narrations provide background information about Anne's life in the secret annex that was triggered by my interactions with a specific object, space or room.

4.3.3. Immersion Through Exposition or Exploration

As I was guided through the virtual space in exposition mode, I noticed I spent more time looking for visual cues to continue the narrative than roaming around the environment discovering at my own pace, which interrupted me from the flow of the experience, something I found to be particularly distracting. While exploring in my own time, I caught myself looking at all the photos that were attached to the walls of Anne and Frantz's room, as seen in the screenshot below, learning more about the things that people of their age were interested in, and more precisely, allowing me to delve more into her mind. As I was walking around her room, I remembered from reading her diary years ago that Anne dreamt of a career as a

[197] Mayer, *The Cambridge Handbook of Multimedia Learning*, 243.

Hollywood movie star. As a result, the walls of the room she shared with Frantz were decorated with photographs from film icons of the time, something I was able to notice while experiencing the VR app. As Anne herself described in her diary: "Our little room looked very bare at first with nothing on the walls; but thanks to Daddy who had brought my film-star collection and picture postcards on beforehand, and with the aid of a paste pot and a brush, I have transformed the walls into one gigantic picture[198]." Witnessing this scene was quite an emotional and touching experience, even though it was a virtual one. While roaming around the different rooms in exploration mode, visual cues start appearing unexpectedly, creating a sense of learning excitement in discovering new elements to Anne Frank's story.

However, an important aspect to keep in mind while experiencing *Anne Frank House VR* is the time we allow to dedicate ourselves to it, which could influence the pertinence of the exploration mode the app offers. A study conducted by Miriam Mulders with students in 2023 with *Anne Frank House VR* discusses the differences in the knowledge between the exposition and the exploration modes. When it comes to the knowledge gained from students in both modes, performances from the ones who experienced the app in exposition mode than in the exploration one. Students in exposition conditions found themselves to be able to solve more questions correctly following their virtual visit. As mentioned by Mulders,

> The differences in the knowledge test can possibly be explained by considering that the students in the exposition conditions, through the instructions given, encountered the content that was later asked in the knowledge test. All of the VR content was

[198] Frank, *The Diary of Anne Frank*, 217.

> explored in the exposition conditions. It was unlikely to have missed relevant content. Students in the exploration conditions, on the other hand, were free to choose what content they wanted to engage with and to what intensity. Often in the exploration conditions, certain elements were examined in a time-consuming manner, while others were neglected, often also depending on personal interest[199].

Indeed, many contributing factors are to be taken in consideration here. One of them, as mentioned by Mulders, is time. Although she mentions that "certain elements were examined in a time-consuming manner[200]," it is also discussed afterwards that people who already know something about the story of Anne Frank tend to gain more advantages in exploration mode, whereas those with limited prior knowledge are more likely to benefit in exposition mode. It is also interesting to mention that the exposition mode of the VR experience was built with timing in mind which could, in a way, confirm that the visit is 'molded' to a specific duration and aimed to give less freedom to its users. As confirmed by Bosman and Metselaar, "You want to tell more than a user can take. Therefore, you must make choices. Also because of the time limitations, we decided that the whole experience should not exceed (roughly) 15 minutes[201]." Nevertheless, most findings suggest that prior knowledge doesn't play a significant role in determining whether someone explores a VR environment with a focus on others or themselves[202]. Moreover, the research conclusions conducted by Mulders mention that only "slight advantages were shown" in the exposition mode. It is also important to mention that in

[199] Mulders, "Learning about Victims of Holocaust in Virtual Reality: The Man, Mediating and Moderating Effects of Technology, Instructional Method, Flow, Presence and Prior Knowledge", 13.
[200] Ibid, 13.
[201] Information gathered through an electronic correspondence with Charlotte Bosman and Menno Metselaar on August 16, 2023.
[202] Ibid, 13-4.

the introduction and conclusion of *Anne Frank House VR*, more information are told about the historical context of the period and the people in hiding and in the secret annex itself in an documentary-like fashion. Reacting to the differences with exploration and exposition mode, Charlotte Bosman and Menno Metselaar answered the questions I asked them in regard to the two different types of modes available in the app. In the interview, both creators discuss the intentional balance achieved in *Anne Frank House VR*. They explain the incorporation of factual, emotional, and personal quotes to strike a balance between educational depth and immersive engagement. While the app offers both exploration and exposition modes, rationales was to ensure users experience the entire narrative before freely exploring the environment in order to not miss any information. The exploration mode provides substantial freedom through walking or teleportation, catering to both guided and exploratory preferences. The interviewees believe that user agency is meaningful in an educational setting, comparing it to preferences in actual museums. It is also important to mention that technical differences between the exposition and exploration modes are minimal, with the main distinction being the mandatory interaction with visual cues in the expositional mode to ensure a comprehensive experience[203].

Referring to my previous chapter on Artistic VR, more precisely on *ArtGate VR* regarding user preferences in an immersive virtual art gallery/museum context, it appears guidance by a conversational agent (i.e., Anne Frank's narration in *Anne Frank House VR)* to exploratory freedom is becoming a more frequent tendency in a VR-based learning environment. To enhance user experience, we could speculate that in order to allow users a degree of influence over their experience, they could choose the visiting mode they want with

[203] Information gathered through an electronic correspondence with Charlotte Bosman and Menno Metselaar on August 16, 2023.

the conversational agent ensuring no critical information is missed. In the museum context, this means users may be guided through rooms by the conversational agent for structured exploration while still being able to explore rooms themselves.

4.3.4. Immersion Through Accessibility

Unfortunately, having never had the chance to visit the Anne Frank House Museum in Amsterdam, visiting it at a distance through my VR HMD was a great compromise. As it is the case for many people, the accessibility of certain museums and art galleries can at times be problematic given the fact that they are located in different parts of the world. For this reason, as explored in the previous chapter, VR appears to be an interesting compromise and solution to bring museums and their knowledge to people rather than inversely[204]. In most cases, VR was introduced in museums for the first time in the past 10 years, with the vast majority in the context of temporary exhibitions, especially during the Covid-19 pandemic. Moreover, in most cases, VR was used to allow visitors to experience an exhibit, a space, or an event that is no longer available to the public. Also, as in the case of the VR experience *The Battle of Vimy Ridge,* which I discuss in greater below in the following sub-chapter on Educational VR' these experiences were created in order for visitors to be walking into history and places that cannot be experienced outside of a virtual context[205]. The *Virtual Antiquities Museum* app developed by the famed Library of Alexandria in Egypt is a notable example of how a museum decided to bring their archeological treasures to the world by displaying them in VR their artifacts and

[205] Shehade and Stylianou-Lambert, "Virtual Reality in Museums: Exploring the Experiences of Museum Professionals", 4-5.

other significant pieces from the Pharaonic era going through Greco-Roman and Coptic epoch, until the Islamic period. Available on the App Lab section of the Meta Store, this VR app that is still in development was created with the same motivation as the Anne Frank Museum: facilitating accessibility to reduced mobility people. In fact, the testing for the *Anne Frank House VR* app was first done in their museum with disabled people to show them the secret annex as they are not able to climb up stairs and to fit in narrow areas[206]. As discussed with Mohammed Elfarargy, the head of VISTA unit at Bibliotheca Alexandrina, regarding a similar topic,

> Now, the thing that triggered us […] is that we had an event in the library. And it was directed towards disabled students. They wanted them to discover the museum, but they knew that they could not walk around the place freely because the number was so large. So, our new our friends in the museum asked us if we can do something in VR, very quick, very limited in features, but we wanted it as fast as soon as possible. So, we did just that. We did a very, very limited version of the VR Museum, and had it available at time for the event. And everybody tried it, everybody was so interested in it. And it helped to make this a more successful and more interesting event. And after the event was done, we had a meeting with them. And we decided that this was very promising, let's make it available for everybody[207].

Similar to the Library of Alexandria and its *Virtual Antiquities Museum* VR experience, *Anne Frank House VR* shares a common approach with museums that limit their VR

[206] *VR Learnings from the Anne Frank House*.
[207] Baillargeon, "The Archeological Treasures of Bibliotheca Alexandrina in VR."

experiences to on-site visits. However, *Anne Frank House VR* distinguishes itself by aiming to open its doors virtually, providing global accessibility to the secret annex and its history. This is achieved through availability on the Meta Store and selected events hosted in other museums. As stated by Bosman and Metselaar,

> We can only welcome a limited number of people in the house (1.3 million before COVID). We are sold out every day. We want to tell the story to as many people as possible. And we are well aware that many people will never have the possibility to travel to Amsterdam themselves, for various reasons. This will give them a chance to experience the hiding place. Therefore, we need to find ways to tell the story outside the museum walls. VR is one of them[208].

The virtualization of their secret annex is not strictly associated with VR. As previously mentioned, the Anne Frank Museum released a CD-ROM in 2000 with the intent to allow people to walk through the house. This initiative started for people who cannot access the museum for mobility, financial, distance-related reasons, or simply to avoid long lineups[209]. Because Adobe stopped supporting Flash in late 2020, the museum needed another version of the secret annex online. The museum released a much more improved version of the CD-ROM in a desktop version with upgraded graphics and interactions. As noted in the literature and through the conducted interviews I carried out with the developers of *ArtGate VR*, *Anne Frank House VR* and *Virtual Antiquities Museum*, it appears museums usually start exploring the virtualization of their institution through a desktop application instead of a VR application due

[208] Information gathered through an electronic correspondence with Charlotte Bosman and Menno Metselaar on August 16, 2023.
[209] *VR Learnings from the Anne Frank House*.

to the mainstream accessibility VR HMD, which is considerably lower than accessing a computer[210]. Since the arrival of VR HMD now accessible to the mainstream public, the museum started to contemplate the idea of working on a VR version of the house. The Amsterdam branch of Vertigo Games was tasked with accurately measuring the building and utilizing archival photographs to faithfully recreate the appearance of the secret annex during the period when it was inhabited by the Franks and their friends between 1942 and 1944. Additionally, ambient sounds, including those of church bells and pigeons on the roof, were directly recorded from the annex. Such a choice of sound design enhances user immersion and provides a genuine sense of the auditory atmosphere experienced within the house[211].

The literature tends to emphasize the role of VR in attracting new audiences, or simply to bring a breath of fresh air by bringing a different type of experience than the ones that are already offered[212][213]. According to research conducted by Shehade and Stylianou-Lambert through various interviews conducted with museum professionals from a number of countries around the world who work with VR in their institutions, VR can not only offer new ways of interpretation allowing personal involvement from the visitors, but most importantly to promote new ways of understanding art, objects, and concepts, and can allow visitors to explore their ideas on these concepts, as well as to serve the visitors' actual learning needs[214]. In an effort to offer 'something new' to the traditional museum experience, VR apps such as *Anne Frank House VR* and *Virtual Antiquities Museum* give their users the possibility to virtually interact

[210] Lin, Chen, and Lin, "Efficacy of Virtual Reality in Painting Art Exhibitions Appreciation", 3012.
[211] *VR Learnings from the Anne Frank House*.
[212] Pop and Borza, "Technological Innovations in Museums as a Source of Competitive Advantage."
[213] Howes, "Charting the Sensorial Revolution (Book Review)."
[214] Shehade and Stylianou-Lambert, "Virtual Reality in Museums: Exploring the Experiences of Museum Professionals", 6.

and touch objects and artifacts. Therefore, this concept challenges the everlasting "do not touch" rule of museums, creating consequently an art history shift, or more precisely, the emergence of a sensory turn[215]. Such a multi-sensory approach has been the subject of various research when it comes its usage for blind and visual impaired audiences (Candlin, 2006; Bérubé, 2023; Hou, 2023). The *Anne Frank House VR* app allows users to physically interact with certain objects and pieces of furniture by virtually grabbing them. When being touched, these objects trigger an action in the experience such as voice over narrations from Anne, a video or a photo connected to that specific object that tells users more about its specific context. The case of the *Anne Frank House VR* is very particular in the sense that the app offers a distinct experience compared to the museum in Amsterdam. Unlike its virtual museum, there is an absence of furniture in the actual physical museum, at the request of Anne's father Otto Frank, as previously mentioned. Exploring the museum, and particularly the secret annex, in VR is inherently different from the conventional on-site experience. It does not aim to undermine the established museum encounter; in fact, it coexists without diminishing the appeal of visiting the authentic house. If anything, it might even enhance the desire to explore the real location, as mentioned by Bosman and Metselaar[216]. Even more comprehensively, users in the *Virtual Antiquities Museum* are encouraged to pick up artifacts using their virtual hands. They also have the possibility to observe them, to turn them around, to zoom in and out on them and also to open the sarcophagus and the coffins. Since every artifact has been digitally scanned, as well as their inside, visitors are now able to discover and learn more things about them. As described in detail by Elfaragy,

[215] Lauwrens, "Welcome to the Revolution: The Sensory Turn and Art History."
[216] Information gathered through an electronic correspondence with Charlotte Bosman and Menno Metselaar on August 16, 2023.

there are things that you can do in the virtual museum that you cannot do in the real world. For example, some of the pieces have very long inscriptions that might be very important for researchers, and they have their backs to the walls all the time. So, it's very difficult to read what's written back there, unless you get permission, which takes a very long time. You can then physically rotate the piece to see what's written on the back. That's one thing. Another very interesting example also is coffins. We have a couple of coffins inside the museum. And these coffins are displayed inside closed boxes to control humidity and temperature and so on. But the interesting thing is that the inside of the coffins has actually more details than the outside. So, the details inside are trapped there for eternity. Nobody can read them; nobody can see what's inside. Unless they were scanned and made available in a virtual museum. Also, some of the pieces in the museum have deteriorated so much. They are not there. They don't look anything like the original form they had. So, we provided the ability to show reconstructions of the destroyed parts side by side with the current version that we have[217].

In her book, *The Museum of the Senses: Experiencing Art and Collections*, cultural historian Constance Classen delves into the sensory history, illustrating how modern museums employ digital and interactive exhibits to engage visitors, without referring once to VR or any other immersive technologies or devices. The authors discuss the endeavor to stimulate the senses emerging as a potential boon for aiding visitors in retaining information through bodily-kinesthetic intelligence. This form of intelligence materializes when individuals actively engage with objects or artifacts through the sense of touch, something that traditional museums

[217] Baillargeon, "The Archeological Treasures of Bibliotheca Alexandrina in VR."

do not really adhere to, but their VR equivalent do, as previously mentioned. As these platforms necessitate interactions, visitors transition from passive observers to active spect-actors, fostering more memorable and engaging museum experiences[218].

Screenshots taken from *Virtual Antiquities Museum*

Although the virtual options for these museums do offer elements that are not available in physical museums, it is important to mention that virtualizing does not mean substituting or

[218] Classen, *The Museum of the Senses: Experiencing Art and Collections*.

replacing, but rather expanding. After discussing about their VR apps for being so interactive, engaging, and kinesthetic, I asked the aforementioned developers if they think their apps are deviating from the traditional "Do not touch" rule of museums. More precisely, I questioned them on how they perceive this departure from traditional conventions, and if they think they challenge the existing museum experience. On this note, Bosman and Metselaar argue that, indeed,

> "the whole VR experience is different from the museum experience. There is no furniture in the museum. Visiting the museum is therefore, by definition, different from visiting the secret annex in VR. It's not challenging the existing museum experience [because] people still want to visit the real house. Maybe even more[219].

As for Elfarargy, he confirms that virtual museums absolutely do deviate from the traditional museum 'do not touch' rule, which is to their advantage.

> Yeah, it surely does. But that's the beauty of VR. It's that you can do some new stuff that you cannot do in the real world. So, I think it's a good addition to what the real world has. It has no constraints like you have in the real world. But again, nothing competes with being able to physically see stuff, you don't touch them, but you will see them, get closer. You enter, interact with a professional tour guide who is going to answer your questions. So, there is something that you cannot replace in VR. And you can do really nice stuff, but there's always going to be room for physical museums […]

[219] Information gathered through an electronic correspondence with Charlotte Bosman and Menno Metselaar on August 16, 2023.

> So, we're pretty much adding a new layer of complexity to museums, and I think from now it should be a part of museums anyway[220].

Both answers maintained a very optimistic and reassuring answer regarding the current state and future of traditional museums. This 'new layer' of museums proposed by Elfarargy when discussing about the possibilities of VR in museums is explored in the following sub-chapter where VR makes its way into a traditional museum.

The *Anne Frank House VR* VR experience offers a poignant and educational journey into the historical context of Anne Frank's life during World War II, specifically her time in the secret annex. The VR experience authentically recreates each room, providing users with a unique opportunity to explore and learn about Anne Frank's experiences. The immersive nature of the experience is heightened by features such as different modes of exploration, namely exposition mode and exploration mode enhancing the spect-actorial approach of Educational VR. The emphasis on accessibility is notable, as the VR tour is used globally for educational purposes by numerous museums and institutions.

As we delve deeper into the discussion, I would like to turn to discuss *The Battle of Vimy Ridge*, a different VR experience that shifts the focus to location-based Educational VR. In contrast to the agency provided in the *MLK: Now is the Time* and the *Anne Frank House VR* experiences, *The Battle of Vimy Ridge* presents a scenario with less user agency, placing greater emphasis on the historical location. This exploration will shed light on the dynamics of

[220] Baillargeon, "The Archeological Treasures of Bibliotheca Alexandrina in VR."

Educational VR experiences in a location-based context, comparing the nuanced approaches employed in the VR experiences discussed in the two previous sub-chapters.

4.4. *The Battle of Vimy Ridge* (The Royal Canadian Regiment Museum/SimWave, 2017)

4.4.1. Description of the Experience

The Royal Canadian Regiment (RCR) Museum is located in London, Ontario, and more precisely situated in Wolseley Barracks, which was purposely built by the Dominion Government to house the "D" Company of the Infantry School Corps (1886 to 1888). It is also known as one of the oldest Canadian museums[221].

It is important to mention that in the weeks preceding my visit at The RCR Museum, I got in touch with Dr. Georgiana Stanciu, the museum's Executive Director, to organize a meeting on location in order for me to experience their VR app, "The Battle of Vimy Ridge." Dr. Stanciu mentioned that they have been experiencing several technical difficulties with the VR app, in particular with running it on their platform. It was clearly stated to me that this issue has been quite unpredictable for the past months and that they were hoping everything would work properly during my visit. My hopes for the app to work were considerable since "The Battle of Vimy Ridge," previously titled "Virtual Vimy," was created to commemorate the 100th anniversary of Vimy Ridge in 2017 at the Canadian War Museum in Ottawa, Ontario. However, the VR app was only made available for the public to experience it for a limited

[221] "About."

period, and I was not able to visit. Luckily, the VR app was now available at the RCR Museum since 2017 and was never withdrawn from their exhibition about the First World War.

4.4.2. Feelings and Thoughts of the Experience

When I entered the premises, I asked the receptionist if she could let Dr. Stanciu know that I have arrived. “You must be Justin,” said the associate. I confirmed my identity, and moments after, Dr. Stanciu welcomed me in the lobby and asked me to follow her. Then, one of the museum’s visitor assistants walked me to the VR booth and turned it on.

The VR experience is presented in the form of an opened booth with a floor plate surrounded by a three-panel windowed gate – the absence of a fourth panel is to allow the user to board the aforesaid booth. A yellow-colored “X” appears at the center of the floor plate, which is meant to show users where to position themselves while experiencing the VR experience in a standing position. This floor plate’s main function is to rumble in order to mimic the tremors caused by the many explosions heard in the background and seen during the experience. The experience is powered by a computer that is wired to a Meta Quest 2 HMD. A mounted television is positioned on the left-hand side of the booth in order for other visitors to watch what the VR user is seeing during the VR experience.

Personal photograph of the VR experience booth

Once I strapped on the HMD, I was transported into the experience which begins in the tunnels behind the Vimy battle lines. My avatar, a male soldier whose facial features are never divulged, is standing in a dark underground tunnel. Although I had the possibility to look around following three degrees of freedom[222], I was being prompted to "walk virtually" in the tunnels. This movement was, however, only made possible when I was looking in the direction imposed by the experience, which was suggested to me through a rotating arrow. When pointing in the right direction, this arrow is highlighted, and the movement of the avatar can now begin. While I started to virtually walk, a first set of floating texts giving me historical contexts for the period in which the experience is taking place, appeared in the front of me: "The Allied Countries are at war against Germany." As I move forward in the tunnels, I ran into a soldier who is walking in front of me, and more texts can be read: "Canada is fighting in France as part of the British

[222] The "three degrees of freedom " (3DoF) rule refers to rotational tracking, allowing users to look around and change their viewpoint in a virtual environment. In a 3DoF system, users can rotate their head up and down, left and right, and tilt it sideways. However, their physical position in the real world remains fixed, and they cannot move and/or walk around within the virtual space.

Empire.” The sound effects simulating several explosions above ground, the electromagnetic noise caused by the electric cables supplying the electricity to the light bulbs to light up the dark tunnels, which intensifies as you get closer to an artificial light source, appear to be quite convincing. On the other hand, the unusually slow speed at which the other soldiers I encounter move, detracts from the immersion of the experience, and reminds me that I am indeed in a simulated environment.

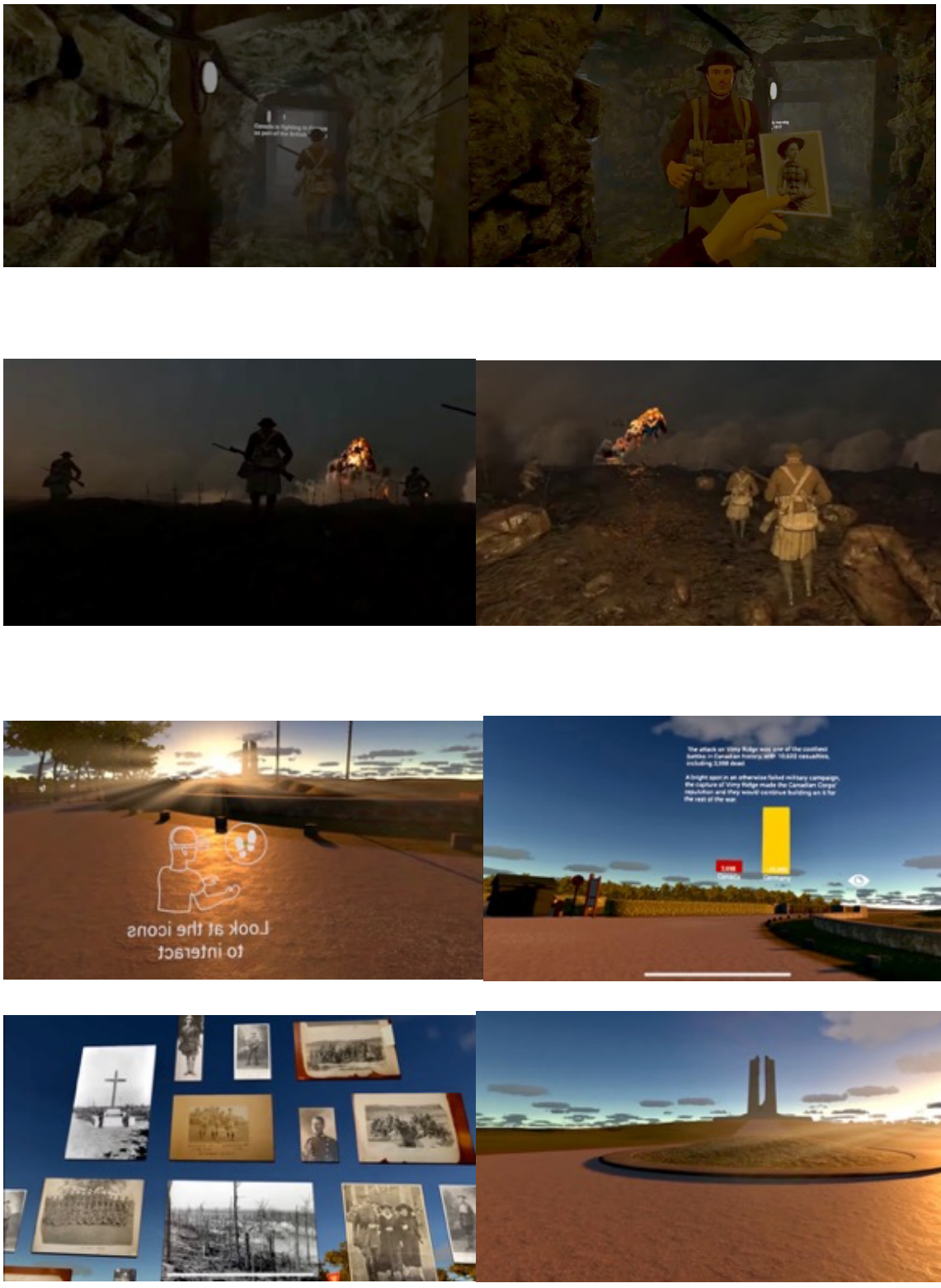
Soon after the second text, another soldier came to meet me and asks me what is in my hand. I am prompted to look down as I discover my hands are not being tracked by the headset or other tracking devices. I initially thought the experience was a hand-free one, but I was not made aware that my movements were not going to be tracked. This is also the moment I discovered I am embodying a white character. As the user meets a soldier in an underground tunnel who is talking to me, the embodied character uses their left hand – their only visible body part – to show the photo of a white woman appears on a photograph. Being asked from another character to look at something my avatar is apparently holding in his hand without me being able to physically move and see my arm and hand in the HMD, detracted me from the experience due to issues linked with proprioception.

Screenshot of *The Battle of Vimy*

Even though the main tunnel I virtually walk in divides into different tunnels, I am forced to follow the path planned by the developers. As I move forward with my journey, other texts appear in front of me, giving me more factual information about its context : “It is the early morning April 9, 1917. Moments before the attack…” The image now fades to black and fades into the middle of the battlefield. I am now in a trench with fellow soldiers located on both sides next to me. I can hear the immersive ice-pellet rain mix sound coming from the overcast sky hitting the muddy ground, which matches the battlefield weather recorded on the day the battle began. The VR experience’s mechanics are now giving me the possibility of crouching, as my fellow soldiers – who all look like exact replicas of each other, and to obviously stand back up. The soldier, who most probably holds a higher rank than mine, stands up, turns around to face me, and gives an order to everyone: “Fix bayonets!” Following the orders, I naturally attempt to move my hands once more to fix the bayonet to my Lee-Enfield rifle, but the technology and the mechanics behind the VR experience prevent me from doing so. “Stick behind the barrage. All right, here we go, boys!” says the same soldier, as I start to

virtually walk towards to next trench. The sound effects of nearby explosions and whizzing bullets passing my head are impressive and add up a lot to the immersion of the experience. However, the very slow pace other soldiers and I are moving at is not particularly realistic given the stressful situation. After a while, the scene gradually fades to white as I get hit by an explosion and ends the Vimy Ridge battlefield part of the experience.

I am now transported to the Vimy Ridge Memorial in France in what I assume is the present time. The setting here is completely different than the wartime part of the experience: the sun is shining, and the sky is clear. I hear the wind passing my head instead of whizzing bullets, and most importantly, it is quiet and peaceful, leaving room for meditation and reflection on the chaos caused by the previous scenes of war. A floating menu is suggesting me to "Look at the icons to interact," just like the beginning of the experience when I wished to walk in the underground tunnels. Here, an icon resembling an eye I can interact with, enables some historical text about Vimy Ridge appear. I am also prompted to interact with another icon, this time making a series of historical photos of the Vimy Ridge era featuring its people and soldiers. Finally, I am also invited to stand before the Vimy Ridge Memorial, which gives me the opportunity to get a general view of the surroundings. This pure spect-actorial moment of simply being able to wander around for the duration I desire, interacting with the content I choose to educate myself on the history of the Battle of Vimy Ridge at my own pace, is itself a very compelling experience. After a while, the VR experience fades to black with a note that mentions: "Thank you for playing!"



Screenshots of *The Battle of Vimy Ridge*

4.4.3. The Importance and Challenges of Location

It is important to mention that the VR experience is not advertised anywhere in the museum, whether in its lobby, in a brochure, or on their website, making it difficult to know it exists. As previously mentioned, "The Battle of Vimy Ridge" was a VR app I have been wanting to experience, which I did not have the chance to do while it was available at the Canadian War Museum. Had I not met Sean Campbell, the Canadian War Museum curator, in May 2023 who told me it was available at the Royal Canadian Regiment Museum, my chances of knowing it was there, or rather still there, would have been limited.

However, Dr. Georgiana Stanciu, the Executive Director of the museum, mentioned that the VR app was indeed advertised when it released in 2017. Many local newspapers, such as the London Free Press, dedicated an article on the release of the VR app praising its immersion capabilities to the point of outshining the museum's permanent exhibition on World War I,

> One hundred years ago, it was an epic battle that helped to forge Canadian identity.
>
> Now, you can experience the reality of Vimy Ridge — the dank tunnels, the Lee-Enfield rifle in your hand, the bullets whizzing past your head, even the artillery rumbling the earth beneath your feet — as part of a new exhibit at the museum of Canada's oldest military regiment in London. Thursday, the Royal Canadian Regiment Museum at Wolseley Barracks formally relaunched its First World War exhibit to mark the centennial of the Battle of Vimy Ridge. The display includes new artifacts and archives,

but the big attraction is a virtual reality kiosk that puts you in the boots of soldiers in the trenches of that epic battle on the Western Front.[223]

Despite the lack of promotion and its year of release going back to 2017, Dr. Stanciu confirmed that the VR experience is still very popular[224], to the point that some people simply come to the museum to experience the app and then leave[225]. One of the reasons behind this lack of promotion was, and is still in part due to the many technical issues they have been experiencing. Even though the VR experience's popularity is still constant, the kiosk itself and the software have been the cause of a lot of technical issues.

Developed by SimWave Consulting, a company based in Ottawa, Ontario specialized in the research and development of projects in the mobile, virtual reality and augmented reality sector, "The Battle of Vimy Ridge" was first shown to the public at the 2016 edition of the Canadian Museum Associations National Conference in Halifax, Nova Scotia. The company were exhibiting their VR app they developed the Canadian War Museum for the Vimy Ridge centenary. The experience sparked a lot of interests due its avant-gardist use of virtual reality, which was still at the time at its mainstream infancy. However, the Royal Canadian Regiment found the VR app and its kiosk to be too big for their gallery space. Initially, the VR system was incorporated in a glass kiosk that included the rumbling platform (still included with the version available at the Royal Canadian Regiment Museum) and 4D elements providing

[223] "New Display at Wolseley Barracks Museum Offers Multi-Sensory Look at First World War Battle."
[224] Dr. Stanciu mentioned during our interview that it is planned that the institution will be working on a revitalization of their experience and to advertise it on social networks to remind people that it is still in opreration (Appendices).
[225] Baillargeon, "La Réalité Virtuelle Dans Un Contexte Muséal." Freely translated.

environmental effects such as air jets to replicate bullets whizzing by. Instead of bringing the integrality of the experience in her museum, Dr. Stanciu decided not to include the air jets, which were attached to the glass kiosk, in order to reduce the size of the original system so it can better fit their space. One of their greatest challenges was adapting the system to their space, as it was not originally designed for it. Also, it is important to mention that since their building is a designated national heritage site, registered with the Canadian Register for Historic Places, which means that it cannot be altered[226].

Screenshots of *The Battle of Vimy Ridge*'s original kiosk as shown in a video coverage from CTV News Ottawa[227]

It is important to keep in mind that "The Battle of Vimy Ridge" experience only represents, according to Dr. Stanciu, 1% of the museum's content on World War I. As she comments,

[226] Taken from the 14 internationally recognized conservation principles from "Standards and Guidelines for the Conservation of Historic Places in Canada" is to "Conserve the heritage value of a historic place. Do not remove, replace or substantially alter its intact or repairable character-defining elements. Do not move a part of a historic place if its current location is a character-defining element.
[227] *Virtual Vimy Ridge: Ottawa Firm's Tech Tour of Famous Battle.*

> It's important to understand that this is just a part of our dedicated section to the First World War. It's quite extensive, taking up space as there's content, and as content, it covers 4 years of war which includes recruitment, training, and transportation of troops in Europe. It's not a small thing. It might be more interesting than, what, five minutes of virtual reality which gives us a likely impression of what we think the Battle of Vimy was like. Honestly, half of them don't even know that it's the Battle of Vimy. It's just the First World War.[228]

The choice of covering a lesser-known topic through an emerging and sought after media platforms such as VR that would attract a lot of attention, was a way to educate people on it. This was mostly done in hopes of immersing visitors, in the period's atmosphere and to discuss it during their visit through the different sections of the permanent exhibition. One of the main objectives was also "[t]o attract as many visitors as possible, therefore opening our doors to young visitors, audiences who might not be interested in visiting us. So that was mostly it. And then? Of course, there was a concern for historical accuracy. Making historical accuracy as close as possible.[229]" Dr. Stanciu affirms that visitor feedback confirms that with the help of "The Battle of Vimy Ridge" VR experience, half of the visitors are now aware there was a battle at Vimy during World War I.

The VR experience was situated at a very specific point in the museum's permanent exhibition section on World War I. Before explaining the why "The Battle of Vimy Ridge" app was carefully positioned where it currently is, it is important to understand the reasoning and

[228] Baillargeon, "La Réalité Virtuelle Dans Un Contexte Muséal." Freely translated.
[229] Ibid.

the curating methodologies behind this layout. There are a total of three galleries positioned in a way to create an "immersive experience"[230] by using the museum's own archival resources. The first gallery is dedicated the beginnings of the war, the training, the recruitment, and then the overseas troop transport. Then, the second gallery focuses on operational history. This includes, the battles of the First World War, and how the museum had unique visual resources that exist only in their archives. There are archival photos that they used for signage, but also the enlargement of four aerial reconnaissance photos that were taken at that time between the towns of Valenciennes, France and Mons, Belgium. The photos show the movement of troops from the Third Canadian Division to Mance towards the end of the First World War and during the famous last hundred days of the war. The VR experience is located in the second gallery where four enlarged aerial bird's-eye view photos of the Valenciennes sector are displayed on the floor.

[230] It is important to mention that Dr. Stanciu is referring here to the words "immersive experience" without VR in mind. These galleries were created and positioned before the arrival of the VR kiosk, as confirmed by Stanciu.

Personal photographs of the museum's second gallery dedicated on World War I

As previously mentioned, the organization was made to create an immersive experience. Such planning is also replicated in other contexts and war periods inside the museum, although without a VR experience. The usage of the VR experience was made, according to Dr. Stanciu, to create and to bring a more traditional "immersive experience," in the proper sense of the words, to the visitors. "The central idea…is always to provide an immersive experience, in a social history rather than a military one, where the people who participated in different events, different battles, are not necessarily individually named, but they are a group that contributed

to the event.[231]" The location of the VR experience, is, in this case, of major historical importance.

Unlike *Anne Frank House VR* which can be experienced outside the museum in Amsterdam, *The Battle of Vimy Ridge* is a location-based VR experience that can only be experienced in the Royal Canadian Regiment Museum, which can lead to various setbacks and technical challenges that can impact its performance and sustainability. These challenges started emerging as early as 2019 when the equipment used to experience the VR app was already showing signs of obsolescence. As Dr. Stanciu mentions, "in 2019, after 2 years of use, we were no longer up to date, you know. We were no longer current. The updates caught up with us, and by the end of 2019, we had purchased a new Oculus. However, in the beginning of 2020, we all entered a pandemic, and the new Oculus became outdated two years later.[232]" Indeed, the first HMD that was used by the museum was the Oculus Rift, which was released in 2013, and started to feel already outdated as early as fall 2019. The latter was then changed to the Oculus Rift S, which was briefly used during the summer of 2021 through December of the same year. Then, after their reopening on March 14, 2022, following the Covid-19 pandemic, the museum used the Oculus Rift S in a sporadic manner in summer 2022, but the HMD stopped working in September of that same year. The VR experience was unavailable to the public since May 2023 when the museum acquired the Meta Quest 2, which has been operational since then[233].

[231] Baillargeon, "La Réalité Virtuelle Dans Un Contexte Muséal." Freely translated.
[232] Ibid.
[233] Information gathered through an electronic correspondence with Dr. Georgiana Stanciu on August 23, 2023.

Setting up a VR experience in a public space like a museum undoubtedly requires, constant maintenance in case of malfunctions, breakdowns, or updates. It also likely involves training museum staff members to ensure the proper functioning of various devices, especially if the experience is developed by a third-party company like SimWave, based in Ottawa. Initially, the museum was in touch with SimWave, who guaranteed a certain technical assistance with their product in the early days of its showcasing in London. One of the most important factors was the possibility of having direct round-trip flights from Ottawa to London in case of hardware or software malfunctions. However, as time went by, SimWave started to show less interest in keeping tabs with software and hardware updates, and direct round-trip flights to London were abandoned. These changes ended up affecting greatly the VR experience as whole, forcing the museum to cut out certain immersive elements in order to ensure the proper functioning of the equipment. As confirmed by Dr. Stanciu,

> “Last Spring, I had to call another company to help us replace the new Oculus and get the system running in a certain way. So, it's Next Level VR, a local company, and they were very kind. They came to help us install the new Oculus. I don't know which generation with all the updates, but what's happening is that, since they weren't the original designers, they couldn't intervene at the software level, so we lost almost half of the experience. We no longer have the shaking, and we can't control the experience. Initially, we had the ability to manage the experience and navigate through the

battlefield and the tunnels […] "And also to select our language since it's a bilingual product. So, we simplified the initial form, let's say, of the product.[234]"[235]

4.4.5. Documentary and Interactivity Components

While interviewing Dr. Stanciu, she was very clear about the fact that the museum wanted their visitors to experience an app that was first and foremost educational, and not oriented towards gaming. As discussed in the interview,

> The agency we were working with gave us the opportunity to tailor the experience to the museum's narrative. So, we could showcase the Royal Canadian Regiment in action, and in fact, that's what I did. I extracted passages from the War Diary describing the exact positions of the Royal Canadian Regiment's companies on the battlefield, which were established on April 9, 1917. So that was mostly it. That's why I didn't want video games, even though I refer to it as video games[236].

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[234] Baillargeon, "La Réalité Virtuelle Dans Un Contexte Muséal." Freely translated.

[235] Unfortunately, it appears "The Battle of Vimy" VR mechanics and freedom of action were different from what I personally experienced during my visit at the Royal Canadian Regiment Museum. Because of the several changes of HMDs by the museum, as well as many technical challenges occurring over time, the VR app had to be altered and downsized to the bare minimum. For this reason, according to Dr. Stanciu, I was not able to experience "The Battle of Vimy Ridge" as it was originally intended. However, a YouTube video of the VR app that was uploaded 6 years ago by SimWave – more precisely May 25th, 2017, the year the VR app was displayed at the museum, shows the exact same mechanics than the version I personally tried. The only obvious difference being the language choices between French and English. The "freedom of action" that was supposedly part of the original version noted by Dr. Stanciu, is nowhere to be found on the video showing what the VR app was like at its initial state . That said, I can confirm I experienced the exact same version of "The Battle of Vimy" during my visit at the Royal Canadian Regiment Museum, except with the lack of possibility to choose the language – the English version was automatically chosen by default by the app itself.

[236] Baillargeon, "La Réalité Virtuelle Dans Un Contexte Muséal." Freely translated.

It is also important to mention that the artistic portion of the VR app was not primordial during its development. According to Dr. Stanciu, the main objective was to immerse the public in the experience with valid documentary information by educating them about the battle of the Vimy Ridge, in parallel with most traditional ways of informing visitors through the different signage in their three galleries dedicated to World War I. Most precisely, "the artistic perspective didn't matter too much. It was mostly a concern of maintaining historical accuracy.[237]" When the app was first made available to test at the Canadian Museum Associations National Conference in 2016, it already aligned with what they knew about the soldiers' experience on the front lines during the First World War: the trenches, the movements, the sounds of the battlefield, and so on. Also, at that time of the Vimy centenary, a fair amount of research and exploration on the subject had been made in that area. Being able to provide a sensory experience to people 100 years later after the event was significant, "a resurgence," as put forward by Dr. Stanciu, "a revitalization of the soldiers' experience from a century ago, even though none of them remain to bear witness to it[238]."

Since the experience is restrained in its freedom of action and movements aside of looking around and crouching, the interactivity and immersive components of the experience are quite low. Moreover, *The Battle of Vimy* does not suggest any avatar customization possibilities, which could be problematic to some marginal communities since we are being shown during the experience that the character the user is embodying is a white heterosexual man. However, as previously mentioned in the preceding sub-chapter on the "Feelings and Thoughts of the Experience," the sound effects of nearby explosions and whizzing bullets

[237] Baillargeon, "La Réalité Virtuelle Dans Un Contexte Muséal." Freely translated.
[238] Ibid.

passing my head while walking on the battlefield, as well the rumbling sounds when I was in the tunnels and the trenches, and the characters directly addressing me, added up a lot to the immersivity of the experience. It is nonetheless important to highlight that although the experience allows fewe interactions and degrees of freedom that previously discussed VR pieces, *The Battle of Vimy* succeeds in transporting the user into the battlefield and by immersing them in an educational context, which is its core objective. Also, the concluding part of the experience where the user is transported into a virtualized version of the Vimy Ridge Memorial in the present time is a pivotal spect-actorial moment that encapsulates the essence of the entire experience.

4.4.6. Analytical Results

Indeed, “bear witnessing” the events reconstructed in *The Battle of Vimy Ridge* is what the user is being put through since interactions and freedom of action are being reduced to the bare minimum. Throughout my observations on the three VR pieces I experienced, and after interviewing their developers – *Anne Frank House VR, MLK: Now is the Time* and *The Battle of Vimy Ridge*, I noticed that such a situation is common for educational experiences. I posed the same question to the developers of each Educational VR experience, seeking their personal insights based on their individual approaches and points of view: 'How much freedom of action do you think should be considered in a VR experience to deem it successful?' In response, Limbert Fabian answered,

Limbert Fabian

Yes, I do. I do think that it depends on the subject matter, and, in the end, what is proposed to the audience. And if I say, "Hey, this is going to be a documentary piece experience about the assassination John F. Kennedy," the audience is coming in with a set of ideas already in their heads about that moment in time. So, what I decided to do with that, is that it's kind of like either depending on that, or either throwing it all out the window and saying, "Okay, that's the background." Is it a document or is it a game? If I were saying, "Hey, this is a game that explores Dr. King's Speech," then I think it would have been more open exploratory. And you've got to reward the audience for time invested in exploring. I think there's the give and take. And what I wanted the reward to be was a kind of self-realization: "Oh my gosh, I never thought about housing that way. I never thought that it was, you know, someone hearing someone say, I want my kids to go to better schools. That's why I moved into this neighborhood." It's not just an off-handed comment that comes loaded, that is designed a specific way. I want people to realize that, as opposed to, you know, I played the game, and I did I lose the game. You're caught up with what I did in the moment that might kind of divorce you from the message. Again, it has to do with timing and deploying information. Again, documentaries do have a point of view. It's material that is real and stuff that's happened. But the directors have a point of view that they're taking the said material, and they want to guide you to a conclusion. So, I think that given the type of experience if it's a game, or a documentary, or a film. You know, in VR, I think it's trying to understand what those things are. So, the audience walks in and go, okay,

I get it. I think I understand what I'm supposed to be doing, and then go from there. I don't know if that answers your question...

Justin Baillargeon

It does! Because basically, what you're telling me is, when it comes to freedom of action, it depends on the type of experience, of the genre, that you're dealing with. And I feel like what you're telling me is, when you have a gaming experience, more freedom of action should be given to you. But when you're trying to tell a story, most likely a film in VR or a documentary, you should be guided, like you said.

Limbert Fabian

Yes, I think you should be guided in all of those scenarios, and all of those genres or approaches. I think, at the end of the day, you're still casting the audience. I have had a lovely idea of a children bedtime story. You want to follow the protagonist, but the idea of following the protagonist becomes interesting, because you can watch this film in the movie theater, or I'm in my living room and watching the experience, whatever the case may be, I think it's really wonderful to consider, okay, I'm going to follow this protagonist. And I am going to be that characters, "blank," the sidekick, a bug on a wall, a teddy bear that it carries, like, it opens up the possibilities to let the audience be passive, but also realize that they were part of the story in their unique way. So the same thing applies for documentary experiences in VR. It's like, okay, I'm going to have to deploy this information to you in some meaningful way. But you are, "blank," right? Are you an observer? Are you a participant? Are you the speaker? That really

does change the dynamic in which you should engage with the material. And I think that's what makes this unique, this medium, so unique, so special, to your subject, is spectator versus participator. Like, you're participating in some way, in one way or another, where I'm being told passively, just sit back and watch this movie. You're being told to do that. And I think that's what's interesting about the medium is to find ways to do that in a very unique way[239].

Answering the same question for *Anne Frank House VR*, Charlotte Bosman and Menno Metselaar answered,

I'd say that user agency can be meaningful in an educational setting (exploratory mode). It is just as in actual museums, some people prefer guided tours/audio guides, others prefer to find their own way[240].

Finally, Dr. Georgiana Stanciu answered the same question,

Dr. Georgiana Stanciu

What we aimed for with virtual reality was to enhance the experience, to offer an alternative, a supplement if you will. Not giving too much freedom to the user, I believe, suits us because if we start developing an experience where the user has choices, it becomes much more complex. Firstly, it's more complex in terms of the

[239] Baillargeon, "VR Documentary, Racism and Embodied Interactions."
[240] Information gathered through an electronic correspondence with Charlotte Bosman and Menno Metselaar on August 16, 2023.

museum's mission, and we need to find connections with the museum's mission. Secondly, it's a bit challenging because we are a military museum, so we have firearms, combat situations, and deal with difficult subjects. Thus, we already limit the category of visitors who can use it […] If I were to develop software where the user makes choices, that's already something else.

Justin Baillargeon

What do you think?

Dr. Georgiana Stanciu

A video game[241].

4.4.7. Treatment of History

In examining the Educational VR experience *The Battle of Vimy Ridge* at The Royal Canadian Regiment Museum, the intersection of technology, history, and education unfold in a unique manner. The challenges faced by the museum, from technical issues to the constraints of location-based VR, underscore the intricacies of implementing and sustaining immersive historical exhibits. The VR setup, including the physical booth and floor plate, highlights the commitment to creating an immersive environment albeit with certain limitations.

[241] Baillargeon, "La Réalité Virtuelle Dans Un Contexte Muséal." Freely translated.

Proprioception emerges as a critical aspect, drawing attention to the user's awareness of their virtual body and the impact of technological constraints on the overall immersive quality. As the user navigates through the recreated tunnels, the balance between guided storytelling and user agency becomes apparent, reflecting the deliberate choices made to align with the educational mission of the museum.

The significance of museum placement and curatorial decisions is key in crafting an immersive historical narrative. Unlike the Educational VR experience *Anne Frank House VR*, "The Battle of Vimy Ridge" is confined to the Royal Canadian Regiment Museum, creating both challenges and opportunities. The deliberate limitation of user freedom emphasizes the museum's focus on education and the sensitivity of the historical subject matter. Also, the varied approaches underscore the genre-specific considerations and educational goals that shape the development of an Educational VR experience such as *The Battle of Vimy Ridge*.

This Educational VR experience provides a nuanced understanding of how historical educational narratives are treated in the realm of VR, and also challenges the spect-actor concept aligning with the museum's mission and addressing the sensitive nature of the content. This limitation on agency reflects a curated and guided experience, akin to a documentary or educational setting. From technical intricacies to educational objectives, each aspect contributes to a broader discourse on the role of VR in conveying historical content. As we delve into the next chapter on Entertainment VR exploring *Stay Alive My Son*, another historical VR experience, we will continue to unravel the motivations, challenges, and implications embedded in the treatment of history within this immersive and interactive platform.

4.5. Conclusion

In the exploration of the VR experiences analyzed above, namely *Anne Frank House VR*, *MLK: Now is the Time*, and *The Battle of Vimy Ridge,* their approach shed light on differences in the prioritization of information and the approach whether they are developed as standalone apps, such as *MLK: Now is the Time,* as the complement of an actual museum in *Anne Frank House VR,* which is accessible on the Meta Store, or as a museum location-based VR experience only. As we dissect the findings, it becomes evident that each VR experience is tailored to achieve specific educational objectives, with varying degrees of user agency and interaction.

The central theme across these VR experiences revolves around the careful selection and presentation of information. In the case of *Anne Frank House VR*, the importance is placed on historical accuracy, immersing users emotionally in the environment inhabited by Anne Frank. *MLK: Now is the Time*, on the other hand, seeks a delicate balance between historical information and user agency, aiming for users to understand current social struggles and to draw parallel with Dr. Martin Luther King Jr.'s speech during pivotal moments of the Civil Rights Movement. In contrast, *The Battle of Vimy Ridge* prioritizes historical education over artistic embellishments with minimal agency, adopting a documentary approach to provide users with an immersive understanding of a specific historical event.

However, the historical education in VR is not without its challenges, particularly for location-based VR experiences. *The Battle of Vimy Ridge*, housed at The Royal Canadian

Regiment Museum, faces hurdles such as technical maintenance, software updates, and waning interest from developers. These challenges raise critical questions about the long-term sustainability of location-based VR experiences, especially in the context of evolving VR technologies and the need for continuous support.

In comparing the analyzes drawn from the two chapters, a distinct difference in the nature of VR experiences emerges, primarily rooted in the degree of mediation and user agency. The Artistic VR chapter highlighted the significance of less mediated experiences, as observed in *After Dan Graham*, *ArtGate VR*, and *Belongings VR*, where interactive elements are intricately connected to the freedom of action users possess. The emphasis here is on minimizing artificial control, offering greater user agency, and prioritizing intuitive interactivity within open-ended environments. The pursuit of higher immersion through reduced mediation and realistic embodiment characterizes these experiences.

Contrastingly, unlike the open-ended, fewer mediated experiences of Artistic VR, Educational VR operates within more structured and deterministic frameworks. The impending exploration delves into how educational objectives and predefined learning outcomes intersect with user agency and immersion. The spect-actor engagement, defined in the context of Artistic VR, undergoes transformation, prompting inquiries into the nuanced dynamics that arise when structured learning goals become central. In other words, in comparison with Artistic VR, Educational VR experiences suggests a more curated agency and embodiment to elevate feelings of presence for the spect-actor in order to understand the concepts and the message developers wish to transmit. While conducting my research and analyses, I observed the idea

of a possible negative correlation between educating individuals in immersive environments and allowing them autonomy and control, as proposed in some literature[242]. While the wider literature does not necessarily endorse this argument, further study would need to be done. Consequently, based on my research, I argue that enhancing interactive freedom and agency in both Artistic VR and Educational VR exploration enriches both our learning process and comprehension of VR experiences, given their complexity and implications for spect-actor engagement across various contexts.

As we transition to the next chapter, the spotlight will shift to Entertainment VR, where the exploration will pivot towards understanding how these experiences heavily depend on user interaction, engagement, agency, and emotional resonance in a spect-actorial context.

[242] Asish, Kulshreshth, and Borst, "Detecting Distracted Students in Educational VR Environments Using Machine Learning on Eye Gaze Data."

5 Entertainment VR

5.1 Introduction

In our exploration of Educational VR experiences, including *MLK: Now is the Time*, *Anne Frank House VR*, and *The Battle of Vimy Ridge*, we have delved into their distinct approaches regarding information prioritization, accessibility models, and whether they function as standalone experiences or location-based VR experiences. Each of these experiences, crafted with varying degrees of user agency and interaction, is meticulously designed to achieve specific educational objectives. The common thread among these VR experiences revolves around the thoughtful selection and presentation of information.

As we transition from the exploration of Artistic VR to Educational VR and, ultimately, concluding with the Entertainment VR realm in the forthcoming chapter, the dynamics of spect-actor engagement are anticipated to evolve. This chapter aims to uncover how Entertainment VR experiences, like *The VOID*, *The Thrill of the Fight* and *Stay Alive My Son* navigate the intricate landscape of user interaction, engagement, agency, and emotional impact in a spect-actorial context. By building on the insights gained from both Artistic VR and Educational VR realms, I strive to contribute to a comprehensive understanding of the multifaceted nature of VR experiences and their implications for spect-actor engagement, with a specific focus on the captivating genre of Entertainment VR.

5.1. *The VOID* (Ken Bretschneider and Curtis Hickman, 2015-2021)

5.1.1. Description of the Experience

The narrative, playful and social oriented framework is what differentiates Entertainment VR to Artistic and Educational VR. Although Entertainment VR is less inclined to push the boundaries of the medium, contrary to Artistic VR experiences such as *After Dan Graham*, which is more experimental than entertaining, and often more individual as in *Belongings VR*, its focus is more aimed towards pushing the boundaries of storytelling and technology. These elements seem to explain users' propensity to become immersed in emotional universes despite their virtual nature. VR experiences like the ones developed by *The VOID* –-further discussed below, which incorporate decision-making possibilities through social interactions contribute to provoking a stronger sense of engagement from the users. As Carl Therrien also points out,

> "[…] it is undoubtedly by exploring these dimensions and immersing the user in a more varied modeling of their psychoaffective sphere that designers will succeed in creating effects of presence with the virtual 'other,' and a presence to oneself through representation, which will finally be worthy of the greatest works of fiction[243]."

The freedom of movement and narrative choices demonstrated in narrative-based Entertainment VR experiences such as the ones produced by *The VOID,* bring spect-actorship

[243] Therrien, « La présence vidéoludique - De l'illusion à la projection dans l'écosystème affectif de la fiction », 243.

to the forefront with the various elements that enhance the sense of presence and engagement through affordances[244]. A term coined by psychologist James Jerome Gibson in his book *The Theory of Affordances*, "affordances" refer to the possibilities for action offered by an object or the environment to an individual[245]. It is all about the relationship between the properties of the environment and the capabilities of the person interacting with it. It is not just about what an object is or what it looks like, but what it enables someone to do. It is a concept deeply rooted in the idea that perception is not just about passive observation but is closely tied to potential actions and interactions with the surroundings. In relation to VR, "affordances" are an object – precisely, the torch from *The VOID*'s *Curse of the Serpent's Eye*, the power button in *After Dan Graham*, the objects in *Belongings VR*, and all the possibilities that could arise from them. In this case, creating a foundation for a potential subjective narrative-based in social interactions, which is an element deeply rooted in spect-actorship

Founded in 2015 and released in 2016 in the USA and in Canada in 2017, *The VOID* challenged the immersive qualities of virtual reality by combining them with physical environments to create unique level of immersion. This hybrid experience described as being halfway between films and video games was conceived as a location-based virtual theme park that offered to a maximum of four users the possibility to live an experience where they become the hero in a virtual adventure. In this multi-sensory "hyper-reality[246]" venture, users can interact and progress together in order to move the story forward while defeating enemies and solving puzzles. The users can also physically interact with surrounding objects that are

[244] Gibson, « The Theory of Affordances ».
[245] Gibson, « The Theory of Affordances ».
[246] The term "hyper-reality" was coined by The VOID co-founder Curtis Hickman. Taken from Hickman, *Hyper-Reality: The Art of Designing Impossible Experiences*.

transposed in real-time inside the virtual world, combined with some AR elements as well. Equipped with a backpack computer, a HMD helmet, a haptic vest and a gun with motion-tracking devices, the spect-actor embodies the master of their own narrative experience, a practice that involves simultaneously their physical mobility and all the necessary equipment for the VR experience. With all its gear, the spect-actor can now freely move inside a virtual environment. Situated inside a restrained space, the experience gives the user the impression of moving through different rooms and floors by taking them to simulated elevators.

I, experiencing *The VOID* in Toronto (December 6th, 2018)

5.1.2. Feelings and Thoughts about the Experience

Located within the walls of the famous Madame Tussauds wax museum in New York City, the first public virtual reality attraction called *The VOID*, an acronym for "The Vision of Infinite Dimensions," seems to break all boundaries of the virtual experience. Before the official

opening in July 2016 of their theme park, or Virtual Entertainment Center, located in Pleasant Grove, Utah, the team behind *The Void* had worked on creating an attraction tied to the release of the movie *Ghostbusters* (Paul Feig, 2016), titled *Ghostbusters: Dimension* (2016). This multisensory experience, halfway between video games and cinema, allows users to enter the world of the film and hunt ghosts and evil spirits while moving through the streets of Times Square, the city's subway tunnels, the basement of a haunted house, an apartment building, and the Ghostbusters' headquarters, with the voice of *Ghostbusters* actor Dan Ackroyd as the narrator. Participants can also interact with a multitude of virtual objects, all integrated into virtual environments superimposed on the physical environment of the game areas. These environments are detected by location sensors, preventing users from colliding with them.

Immersion is at the heart of *Ghostbusters: Dimension* by *The VOID*, and it begins even before the adventure starts. As mentioned earlier, the experience was located within the walls of the famous Madame Tussauds wax museum in New York. It was accessible to the public after paying both the museum's entrance fee and *The VOID*'s fee. Despite being seemingly distant from each other, virtual reality and the wax museum are linked from an attraction perspective. As Viva Paci points out,

> "[...] all this technological bric-a-brac related to cinema, when exhibited in museum contexts, is often staged as an experimentation of the cinema's future possibilities [...] Cinema going to the museum, for reasons and in ways that we map here, takes on the original characteristics of the device, characteristics from a time when everything was still based on attraction [...] The works presented in the exhibitions (present) a deliberately

ostentatious use of the technologies they came from; technologies presented in most cases as a destination for cinema, as the 'future of cinema'[247]."

Transitioning from the immersive VR experiences at *The VOID*, it is intriguing to explore how location plays a pivotal role in shaping the virtual encounter. This connection between VR and physical space becomes even more fascinating when examining historical instances like Étienne-Jules Gaspard's *Phantasmagoria*, where the manipulation of locations was an essential element. The interplay of location and immersive tricks in *Phantasmagoria* holds intriguing parallels with modern location-based VR experiences, such as *The VOID*. Delving into these historical and contemporary perspectives sheds light on the evolving relationship between spatial context and virtual narratives.

5.1.3. *The VOID* and its Similarities with Étienne-Gaspard Robertson's *Phantasmagoria*

Access to the main attraction in one of the museum's many rooms is then gained through a door reminiscing of a proscenium[248], perhaps in an objective to facilitate a sense of "human rootedness in the world[249]" before the VR experience that is going to be happening, or as Charlotte Herzog describes it, the importance of location "itself in terms of its architectural design and social function, as the place where the process begun by production is completed by

[247] Paci, *La machine à voir : À propos de cinéma, attraction, exhibition*, 36 and 40.
[248] In stage productions, a proscenium is an arch that creates the window, or frame, through which the audience experiences a production. According to Kiara Pipino, "That frame generates what is also known as the fourth wall. When we talk about actors "breaking the fourth wall", we mean that during the production the actors directly address the audience, breaking the illusion of separation between what is happening on stage and the "real" world." Retrieved from Pipino, « 1.3: Theatrical Spaces ».
[249] Pallasma, *The Eyes of the Skin: Architecture and the Senses*, 22.

consumption[250].” Before the user is invited to enter a room dedicated to recording their age and gender to determine the appearance of their avatar in the game, they are being handed equipment such as a headset, a haptic vest and a virtual gun that will make the virtual reality experience possible. The next door leads to a decorated basement that gives the impression of descending into the New York subway tunnels. An actor dressed as a security guard directs you, while others warn you of potential ghostly and spirit-related threats in the area.

Moreover, the whole pre-show of the VR piece could be compared to techniques borrowed from the pre-cinema with horrific portraits hanging on the walls and holographic projections on smoke screens, reminiscent of 19th-century phantasmagoria shows. These phantasmagoria performances were precursors to modern horror, and in a pre-cinema age, they utilized magic lanterns projected against screens and smoke. In his article about Étienne Gaspard Robertson's *Phantasmagoria*, author X. Theodore Barber describes Robertson’s piece as “the most influential magic lantern ghost shows of the early nineteenth century[251].” The description Barber does of the piece closely resembles the efforts accomplished by *The VOID*’s team after the public passes the proscenium. Set into an abandoned chapel, Robertson would have the public enter,

> “[..] a somber room painted or draped with black, decorated with gloomy images, and illuminated by a weak lamp. In this environment they became grave and spoke in whispers. When the show was ready to begin, Robertson stepped forward and delivered

[250] Herzog, « The Movie Palace and the Theatrical Sources of its Architectural Style », 15.
[251] Barber, « Phantasmagorical Wonders: The Magic Lantern Ghost Show in Nineteenth-Century America ».

a speech that warned against superstition and impostors who have deceived the credulous.[252]"

More similarities with *The VOID* and phantasmagoria are to be noted, especially when it comes to the many tricks used to transport the audience into an immersive event. To further enhance the sense of presence, *The VOID* allows users to experience various effects such as vibrations, air pressure, heat, and cold, as well as different olfactory, liquid effects and sounds to blurry the boundaries even more between the real and the virtual.

Regarding sound design, it is important to mention that sound effects heard in the different experiences from *The VOID*, such as the ones I tried, namely *Ghostbusters: Dimension* and *Star Wars: Secrets of the Empire* (2017), are reproduced to sound the way they do in their specific cinematic universes. A lightsaber in *Star Wars: Secrets of the Empire* will sound the same as it does in the *Star Wars* film saga, just like to a proton pack in *Ghostbusters: Dimension*, which will sound the same as it does in the film series.

It is also important to mention the initial reluctance of Curtis Hickman to include a soundtrack in *The VOID* experiences for realism purposes, as people's lives do not have soundtracks. However, after his initial walkthroughs into hyper-reality experiences, Hickman reconsidered his thoughts, going as far as to say that a musical score added to a VR experience plays a major part in virtual presence: "[…] music was a big part of every experience after that. It just felt wrong not to have it, and its absence negatively affected the feeling of presence far

[252] Barber, « Phantasmagorical Wonders: The Magic Lantern Ghost Show in Nineteenth-Century America », 75.

more than its 'unnatural' existence ever did. That day I learned what is real and what feels real are sometimes two very different things[253]."

Although Hickman's statement is clearly justified when it comes to VR experiences based in settings known to the public that are strongly ingrained in popular culture and people's cultural baggage, specifically fans of the aforementioned cinematic universes, I argue that soundtracks are justified as considerable and powerful presence tools in Entertainment VR experiences only, aside of diegetic sound and music for realism purposes, especially when users are aware of specific musical themes. These may indeed propel their immersion and presence process to further grounds by giving them the real feeling of partaking in a story in a universe they are so fond of, which is, I argue, the foundation of the spect-actorship concept. Gaspard Robertson would also take the path of the illusion of reality to convince its audience of the truth of the experience through the usage of sound:

> "[Robertson's words] were ambiguously phrased and even open to the interpretation that the ghosts about to be seen were real […] Having completed his speech, Robertson quickly extinguished the light so as to plunge the room in total darkness for the next hour and a half. This in itself was frightening, but to increase the terror he proceeded to lock the doors. The audience then heard the noise of rain, thunder, and a funereal bell calling forth phantoms from their tombs, a Franklin's Harmonica, a form of musical, water-filled glasses, provided a haunting sound which served both here and throughout the show to mask the noise of the goings-on behind the scenes. During these sound effects, Robertson

[253] Hickman, *Hyper-Reality: The Art of Designing Impossible Experiences*, 38-9.

was setting up his magic lantern behind the screen, rear projection being in fact a key to his performance[254].”

As often attributed, though without direct evidence, by French philosopher Jean-Jacques Rousseau: 'The world of reality has its limits; the world of imagination is boundless,' this famous proverb seems to perfectly apply to possibilities offered to the public by popular immersive entertainments such as Robertson's phantasmagorias and *The VOID*. What appears to bound them together is their usage of "alief" elements. Coined by Tamar Szábo Gendler, aliefs are defined as "a mental state with associatively-linked content that is representational, affective and behavioral, and that is activated – consciously or unconsciously – by features of the subject's internal or ambient environment[255]." The author expands on the notion by stating that an alief is not only a mental state, as previously mentioned, but also a physical one that "result in the creation of clusters of associations with representational-affective-behavioral[256]." In other words, aliefs are automatically activated while we assume we are truly experiencing something both mentally and physically, but that we are not truly doing "for real," hence an automatic-belief, or an a-lief, to refer to Gendler's notion.

In order to support this assessment, it is necessary to go back to Barber's essay on Robertson's *Phantasmagoria.* After his retelling of Robertson's speech during the pre-show, Barber relates that " […] his words were ambiguously phrased and even open to the

[254] Barber, « Phantasmagorical Wonders: The Magic Lantern Ghost Show in Nineteenth-Century America », 74-5.
[255] Gendler, « Alief and Belief », 642.
[256] Ibid, 642.

interpretation that the ghosts about to be seen were real. At the least, some people present were apparently so overwhelmed by the apparitions that they forgot that the show was based solely on tricks[257]." Furthermore, as Allison C. Meier mentions, "It was not just a magic lantern show; it was an immersive event of mystery and terror (with the safety of knowing it was all a trick). The arrival of cinema effectively ended phantasmagoria. Yet film's embrace of technology for transporting audiences continues the phantasmagoria's spirit[258]."

In relation to *The VOID*, the same could be discussed about their faculty of creating several aliefs such as simulating the movement of a virtual elevator in *Ghostbusters: Dimension*, or virtually walking on a dangerous moving platform that is levitating over a precipice filled with hot lava in *Star Wars: Secrets of the Empire* (2017), all of this amplified by the feeling of the heat of Mustafar's lava and smelling its burning air as seen in the image above. Such an example could also be compared to the very simple, but extremely effective VR experience *Richie's Plank Experience* (2016) developed by Toast VR. In this experience that is meant to simulate vertigo, users are invited to take an elevator that takes them 80 stories high on the top of a building to step out on a plank high up among skyscrapers in an urban landscape. The sense of fear associated with heights is amplified with various audio effects such as the sound of heavy winds, the sight of a helicopter passing overhead not too far from where the user is standing and the cracking of the wooden plank as you proceed to walk on it. Even though the vertigo effect already appears to be quite strong from the very beginning, it is possible to amplify it by simply adding a real plank to the experience. What is most surprising is the immediate physical response that users can encounter: the human brain instantly throws the

[257] Barber, « Phantasmagorical Wonders: The Magic Lantern Ghost Show in Nineteenth-Century America », 74.
[258] Meier, « The Magic Lantern Shows that Influenced Modern Horror ».

sense of balance into question, while it knows you are not 80 stories high. On this note, Curtis Hickman, the co-founder of *The VOID* discusses in his book *Hyper-Reality: The Art of Designing Impossible Experiences* about the disconnect between the intellectual understanding and emotional response when immersed in a conclusive VR experience, something he calls "the path of conviction[259]." According to the author, the main objective of this path of conviction is to first and foremost provide users with a foundation for the aliefs of the guest by grounding them into the world they enter in before asking from them to accomplish more complex objectives and meet with events and characters in the experience. As mentioned by Hickman, "creating a simulacrum of a mental state which is the 'feeling' of meeting [Darth] Vader, without asking anything of the guest in order to invoke it. We certainly couldn't just start by tossing Vader in your face. We need to walk you step by step down a path that will hopefully end in a form of subconscious conviction[260]." For instance, *The VOID* allows you in the experiences' very first moment to interact with your environment in ways you would normally do in "the real world," such as manipulating and interacting with virtual objects that are also present in the tangible world, or to simply lean on a wall or sit on a chair. Expanding on this notion, Hickman assesses,

> "I'm guessing you wouldn't think twice about leaning against a wall. In a virtual setting it's much more difficult to predict your behavior. In the inner reality of VR your belief system might say, 'Hey these things are fake, and your alief system may or may not register the walls of your virtual world the same way they do in actual reality." It all depends on the experience of the individual. There are horror stories about people

[259] Hickman, *Hyper-Reality: The Art of Designing Impossible Experiences*, 163.
[260] Hickman, *Hyper-Reality: The Art of Designing Impossible Experiences*, 164.

attempting to lean on things in virtual environments who were subsequently injured. On the other hand, when people first enter *The VOID,* they are hesitant to touch anything at all and that's actually a big problem. After all, a fundamental goal of hyper-reality is to create a conviction in the impossible nature of that reality. If we can't convince a guest of something as simple as 'the walls around me are real' then how can we convince them that something as impossible as meeting Darth Vader is real[261]?"

To support this statement, Hickman refers in his book to an example from the experience *Star Wars: Secrets of the Empire*. In the first minutes when the experience begins, users are prompted to sit down on a bench opposite of a cockpit located in a starship. The character K-2SO, a droid that will guide you throughout the experience, tells you to sit down on the bench before the ship takes out. As Hickman remarks, users would at first hesitate to sit down because "they are being asked to sit on a chair that they haven't seen in the outer reality. They only see a *virtual* bench in the inner reality. They don't know for sure if there is a physical bench there or not, yet K-2SO is asking them to trust that they won't fall when they move to sit on it[262]." This is something I completely remember experiencing myself while being immersed in the aforementioned environment. I remember tapping the bench a few times to make sure that there was indeed something in the outer reality, as mentioned by Hickman. This very clever technique imposed at the very beginning of the story is used here to reassure and convince users of the tangibility of the virtual world, and most importantly, that this virtual world is a physical one too. In this way, by being on the path of conviction through physical evidence, as previously described, the users' belief system is confirming to them that what they are seeing in the inner

[261] Ibid, 163.
[262] Hickman, *Hyper-Reality: The Art of Designing Impossible Experiences*, 165.

world can be interacted with, while their alief system tells them that everything they are virtually seeing is, in fact, real.

5.1.4. The Advantages of Social Experiences

One notices that, historically, technological and media innovations often come with a fear of social isolation. A study published in the American Sociological Review in 2006, which had been authoritative since its publication, demonstrates that hours spent using new communication technologies, such as the Internet or mobile phones, compromise social relationships[263]. As the authors observe, since 1985, new technologies have contributed to socially isolating individuals. Nowadays, even with greater accessibility to the Internet and the emergence of communication tools like social networks, which are intended to keep the population in contact, "roughly a third of respondents predicted that harms to well-being will outweigh the positives overall in the next decade of digital life will continue to outweigh the negatives[264]. Indeed, these communication advances would actually reduce the likelihood of face-to-face encounters between individuals given the ease with which they can communicate remotely with their loved ones through their computer or mobile device[265]. In her book *How Games Move Us*, Katherine Isbister discusses about what is emotionally different about social play compared to an individual experience. According to the author, most people who play digital games prefer playing them with others. Not only does the players' emotional response

[263] McPherson, Smith-Lovin, et Brashears, « Social Isolation in America: Changes in Core Discussion Networks over Two Decades », 373.
[264] Anderson and Rainie, « The Future of Well-Being in a Tech Saturated World », 30
[265] McPherson, Smith-Lovin, et Brashears, « Social Isolation in America: Changes in Core Discussion Networks over Two Decades », 373.

change when competing with other people, but it also led to higher ratings of engagement than playing against a computer[266]. Moreover, in conjunction with my concept of the spect-actor in which freedom of action and choices are primordial in the immersion process, the social experience of playing with other brings meaningful choices into the social interactions of gameplay. As stated by Isbister, "when playing together, you and your fellow players take in-game actions that have real life consequences for one another's moment-to-moment experience, as well as consequences for one another's in-game virtual bodies and self[267]."

As for VR, a study conducted in 2016 by Hybridlab[268], a design research laboratory at the Université de Montréal, aimed to evaluate the reactions of twenty research subjects in two types of VR experiences with or without narration[269]. The research team, led by Tomás Dorta, wanted to measure the degree of immersion in these experiences by comparing them with two devices: a cardboard-type head-mounted display and the Hybrid Virtual Environment 3D (or Hyve-3D), a concave screen developed by the members of the same team. Following the results of the different experiments, the researchers concluded,

> "Our results indicate that social interaction was perceived to be quite difficult using the VR headsets. Despite this, participants talked more using the VR headsets. Because from the interviews emerged that to be able to feel the mate's presence was an important aspect of the whole experience, we interpreted this result as the attempt to reach their friends

[266] Isbister, *How Games Move Us - Emotion by Design*. 44.
[267] Ibid, 40.
[268] This research is all the more interesting and relevant considering that it was published in the year of *The VOID*'s public release.
[269] Dorta, Pierini, and Boudhraâ, « Why 360° and VR Headsets for Movies? Exploratory Study of Social VR via Hyve-3D », 211–220.

verbally: since they lost all visual clues about their presence, their position, and their actions, verbal communication occurred to compensate the lack of other's presence[270]."

In an interview he conducted following the publishing of his article, Tomás Dortà deduces that "the viewer with an individual device is isolated from others, which goes against the collective experience[271]." Following the results of his research, Dortà the author the wearing of a VR head-mounted display as one of the many contributing factors to disengage the users and to de-immerse them. As Dortà states, in reference to his Hyve-3D screening system, "In the end, people clearly preferred virtual reality without glasses, as they could interact with other viewers and exchange their impressions in real time. They appreciated the communal aspect of the experience.[272]" In summary, the level of enjoyability of VR experiences would depend on the sociability among users. However, even though this study raises interesting points and questions related to the importance and value of the social context in VR, the results of this research and the methods employed to reach this conclusion deserve to be discussed and debated. As mentioned in his article, the participants who participated in his study have been given Goodle cardboards to experience VR, which is one of the first HMD – made with fold-out cardboard – in which a smartphone is inserted, was originally intended as a low-cost system to encourage interest and development in the early days of VR applications before its mainstream release in 2016. Moreover, the study conducted in 2016 could have provided participants with devices that enhance the sense of immersion, such as Oculus Rift or HTC Vive, which were available to the public at the time. Additionally, the article never mentions

[270] Dorta, Pierini, and Boudhraâ, « Why 360° and VR Headsets for Movies? Exploratory Study of Social VR via Hyve-3D ». 219.
[271] « Réalité virtuelle : les gens la préfèrent sans lunettes ! » Freely translated.
[272] « Réalité virtuelle : les gens la préfèrent sans lunettes ! » Freely translated.

which experiences were presented to participants for comparison with their immersive system called Hyve-3D. The lack of details provided by the study makes it difficult, if not debatable, to arrive at such a conclusion.

Although some VR content is indeed dedicated to an individual experience such as spherical films, location-based Entertainement VR experiences such as *Sandbox VR* and *The VOID* encourage interaction among multiple users in the context of cooperative experiences. In fact, as confirmed by Curtis Hickman, "because *The VOID* is intended to be a social experience, we expect and want to encourage guests to talk to each other – solving issues, making plans, commenting, etc. They should be unknowingly writing their own dialogue in the story[273]". Groups of up to four users can indeed participate together as they evolve in several possible game scenarios. Equipped with a microphone that allows users to talk, we are often prompted to communicate in order to come up with a plan on how to evolve in the narrative, and also to make decisions that could influence the course of the story. In a similar fashion, in the VR experience *Curse of the Serpent's Eye* (2015) produced by *The VOID,* four users are being given only one torch to help light their way in an ancient temple to fulfil a mystical prophecy about a fractured star. As mentioned by Hickman, giving only one torch to four users,

> "was a way for them to add a layer of physical-virtual interaction improving immersion and consequently presence […] When guests have only one torch, you create a foundation for a potential subjective narrative based in social interactions. If another member of the team wants the torch, they must then ask their buddy for it who, in turn, has to make a

[273] Hickman, *Hyper-Reality: The Art of Designing Impossible Experiences*, 61.

decision. 'Do I give the torch to Garry, or do I hold on to it?' This dialogue and decision-making over a simple prop add to the subjective story throughline […] They were required to communicate, act more like a team and, above all, generate a story[274]."

5.1.5. Conclusion

The concept of the spect-actor, which highlights the user's engagement with the narrative, particularly within the context of Entertainment VR, is exemplified by experiences such as *The VOID*. However, as Curtis Hickman states, "Creating a story with a character who is also driving the narrative is a difficult task. For starters, it takes a lot of content. The more freedom the guest/character is given the more content you need – most of which an individual guest will never experience[275]. On this note, the next Entertainment VR experience I will be discussing proposes users no storyline and almost no authorial control where the freedom given to the playfulness of the game is key. Although *The VOID* stands out as a more narrative-drive experience *The Thrill of the Fight*, is a room-scaled with an arcade gameplay that brings another important facet of spect-actorship: authenticity.

5.2. *The Thrill of the Fight* (Sealost Interactive LLC, 2016)

5.2.1. Description of the Experience

[274] Ibid, 120-21.
[275] Hickman, *Hyper-Reality: The Art of Designing Impossible Experiences*, 78,

The Thrill of the Fight, the Entertainment VR experience analyzed in the present section, is different from the other two experiences for its absence of a narrative, but quite similar in its spect-actorship angle. Belonging to the genre of "skill-based games" which are defined by Paweł Pietrasieński as, "easy to play, require almost no starting skills, have short sessions, and don't expect users to understand complex mechanics and controls" [276]. While skill-games offer a simple entry point, mastering them is challenging. The game design focuses on creating a gradual learning experience for users, and this approach to ease ensures the enduring popularity of such games. Most importantly, what differentiates *The Thrill of the Fight* from the other Entertainment VR experiences is its almost total absence of narration. The essence of games such as *The Thrill of the Fight* lies in their straightforward storytelling. Typically centered around simple mechanics, these games provide a brief introduction that players can quickly grasp. On the opposite of *The VOID*, which features more detailed introductions and tutorials inserted in a prologue to the story before the experiences begin, games such as *The Thrill of the Fight* require minimal introduction for users who will user their boxing skills to fight opponents. Last but certainly not least, and perhaps most importantly, *The Thrill of the Fight* unquestionably deserves recognition as a spect-actor Entertainment VR experience for its remarkable freedom of action, agency, and authenticity.

Although one might argue that *The Thrill of the Fight* can be seen as a fitness app, a boxing simulation app, or even an Educational VR app on boxing training, interestingly enough, as developer Ian Fitz mentioned in an interview I conducted with him, although he did think about it occasionally, he did not seek advice from professional boxers for his VR experience[277].

[276] « Skill-based games - What are they? »
[277] Information gathered through an electronic correspondence with Ian Fitz on July 30, 2023.

Even though the game is solely based on boxing authenticity, Fitz "chose boxing just because [he] thought it was a great fit for the [VR] technology, especially with HTC and Valve pushing room-scale hard for the Vive. I have no combat sports experience and am not a combat sports fan. The original plan was actually to go ultra-arcadey, more like a VR version of *Punch-Out!!*[278][279]." Concisely, *The Thrill of the Fight* was designed to be purely entertaining, but in the end, circumstances have led *The Thrill of the Fight* to become a VR experience of such authenticity and realism that it could be likened to an actual shadow-boxing exercise.

In a podcast episode from *The Joe Rogan Experience*, top UFC middleweight contender Jared Cannonier mentioned, "[*Thrill of the Fight*] is fairly realistic as far as the sensors and responsiveness go, and I was using that to cut weight for my last fight and the Adesanya fight[280]".

Developed by Ian Fitz, a self-taught programmer with an 8-year career in web development and no prior game production or business owning experience, *The Thrill of the Fight* is an independently produced room-scale only VR boxing simulation game focused on authenticity and freedom[281]. VR games that require users to be physically active during the

[278] *Punch-Out!!* is a video games series of boxing developed by Nintendo. The first one released in 1984 as an arcade unit. The series was later adapted on the Nintendo video game console in 1987. The gameplay is indeed very "arcade," as Fitz mentioned, and requires from the player to rely on button combos to attack the opponents. The characters' appearance also tends to look more caricatural than realistic, as it is the case in *The Thrill of the Fight*.

[279] Information gathered through an electronic correspondence with Ian Fitz on July 30, 2023.

[280] Rogan, « JRE MMA SHOW #144 ».

[281] As Ian Fitz mentioned it himself in an interview I conducted with him, "I think it's fair to call it a passion project, as I had a lifelong interest in video games and had always wanted to try to make a game myself, but I was also hoping it would be less a passion and more just a new career. I chose VR because back in 2016 there were very few VR games available, and the audience (including myself) was eager to try just about any experience they could. That made it much easier for new games to stand out and get immediate attention and visibility." (electronic correspondence, 30 July 2023)

experience, referred as “exergames,” a portmanteau word for the combination of exercise and video games, or AVRG for ‘active virtual reality games’[282]. The user can deliver various basic punches to the opponent such as jabs, crosses, lead hooks, rear hooks, as well as lead and rear uppercuts, either to the head or to the body. When the opponent attacks, the user can defend themselves by blocking, dodging left, dodging right, ducking, sidestepping, snapping back or by countering with an attack of their own. Each opponent has their own boxing styles and techniques, similarly to the user. The opponents are then prompted to attack the user based on their movements and attacks. The user fights in matches against opponents of progressively increasing difficulty. Also, due to safety concerns for the user and to ensure they do not run into things in the external environment, the virtual boxing “ring” is confined to a 6x6 foot circle. It is important to mention that a typical boxing ring is an 18x22 foot square, with rounds typically ranging from 4-12 rounds at three minutes a round[283]. The boxing VR experience respects the rounds timeslots but can also be altered accordingly in the game’s option menu. *The Thrill of the Fight* was first released on Steam in 2016 and the Meta Store in 2019.

5.2.2. Feelings and Thoughts about the Experience

As previously mentioned, the game stands out as an VR experience on authenticity and realism for a better sense of immersion. As I entered the game, I am quickly prompted to step on a scale that is facing a photo camera, mimicking a very common practice in boxing: the

[282] Stewart et al., « Actual vs. perceived exertion during active virtual reality game exercise », 2.
[283] « Boxing ».

weigh-in[284]. This action's objective is basically made to register the height of the user in order to properly scale the user in the game environment, a very simple and fast practice, but often very much neglected, which plays a significant part in immersing the user inside the experience. According to the literature,

> "Understanding size and distance perception in virtual reality (VR) has been seen as a relevant research topic, not only because of scientific interest, but also since incorrect estimations inside virtual environments (VEs) might lead to unwanted effects in various VR-based training, design, and visualization applications […] This illusion has been used to manipulate perception of sizes and distances by making participants embody virtual bodies of different sizes in VR; as the size of the virtual body changes, the body scaling effect causes perceived sizes and distances to scale into the opposite direction[285].

Björn Van der Hoort and H. Henrik Ehrsson's research highlights that the body-scaling effect, which is crucial for immersion in VR, is not solely influenced by the visual representation of our body[286][287]. It also hinges on the manipulation as proprioceptive[288] information through the body ownership illusion. This manipulation can lead to important

[284] As confirned by the *World Boxing Association* website: "The taking of a boxer's weight before a fight ensures that the boxer is in the weight category in which he has been contracted to fight." Referenced in "Inalsingh, « Weigh - in Time for the Boxer ».
[285] Pouke et al., « The Body Scaling Effect and Its Impact on Physics Plausibility ».
[286] van der Hoort and Ehrsson, « Body ownership affects visual perception of object size by rescaling the visual representation of external space ».
[287] van der Hoort, Guterstam, et Ehrsson, « Being Barbie: The Size of One's Own Body Determines the Perceived Size of the World », e20195.
[288] "From this perspective, proprioception is the awareness of the position and movement of our body in space and results from the processing of information from muscle, joint, tendon, and skin receptors. It arises from static (position) and dynamic (movement) information, and is crucial to the production of coordinated movements," as defined by Valori et al., « Proprioceptive accuracy in Immersive Virtual Reality: A developmental perspective ».

perceptual change in scaling sizes and distances, even in the absence of visual cues the body, a very common case in several VR experiences. Understanding this phenomenon is integral to grasping its significance in the context of immersion.

After being scaled, the user is suggested in the menu to either choose to start the game with a first fight, or to enter the gym to warm up where you can practice your speed or your punching techniques on a heavy bag, a dummy, or a speed bag. The game also offers you the choice to start a boxing campaign. The first opponent you face is a sparring-partner with low strength and very little technical fighting abilities. In boxing, sparring simulates a fighting experience to learn and refine techniques, and also to make fighters more aware of their strengths and weaknesses prior to a "real fight" in the ring. In the case of *The Thrill of The Fight*, the other purpose of this sparring-partner is to familiarize the user with the game's mechanics and the virtual environment. Following this sparring session, the user is invited to start a solo campaign whose difficulty will increase as opponents succeed each other. The difficulty increases as opponents follow one after the other. Each of them has different sizes, shapes, fighting styles, and techniques. The user is therefore called upon to adapt to each of their strengths and weaknesses – much like in a real boxing tournament, in order to fight them and ultimately complete the campaign to become the champion.

Screenshot of the sparring-partner taken from *The Thrill of the Fight* (Meta Quest 3)

5.2.3. Total Immersion Through Simplicity

The mechanics of this game distinguish themselves for their simplicity. Aside of holding the Meta Quest 3 controllers for movement tracking purposes and to point-and-click in the menu to select different options, *The Thrill of The Fight* depends solely on the user's motor skills, as well as the efforts they make to the best of their ability to combat their opponents. As I progressed through the solo campaign, I felt psychologically and physically motivated to go further in the game to be crowned champion. Having practiced boxing myself for several years, I was able to observe how faithfully the game reproduces the techniques I was taught in the past, and also how the artificial intelligence of the characters reacts naturally and realistically to boxing combat methods. Such faithful proprioceptive reproduction of my combat movements, as well as the satisfaction it conferred, made the experience absolutely gratifying

and motivating. Another crucial aspect of *The Thrill of the Fight* is the freedom it offers spect-actors, as they are not compelled to adopt a pre-made avatar with predetermined gender and skin color, thus enhancing immersion, embodiment, and identification. Furthermore, the only representation of the user in the virtual environment is through boxing gloves that accurately replicate the user's movements. My personal evolution as a player, coupled with my improvement as a boxer, represented a real achievement for me. As I progressed into the game, the next opponent would always be stronger, with better stamina, than the previous one, which pushed me to better myself and to welcome these new challenges. As mentioned in the article written by Maurillio Giuseppe, Maria Tavormina and Romina Tavormina,

> The stimulus to play is determined not only by a hedonic aspect but also by a reward mechanism. The player experiences easy and frequent rewards in the early stages of the game, later it is more difficult to achieve the same prizes and it requires more and more effort. This mechanism is gradual and is recognized as capable of conditioning behaviour to continue in the activity undertaken. The effects of intense use of video games on brain activity were monitored by Koepp and his collaborators, who recorded an incredible increase in dopamine, observed in an amount comparable only to that caused by the intake of amphetamines[289].

As mentioned earlier, as the user progresses in the game, challenges become harder and harder as opponents are better, faster, stronger, and use better boxing techniques than the previous one. Such difficulties were revealed through video game research "that the most

[289] Tavormina and Tavormina, "Video Games and COVID-19: How Do Lockdown And addiction Interact?", 155.

dominant element related to player enjoyment was the execution of challenges,[290]" which stimulates the user to push themselves to beat the game. According to research found on the subject,

> Challenges come from enemy artificial intelligence that exhibits interesting behaviour that will challenge the player. The enemy artificial intelligence should be able to change its behaviour depending on the difficulty of the setting that the player has chosen. The game should gradually increase the difficulty for the player, ensuring that the player is always engaged. Varying mission objectives that change the pacing of the game and give players something new to do are essential in player engagement[291].

When it comes to flow in *The Thrill of the Fight*, the game distinguishes itself, as previously stated, by its simple mechanics, accurate proprioceptive sensations, as well as authenticity, which plays a significant part in immersing the users. Other VR boxing games such as *Creed – Rise to Glory* (Survios, 2018), while still anchored in realism with their authentic boxing mechanics and photorealist characters based on the *Creed* film franchise (2015-2023), which is itself a follow-up to the *Rocky* film franchise (1976-2006), tends to bypass the user's freedom of action by regulating the game progression through a stamina system[292] to the playable character, and at the same time, to the user. The user is thus compelled to conform to the endurance of their in-game character. When the character becomes fatigued,

[290] Sweester et al., "Gameflow in Different Games Genres and Platforms", 13.
[291] Ibid.
[292] In video games, a stamina system encompasses two distinct aspects. Firstly, it aims to curtail a player's advancement to facilitate the unfolding of the complete gaming experience in alignment with the developer's intended duration of play – the longer the game, the better. Secondly, it seeks to guarantee that players with varying paces of gameplay can sustain relatively analogous levels of progression, and to impose different levels of difficulties to the players.

the user cannot continue at their own pace even if they still have energy, as their actions are slowed down or even interrupted until the in-game character catches their breath by holding boxing gloves up to their face to defend against the opponent's strikes. Such imposition disrupts the user's immersion, as decisions are no longer within their control but are dictated by the game's artificial intelligence. Moreover, when the playable character is severely punched repeatedly, the user is then projected out of the character's body, as if the attacks momentarily render the character unconscious, as demonstrated in the screenshots below. The user is then prompted to 'reconnect' with their character to regain control by aligning their controllers with the character's boxing gloves in order to continue playing. This serves as a clear reminder that the authenticity of the game is not at the core of the experience, unlike in *The Thrill of The Fight*, which follows a spect-actorship approach. When the character regains energy after a period of not fighting, the experience then resumes its normal flow[293].

Screenshots taken from *Creed: Rise to Glory* while experiencing the forced stamina effect

[293] In 2023, five years after the release of *Creed: Rise to Glory*, the developpers released an update on the game called 'Endurance Mode' where your character will not have a virtual stamina bar. Instead, it will tire out based on your own physical exertion, leading to a more authentic experience.

In *The Thrill of the Fight*, the stamina is solely based on the user's, which deepens the immersion, as well as the flow of the game through freedom of action and accurate proprioceptive sensations. As demonstrated by research conducted by Marco Pasch when it comes to sports video games specifically, as show, in the chart below, "flow can only happen when the challenge at hand is matched by a person's skills. When the challenge is too low boredom occurs[294]." Moreover, "a person is in the flow zone when the person's abilities are matched by a challenge. Too much challenge leads to frustration, too little challenge to boredom[295]." The strength of *The Thrill of The Fight* relies on the user's total immersion through simplicity, which was paramount to Fitz during the game's development,

> Mainly, I just tried to keep the contents of the game in line with what users expect to encounter, and I tried to keep the game pretty intuitive with what players might expect from real life. I think room scale adds to the immersion, too, unless you are trying to play without meeting the space requirements or are just nervous about what's around your play area (or who might try to enter it when they should not). I also don't ever require any button presses, which means everything the player is doing in game is mimicking exactly what the player is doing in real life, without much abstraction[296].

Adding to this, user gratification in a movement-based VR experience such as *The Thrill of The Fight* can only be achieved if the game finds a right balance between the right amount

[294] Pasch et al., "Movement-based sports video games: Investigating motivation and gaming experience", 52.
[295] Ibid, 53.
[296] Information gathered through an electronic correspondence with Ian Fitz on July 30, 2023.

of challenge while adapting to their skills. Adding to Fitz's comments, Pasch further explains how,

> [t]he consequence for the design of movement-based games is how can the game ensure a balance between challenge and skill. As in strategy games where the artificial intelligence is adapting to the gamer's mental and strategic skills, a movement-based game should adapt to the physical skills of the gamer. Another area of interest is how can game design influence the subjective perception of challenge and skill, and thus the experience of flow. Ultimately, movement-based games can succeed only if they offer joyful experiences to the gamer[297].

5.2.4. Pleasure and Engagement Through Perceived Exertion

The Thrill of the Fight adheres not only to my spect-actor concept through freedom of action, faithful movement reproduction in the virtual environment, but also through true rewarding physical results that are due to my personal exertion in the game. As described by Stewart, exergaming, "has gained recent popularity for its potential to turn an otherwise sedentary activity in video gaming into an active one[298]. Moreover, "video games that require the user to be physically active during gameplay […] are obvious targets for research due to video games' long-standing as highly enjoyable and pleasurable leisure activities[299]. As a matter of fact, while putting myself through a virtual physical journey with the aforementioned VR experience, I noticed the physicality of the game prompted me more to go back to it on a

[297] Pasch et al., "Movement-based sports video games: Investigating motivation and gaming experience", 52.
[298] Stewart et al., "Actual vs. perceived exertion during active virtual reality game exercise", 2.
[299] Ibid, 2.

daily basis than any other games in order to: 1) entertain myself ; 2) find pleasure through exertion ; 2) physically surpass myself ; 3) notice my evolution in the game ; 4) unlock new opponents ; 5) be finally crowned champion and complete the game. After many hours spent playing *The Thrill of the Fight,* I also came to the realization that my focus, attention span and dedication to my physical activity were quite different from other exertion such as doing muscle building exercise in a gym or running on a treadmill. Instead, while doing VR boxing, I had the feeling I was indulging in the pleasure of exertion rather than *working*-out. Such an assessment has been the subject of an investigation conducted in 2022 in which researchers studied the differences in actual and perceived exertion during gameplay[300]. In fact, according to Neumann and Moffitt, attention shifts away from internal stimuli, such as increased breathing, fatigue, or muscle pain, toward external sensory stimuli of the AVRG like game sounds and visual images[301]. Following this study, the Virtual Reality Institute of Health and Exercise supervised by Dr. Marialice Kern and Dr. Jimmy Bagly from the Department of Kinesiology of the San Francisco State University created a mobile app called the *VR Health Exercise Tracker*. The purpose of this app is to accurately track your heart rate and calories in VR through a heart-rate monitor. In their most recent study, the institute has compiled a list of VR games and their workout equivalents. They found through observed MET[302] score during testing that *The Thrill of Fight*'s rating comes in at 8 to 10 calories per minute, the equivalent of rowing, with an average observed METs of 9.28. On that subject, Ian Fitz calls these physical benefits as "just a happy accident" and that his game was developed as "just a simple boxing game […] I

[300] Stewart et al., "Actual vs. perceived exertion during active virtual reality game exercise", 7.
[301] Neumann and Moffitt, "Affective and attentional states when running in a virtual reality environment", 9.
[302] According to the Harvard School of Public Health, "MET stands for the metabolic equivalent of task. One MET is the amount of energy used while sitting quietly. Physical activities may be rated using METs to indicate their intensity." "Staying Active".

definitely did not approach it as a fitness app or intend it to be used as one." He also confirmed to me through our interview that he was not specifically thinking about the physical benefits when coming up with the idea of *The Thrill of the Fight*, nor did he specifically cater to them as part of the game's design[303]. Throughout the course of one week, I have myself tested the game and used the Meta Quest Move app in order to track my fitness evolution and to compare it with the data gathered from the Virtual Reality Institute of Health and Exercise. I have found that my records matched those of the Virtual Reality Institute of Health and Exercise, and that I indeed burned 9.37 calories every minute, for a total of 562.2 calories in one hour. My maximum heart rate was also tracked at 172 with an Apple Watch, which is 5 more than the average tracked at 167.

As mentioned previously, while I do enjoy exertion and fitness, I am not particularly prone to go to the gym to exercise. However, I have noticed a stronger dedication and excitement to physical activity with *The Thrill of The Fight*, a feeling I associate with its engaging, immersive, entertaining, and most importantly authentic mechanics that encourage freedom of action, which lies at the heart of my concept of the spect-actor.

5.2.5. Conclusion

The Thrill of the Fight, a prominent example within the Entertainment VR genre, stands out for its unique focus on bodily interactions which are faithfully transcribed in the virtual environment, eschewing narrative complexities in favor of pure feelings and emotions. Its

[303] Information gathered through an electronic correspondence with Ian Fitz on July 30, 2023.

classification as a skill-based game differentiates it from other VR experiences. The absence of a traditional narrative does not diminish its impact; instead, it enhances the game's commitment to delivering an authentic spect-actorial experience that puts freedom and agency at the forefront.

The simplicity of controls, combined with authentic mechanics, fosters a sense of accomplishment for users as they navigate increasingly challenging opponents in the solo campaign. Beyond its immersive qualities, *The Thrill of the Fight* induces pure pleasure and engagement through perceived interactions, positioning itself as a definitive spect-actor VR experience.

As we transition to examining *Stay Alive My Son*, understanding the user-centric, immersive, and authentic elements of *The Thrill of the Fight* will inform a nuanced evaluation of how *Stay Alive My Son* balances interactivity and cinematic storytelling within the Entertainment VR genre. The lessons learned from the simplicity, authenticity, of *The Thrill of the Fight* and the strong storytelling elements of *The VOID* serve as a foundation for assessing the distinct qualities and impact of the upcoming VR experience.

5.3. *Stay Alive My Son* – Chapters 1 & 2 (Victoria Bousis, 2023)

5.3.1 Introduction

As mentioned in the introduction of the present dissertation, Entertainment VR experiences offer a dynamic narrative where users actively shape the story, inviting them to step into an interactive film or a game as spect-actors, and prioritize engagement by allowing them to interact and influence the virtual world. However, as we concluded in the previous sub-chapter, although an Entertainment VR piece such as *The Thrill of the Fight* have educational components, this experience, just as *The VOID*, were included in this chapter on Entertainment VR because their main objective is to entertain.

Although the third and final experience analyzed in this present sub-chapter chapter on Entertainment VR, *Stay Alive My Son* by Victoria Bousis, is defined by its director as an "immersive and interactive film"[304], it features artistic, technical, historical, and educational components that are inserted in the narrative. As stated by Bousis in the interview I conducted with her while questioning her on the genre of her piece,

> *Stay Alive My Son* is definitely not a game because the driving force is narrative, followed by gameplay mechanics to underscore agency. Also, it is definitely not a film because it's not passive. Under VR categories, *Stay Alive My Son* is not 360 video or known as 3DOF, which is also a passive experience which does not really leverages the power and freedom of VR, as it was originally intended. For me it is an interactive and immersive film showcasing the potential of storytelling in the future especially when the audience has the opportunity and privilege to step inside the shoes of the protagonist and experience their story first-handed. It's the first of its kind, in a new

[304] Baillargeon, "VR and the Future of Cinema."

genre I coined call “Cineplay” that uniquely combines storytelling from a first-person point of view, taking you into the protagonist’s shoes to hear their thoughts and interact with their world, coming so close to the characters inside the piece, unlike any other medium[305].

In regard to the historical side of her piece, Bousis argues that,

I think history is one element of this experience as well, because you're allowed the opportunity to use a flashlight to highlight key objects in the world that activate historical and cultural information about Cambodia and this time period so our audience is actively learning about the genocide in a more impactful and resonant way as they are experiencing and living the effects of the genocide on family separation though the lens of Yathay’s eyes and family. When we screened *Stay Alive My Son* globally, it was surprising to me that, of the thousands of people who experienced it, irrespective of ages, ethnicity, education, or background, many people did not know that the Cambodian genocide occurred. However, by experiencing and learning about it through this project and Cineplay method, it inspired them to research it, but, more also compelled them into action: asking me more questions about Yathay, buying his book online, and researching more about the Cambodian genocide. One group is actually going to Cambodia because this project and story and visit the locations we recreated in *Stay Alive My Son* like the magnificent Angkor Wat temple and S-21 concentration camps. They also wanted to also experience the rich Cambodian culture

[305] Baillargeon, “VR and the Future of Cinema.”

> - something I also wanted to underscore because its important to note that the Cambodian people and their history is not only one of tragedy but richly based on an ancient civilizationthat was regal, knowlegdable, and sophisticated with a deep history.[306]

As previously stated in the Introductory chapter of this dissertation, I define the different genres –Artistic VR, Educational VR and Entertainment VR, through different case studies. While they are not finite definitions, I developed them based on actual VR works I selected. It is in this optic that *Stay Alive, My Son* will be observed and analyzed as an Entertainment VR interactive film.

5.3.2. Description of the Experience

The user is immersed in a 45-year odyssey inspired by the internationally acclaimed memoirs of Yathay Pin, brought to life in the VR experience *Stay Alive My Son*, adapted from Yathay's 1987 novel "Tu vivras, mon fils." You are asked to step into the shoes of a tormented father forced to make the heart-wrenching decision to abandon his 6-year-old son during the Cambodian genocide to ensure their survival. As the user, you encounter a digital human representation of a fragile 88-year-old Yathay Pin, delving into the haunting consequences of his choices. While embarking on a transformative journey, you fall through reality, navigating an emotional and gut-wrenching quest for redemption. While discovering the depths of the protagonist's labyrinthine mental prison, you find yourself unraveled by Cambodia's history

[306] Baillargeon, "VR and the Future of Cinema."

and confronted by Yathay's deepest regrets. The piece makes you relive through first-person view and physical interactions and embodiment, pivotal moments with decades of guilt and the anguish of uncertainty regarding his son's fate. The dark narrative finds yourself at the shadowed heart symbolized by the awe-inspiring temple of Angkor Wat, embarking on a symbolic pursuit of salvation. In the end, the user discovers that Yathay's resilience in facing the unimaginable serves a profound purpose—a quest to reclaim all that was lost. Guided by the beacon of familial love, users reunite with the lost son, bringing healing to a wounded heart in this epic and emotionally immersive VR experience.

5.3.2. Feelings and Thoughts about the Experience

Contrary to other VR experiences, this interactive film has a duration of around an hour depending on how much time users spend on exploring the environments the piece offers. Indeed, *Stay Alive My Son* differentiates itself from others, not only for its duration, but for its freedom of action. At the beginning of the experience, you meet the protagonist in his house who warmly welcomes you into his house and explains to you his painful journey in Cambodia during the years under the Khmer Rouge regime. By using the joysticks on the controllers, you are able to move around the virtual environment, while also being prompted to interact with many props and elements. Before ringing the bell of the protagonist's house, I had the pleasure of discovering the front yard of his house and to admire its many details. After ringing the bell, the protagonist opens the door and invites you to come into his house. Although the whole VR piece is incredible in every way, the time spent in Yathay's house was, by far, my favorite. The digital avatar of Yathay Pin is incredible, as are his movements and facial expressions, which

are admirably rendered through performance capture technology[307]. Beautifully decorated and very warm, his house's aesthetic is a bland of Asian and European décor with dimed lighting. After a short discussion with Yathay, users are given the freedom to roam around the house and interact with the environment. The most interesting part is when you access the second floor and enter a space that is as much as a living room and as an office. While walking around, you are able to grab certain things such as books and photographs found on shelves and tables in order to look at them closely. Some elements also come with interactive attributes, such as using the computer and reading what is written to learn more about the protagonist's story or grabbing a ringing phone and put it against your ear to hear someone talking to you. Another interesting option was to turn the TV on and to start watching a show about Cambodian people meeting up with long lost friends or family members, much like the popular British television series *Long Lost Family*, which has been airing since 2011.

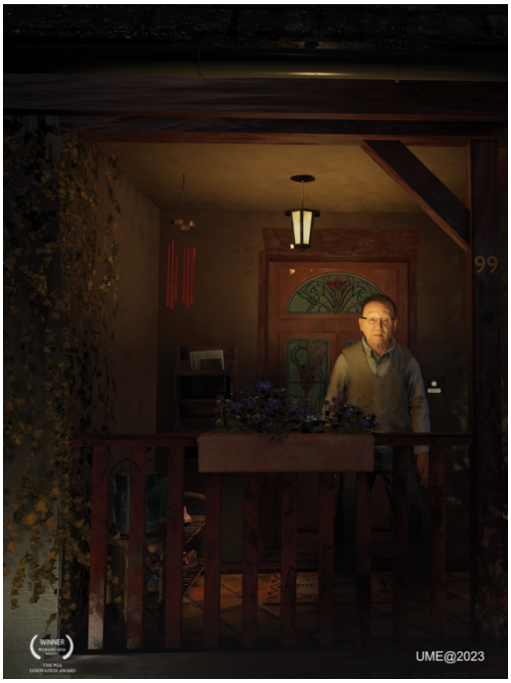
What is the most interesting and fascinating about this specific moment is the freedom it brings to the users. You are not forced to go upstairs and interact with the environment and its elements. If you choose not to, you are welcome to skip this part and directly delve into the heart of the narrative as the protagonist is waiting for you on the main level to initiate the story. However, it is in the user's power to decide if they want to deepen the story and to learn even more details that are at the user's discretion. These fragments of added information could be compared to trophies players win in a video game for accomplishing supplementary objectives that are not mandatory to the main narrative line but are simply made available as 'side quests.'

[307] The evolution of motion capture, performance capture technique allows, in addition to capturing body movements, to record the entirety of an actor's performance by combining body movements and facial expressions in order to achieve the complete digital capture of a dramatic performance. Definition taken from Baillargeon, *Entre réalité et virtuel - La captation de mouvement au cinéma*, 12. Freely translated.

In the case of *Stay Alive My Son*, these ‘side quests’ moments are extremely gratifying and help elevating the whole experience to another level. As observed by Bousis,

> I think that every person's personal space or home tells a story. By simply walking into someone's home, their home serves as a mirror to who we are, who lives there, the life we are or have lived, and the people that we've become. Through the creation of personalized 3D digital assets inside the game engine, I leveraged visual storytelling to incorporate Yathay’s personal elements from his history, interests, importance of spirituality, and family life. Despite meeting and interacting with digital Yathay for a short period of time in his home, you get a sense of who he is and that his life is joyful being and feeling the pleasantness and warmth of his home. Even though VR is new for a lot of people, you're not alienated by this man andyou're not scared to be in his home. I wanted it to be welcoming because he himself is very welcoming. I wanted people to see all the different little things we added, to say, “oh, yeah, he’s Budhhist, he has a wife that live here,” from the pictures on the staircase, “yes, he has a family.” that's telling me a story. Oh, the map, oh, that's where he traveled. The ability to look at the television, to see the relevance. So, we start adding these cues, the ability to walk around his office and see that there's, you know, there's a basketball, you must have children. Subconsciously, you notice these familiar things that encourage more exploration and discovery into this man’s life. But as we go through the story, and then we go to the end, we have come full circle, and you realize, oh, wow, the things I noticed earlier in his house were also in the

memories and connected to the post-script videos. So, I think, you know, to come into his home is also to become part of his home and to become part of his life. So, by the time, he hands you his prayer beads and asks you to help him find the peace he sesks, you accept willingly this call to action because you are somehow personally vested. We go off on our quest, on Yathay's hero journey but also our own hero's journey. So when people to actually take the bracelette and accept the call to action, they also realize that they have agency, and they're going to help heal this man and give them the peace that he's so long[308].



Still photograph taken of Yathay Pin in his house from *Stay Alive My Son*
(with the permission of Victoria Bousis and UME Studios)

[308] Baillargeon, "VR and the Future of Cinema."

When ready to move forward with the narrative, you are shown Yahtay Pin's photo of his 6-year-old lost son, digitally aged to 54 years old, the age he would be in 2022. At that moment, the protagonist's realities collide, and while still haunted by his demons, his guilt surfaces for abandoning his son to ensure their survival while escaping during the Cambodian genocide. Following this reemergence of grief and sorrow, Yathay gives you his prayer beads bracelet which makes the user step into his shoes and allow users to transform into him. In an instance that reminds Lewis Carrol's *Alice in Wonderland*, the user falls through reality and begins a fantastical journey for atonement. The user, now embodying Yathay as a younger man, dives into his mental prison, containing locked memories that will be unlocked by the user. As they experience Yathay's journey, they discover his reason for living: to reclaim all that he lost and to reunite with his son towards the end of the experience. While navigating a nightmarish labyrinth of endless corridors, the user encounters images of Yathay's family members presented as volumetric capture footage[309] featuring real performers. These scenes, captured as memory fragments, aim to provide the user with deeper insights into Yathay's grieving history. In an emotionally-charged ending, the user as Yathay is taken to a shadowed heart tree, a place that metaphorically represents the temple of Angkor Wat where he is now able to find peace, his son, and his salvation.

[309] Volumetric capture is a technique used to capture three-dimensional representations of objects, people, or scenes in real-time, typically using an array of cameras or depth sensors. This technology enables the creation of immersive experiences where users can interact with and explore captured content from multiple angles, providing a more realistic sense of depth and presence compared to traditional two-dimensional video or images. As explained by Bousis through electronic correspondence, "It's not really live footage, but in addition to the DSLR to capture color data is a Microsoft azure camera to capture volumetric DATA (our own developed volumetric capture pipeline) via Depthkit software and Houdini bc each scene is then converted into an alembic cache in 2.5 D which allows us to step through the memory on the X axis. Live-action footage may give the impression it is footage on a flat plane." Information gathered through Baillargeon, "VR and the Future of Cinema."

Still photographs taken of some of the volumetric capture footage parts
from *Stay Alive My Son*
(with the permission of Victoria Bousis)

Still photograph taken of the heart-shaped tree
from *Stay Alive My Son*
(with the permission of Victoria Bousis)

5.3.3. *Stay Alive My Son*: VR Experience, Video Game, or Cinema?

An increased presence of cinematics, emphasis on photorealism, and the capture of the Yathay's memories of a human tragedy are all examples and logical reasons that might lead one to believe that *Stay Alive My Son* could have been a film adaptation of a literary work. However, *Stay Alive My Son* is indeed a VR experience that combines video gaming mechanics with narrative techniques belonging to the realm of cinema, what Bousis refers to as 'Cineplay.' In essence, Victoria Bousis' VR directorial debut is a portrayal of many examples of the convergence and hybridization logics that have shaped the intertwined history of two cultural industries: video games and cinema. According to Bousis, working with both VR and cinema was a well-thought-out decision of hers,

> it was a real definite choice from the beginning for me. The reason being for using a different creative and technical approach for Yathay's family versus, creating actual Metahumans[310] of each family member as we did for Yahtay Pin. I felt strongely about this for two key reasons: number one, this is a real family we're talking about and I wanted people to feel that this is a beautiful family that was loving beautiful, once healthy and full of life. To see their progressive deterioration was not just physically due to the labor camps, but also the psychological and emotional effects of this family being torn apart as a unit physically. I felt a strong need to honor who they were by allowing actors to bring them to life inside the game engine by walking in this places

[310] MetaHuman Creator is a digital tool developed by the game engine Unreal Engine that allows users to easily create highly realistic, customizable human characters for use in virtual environments, games, films, and other interactive experiences.

from the past. The second reason behind that creative and narrative choice was an emotional reason too. Because I believe that all people inside of our hearts, somehow carry those that we love inside of them, and for me, this is how I envisioned my heart and how I envisioned Yathay's heart. I actually envisioned them being very much alive inside his heart and being the people that he carried inside of him through the years that allowed him to not only continue living but also accomplish so much afterwards. It gave them him that inner will to live through his darkest moments following his escape as he wrestles with complex emotions of regret, guilt, and shame. It gave him the strength and courage to continue, and invariably, stand as a civil party and witness to testify agains the leaders of the Khmer Rouge and seek justice for his family during the United Nations Tribunal Hearings in Cambodia decades later. And so, I felt that to accomplish this, I would cast real actors to bring this family to life, to translate the emotional strength of what a family gives to us, but also to draw out those narrative and emotional beats that were necessary to honor the family and the power of this story[311].

The unification of two regimes of images alludes to specific visual styles or narrative modes inherent to cinema and video games that coexist or interact in this convergence. Although this 'cinematographization' of video games or this 'gamification' of cinema is quite fascinating, comparing video games to cinema has not always been received positively. In his article "Computer Game Studies, Year One," Espen Aarseth expressed worries about the potential "colonization" of video games by literary and cinematic studies. As he himself states,

[311] Baillargeon, "VR and the Future of Cinema."

"Games are not a kind of cinema, or literature, but colonizing attempts from both these fields have already happened, and no doubt will happen again. And again, until computer game studies emerge as a clearly self-sustained academic field.[312]" He characterized the merging principles of these two mediums as a kind of 'Hollywoodization' of the predominant video game production, which he saw as a passing trend[313]. In the same train of thoughts, Bernard Perron and Dominic Arsenault, attempt to question the basis on which video games are framed as cinema. They both discuss how excessively focused on cinema and heavily influenced by cinematic principles video games are and how strongly they are oriented towards cinema that it may obscure or limit the understanding of their own cultural practice[314]. Starting from the 2010s, the study of the relationships between cinema and video games has been moving towards standardization and is now a fruitful field of study at the intersection of video game studies, media, and cinema. Such research, involving contributors like Perron and Therrien (2009), as well as Krichane (2018) on the cinematographicization of video games' graphic styles, Blanchet (2010) and Picard and Fandango (2008) on cross-adaptations between video games into films and vice-versa, while Klevjer (2014), as well as Krichane and Rochat (2018), followed by Taylor (2015) who explores various aspects of cinematic elements and spectatorial practices.

Furthermore, layered sound design[315] is an important part in *Stay Alive My Son*, as it does in film productions. As previously stated by Curtis Hickman in the precedent chapter on

[312] Aarseth, « Computer Game Studies, Year One ».
[313] Ibid.
[314] Arsenault and Perron, « De-framing Video Games from the Light of Cinema ».
[315] Layered sound design involves crafting audio compositions that respond to users' movements within the virtual environment, thereby enhancing their sense of presence and immersion. It goes beyond mere musical scores, offering a comprehensive approach to controlling the auditory experience. By manipulating individual layers independently, designers can achieve specific emotional responses or narrative effects. Layered sound design is a collaborative effort that combines advanced engineering, game design, and programming to bring each element to life.

The VOID, a musical score to an Entertainment VR experience plays a major part in spect-actors virtual presence: "[…] music was a big part of every experience […] It just felt wrong not to have it, and its absence negatively affected the feeling of presence far more than its 'unnatural' existence ever did. That day I learned what is real and what feels real are sometimes two very different things[316]." During my interview with Victoria Bousis, we discussed how music plays such an integral part of her VR experience, especially as musical cues in a specific moment to enhance virtual presence and emotions. Interestingly, before leading to subject of sound, Bousis and I were discussing on how she chose for users to use a joystick to walk[317] around the virtual environment instead of teleportation. The choice for users to select teleportation instead of moving around in the virtual space using a joystick can be used to prevent motion sickness. This discussion continued with me asking her how she designed comfort in her piece. Following this discussion on comfort, I picked up on what Bousis mentioned that felt very cinematic in her VR experience in relation to music, which correlates with Hickman's observation on the same subject. As Bousis stated,

> **Victoria Bousis**
>
> […] the choice to go for actual walking via joystick instead of teleporting was a deliberate decision. Because of the story's nature, by physically walking with each moment, the music comes in, and you the emotions you already have due to the power of the narrative and scenes is futher augmented by the score to give you heightened

[316] Hickman, Curtis. (2023). *Hyper-Reality: The Art of Designing Impossible Experiences*, Independently Published, p. 38-9.
[317] "Walk" is a better word choice here than "move" because users in *Stay Alive My Son* are actually stepping through the world with the controller's joystick and can hear their steps versus teleportation movement where users do not really have the impression to actually walk.

feelings of loss and love. If you teleported, through the world instead of walk through it, there would be a break in that growing sense of suspense and emotion. So, for me, it was absolutely vital to have it this way. Then, came the challenge of preventing motion sickness from occurring, and finding the right rate of movement in each level became an exploration in itself through extensive user testing. We tested various rates of movement against the frame rate of each level becayse some levels were heavier performance wise so it wasn't a one-siz-fits all but a longer iterative process. Despite choosing certain rates of movement and computational considerations, the physical size of the space and the amout of interactivity also influenced the perception of speed. A bigger space with less interactivity made people feel they were moving slower. While the rate feels more or less consistent throughout the entire piece, it felt perfect when you go to the prison because you are also using the flashlight to explore and discover hidden elements and scenes – sometimes, it was slow creating a sense of fear and anxiety and at other times faster, creating a sense of urgency to escape the threatening nature of the Khmer Rouge and escape. Finding that middle ground through extensive user testing was crucial. Another element we added is understanding the neuroscience of the brain. Initially, when you start to move, there's a disconnect between your mind and your body, and then the joystick. To account for this, we coded acceleration and deceleration in the piece so that when you start to move, your movement doesn't ramp up,avoiding that jolting feeling that can cause nausea. As you know, the moment someone experiences motion sickness, it's hard to get ride of it and usually ruins experiences. With this emotionally charged experience, especially in the intnetionally clausterphobic mental prison, we didn't want motion sickness to destroy

the user experience. It was a work in progress, involving a lot of testing and understanding how our brain works to help it adjust to movement via the joystick through methodical programming.

Justin Baillargeon

Yeah, it was very seamless, very nice, and I felt that you put in a lot of effort into this. I really liked something that you said; you mentioned something that's very cinematic. Like you mentioned, when you start moving, you hear the music. That's very cinematic. You are highly inspired by film here.

Victoria Bousis

I am, I am. I love and appreciate cinema.

Justin Baillargeon

I can tell, and I really appreciate that of you as an artist, because you're pushing the medium to a different direction. You know, everybody starts talking about the end of cinema and things like that. But I feel like artists like you push it even further, you know, you give us another branch and other avenues of film. And I liked that a lot.

Victoria Bousis

Actually, thank you. I think it was an intentional and natural creative choice for me, because I come from cinema, and I believe in cinema, and I love cinema. You know, from those epic films like *Titanic*, where the music starts to swell, or you hear a part

of a recognizable melody that comes in, there's a prelude to something that's about to happen. And I think, that's our cognitive brain at work with our emotional state as human beings who feelMy composer, T.K. Broderick, was brilliant. I said to him, I am inspired by the work of Hans Zimmer, so I want an epic score, I want our emotions and our heart to soar, you know, as if we're actually flying through the clouds on the branch towards this beautiful heart tree, this temple. I also wanted separate musical melodies for the family to show their love using the piano and strings as principal instruments to draw out this emotion of love, hope, and longing. While for the Khmer Rouge, I wanted a haunting, threatening, and menacing feeling, so we decided on Cambodian instruments like the bassoon to create the villan's musical cues. I want us to feel that stark difference in sound and emotion between these two, and I think he did a really, really beautiful job. And he complimented by my sound team got it just right. So, yes. Thank you for noticing it Justin[318].

[318] Baillargeon, "VR and the Future of Cinema."

The ‘heart tree’ as described by Bousis in her interview, as seen on the *Stay Alive My Son* poster. It is also interesting how ‘cinematic’ this poster appears to be designed, including the key narrative of this story: a father’s relentless and hopeful quest for his son.

Such attention to recreating a cinematic atmosphere and ambiance in *Stay Alive My Son* through music in specific moments where the user is prompted to make a choice, is, I argue, the foundation of the spect-actorship concept.

Regardless of previous discourses about the current state of convergence of these two media, Bousis chose to approach her piece as an 'interactive film.' To create a sense of immersion, presence, and identification, *Stay Alive My Son* uses a concept Gérard Genette called 'metalepsis.' Perceived by contemporary narratology as an "intrusion of the narrator or narratee from the extradiegetic level into the diegetic universe (or of diegetic characters into a metadiegetic universe, etc.),[319]"narrative metalepsis significantly contributes to the construction of modern and postmodern artistic forms, whether literary, theatrical, pictorial, or cinematic. More specifically, narrative metalepsis, in its narratological sense, is a deliberate transgression between the diegetic world of the telling and the non-diegetic world of the told. As Genette observes,

> [a]ll of these games, by the intensity of their effects, demonstrate the importance of the boundary they tax their ingenuity to overstep, in defiance of verisimilitude—a boundary that is precisely the narrating (or the performance) itself: a shifting but sacred frontier [or boundary] between two worlds, the world in which one tells, the world of which one tells. […] The most troubling thing about metalepsis indeed lies in this unacceptable and insistent hypothesis that the extradiegetic is perhaps always diegetic and that the narrator and his narratees—you and I—perhaps belong to some narrative.[320]

[319] Genette, *Figures III*, 244. Freely translated.
[320] Genette, *Figures III*, 236. Freely translated.

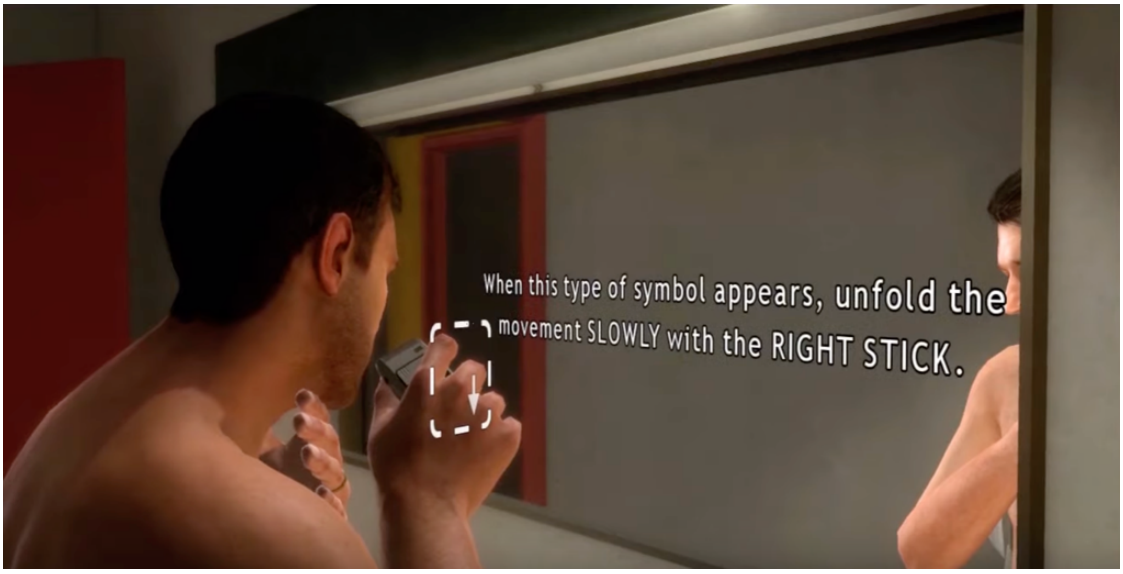
5.3.4. Identification and Immersion Through Interactions

The 'shift' described by Genette is evident in *Stay Alive My Son* as its protagonist directly addresses the virtual camera (the user), explicitly inviting them to take control of his body by handing over his prayer beads bracelet, saying, "My thoughts and memories are now yours to live." The user is then transported into the nightmarish labyrinth of his inner self to aid him in seeking redemption. Espen Aarseth emphasizes that in identifying with a game's protagonist, the user assumes the role to the extent that they don't see the character as an 'other,' but as a remote-controlled extension of themselves. The trailer for *Stay Alive My Son* reinforces this idea, stating, 'The future of storytelling is you becoming the character, the hero going through the phases of the hero's journey as them,' emphasizing a spect-actor role. This distinction is crucial in understanding the different contexts of Entertainment VR, Artistic VR, and Educational VR experiences, regardless of shared elements. Although *Stay Alive My Son* includes historical facts and research, its primary ambition is to entertain as an interactive film. Similarly, *The Thrill of the Fight*, categorized under Entertainment VR, lacks historical research but unexpectedly includes educational elements related to boxing and exertion. Developer Ian Fitz has in fact explicitly stated that the incorporation of these educational and exertion aspects were "just a happy accident[321]," reinforcing its primary purpose as an entertainment experience.

As previously discussed, metaleptic presence is a method employed to give the user ample space by integrating the user's real-life situation at the very heart of the simulation. Similarly to the protagonist in *Stay Alive My Son*, the in-game character in Quantic Dream's

[321] Information gathered through an electronic correspondence with Ian Fitz on July 30, 2023.

Omikron: The Nomad Soul (1999) invites the player to take control of their body through a computer to enter the virtual world of the game. However, there is an observed confusion between the actual world and the ludic world, creating an asymptomatic association between immersion and immediacy. In *Heavy Rain* (Quantic Dream, 2011), even though the game allows for the reproduction of daily experiences, as seen in the tutorial at the beginning the game where the player guides the character through the morning routine of going to the bathroom and taking a shower, the outcome is often more or less conclusive because the actions directed to the characters are not exactly the same as they are already guided.



Screenshot taken from *Heavy Rain*'s first chapter

Referring to the freedom of action the introduction of the piece conveys while the user enters Yahtay Pin's house, identification with the character we are playing is rapidly initiated since the latter does not talk. As they enter the house, they simply listen to what the protagonist

has to say and to freely interact with the environment, which is key in the identification process. However, this freedom of action must be controlled, to a certain extent. As described by Bousis,

> When you have too much freedom there can be a loss of narrative and flow, for instance, in *Stay Alive My Son*, we made things interactable along the player's path. If we have made every little asset interactable, then people lose their focus and not follow the experience, but more importantly not feel the emotional arc purposely crafted using the traditional three act structure along this hero's journey. It would also make it very difficult to show in festivals when time is slotted and booked by attendees. Despite our efforts, we saw many eople explore endlessly every detail and stay in the headset for over an hour, so it would make it and even challenging tast with a lower emotional payoff So, I think it really depends on what you're trying to accomplish as a creator. And that freedom actually underscores what the creator wants the participants to take away in meaning and emotional impact. Sometimes too much freedom deserves the story and the purpose. The same way, if you inhibit a player too much, it's also not a good thing because it eclipses the medium's potential limits player exploration. So, these decisions need to align with the story you're trying to tell and the purpose it serves[322].

Researchers use the concept of identification to denote the act of assimilating the possibilities of actions associated with clearly defined characters, as in the case of Jean-Marie Schaeffer's formula declaring 'Lara Croft, it's me![323]'. This involves the substitution of physical

[322] Baillargeon, "VR and the Future of Cinema."
[323] Schaeffer, *Pourquoi la fiction ?,* 254. Freely translated.

identity, which he associates with both the actor's work and the ludic posture. As seen, identification is indeed at the core of the theory of fictional immersion. To achieve this, Carl Therrien suggests the concept of the 'empty shell[324],' which is an ideal for developers since, in this case, traces of alteration must be minimized, and the player's appropriation of the actantial sphere must be maximized. The 'empty shell' 'offers a more natural interactivity, a symbiotic connection, an intimate union between the controlled character and the player through primary manipulations and simulated fictional situations that immerse the user by eliminating the avatar intermediary to the maximum extent[325].' One could define this ideal as a character encountered from birth with whom one evolves throughout the story, or as an amnesiac character where ignorance accompanies, and the player learns along with them through tutorial sessions that enhance immersion. Silent characters, such as Gordon Freeman in *Half-Life* (Valve Corporation, 1998) or Link in *The Legend of Zelda* series (Nintendo, 1986-present), can also be compared to the one users are embodying in *Stay Alive, My Son* before being teleported into the protagonist's shoes. Of course, immersive technologies inherent to VR HMDs contribute to achieving an enhanced sense of presence.

Researchers Noel Carroll[326] and Dolf Zillmann[327] question the term 'identification,' drawing examples from the psychological involvement of cinema audiences with movie characters. As Carroll states, "[m]ost often, characters and spectators are too different at cognitive and emotional levels to justify any presumption of identity[328]." It's also essential to

[324] Therrien, « La présence vidéoludique - De l'illusion à la projection dans l'écosystème affectif de la fiction », 230. Freely translated.
[325] Ibid, 230.
[326] Carroll, « The Paradox of Suspense ».
[327] Zilmann, « The psychology of suspense in dramatic exposition ».
[328] Carroll, « The Paradox of Suspense », 80.

consider the staging, which contains numerous marks of alterity, such as framing choices, shots, and editing, to challenge primary identification with the characters in films and video games. However, with the advent of VR and interactive films such as *Stay Alive, My Son*, the disappearance of these traces through 360-degree environment encourages better identification with the protagonist or as defined by Rune Klevjer, an identification that is described as an 'umbilical' relationship that distinguishes itself from novelistic fiction and cinema[329].

5.3.5. Treatment of History

In the VR experience *Stay Alive My Son*, the treatment of history goes beyond a traditional educational framework. The user is not merely a passive observer; instead, they become an active participant in the historical narrative. They become a spect-actor. The narrative structure is carefully crafted to immerse users in a 45-year odyssey inspired by the memoirs of Yathay Pin, a survivor of the Cambodian genocide.

The interactive nature of the VR platform allows users to explore historical contexts at their own pace, providing them with the freedom to interact with the environment and engage with various elements. This deliberate design choice, explained by Bousis, aims to strike a balance between user engagement and the narrative flow. It grants users the agency to delve deeper into the story, similar to completing optional quests in a video game, thereby enhancing the overall immersive experience. Importantly, this challenges Peter Morris' assertion that "the real past, for ever and always, [is] inaccessible to us in a literal sense. All we have are the

[329] Klevjer, *What is the Avatar? Fiction and Embodiment in Avatar-Based Single Player Computer Games*.

fragments that have been left behind[330]" (1999). Now, the protagonist's memory becomes the user's as they experience it while immersed in VR. This concept is further reinforced in the trailer for *Stay Alive My Son*, which declares, "The future of storytelling is you becoming the character and living the story," emphasizing a spect-actor role. Additionally, the protagonist directly addresses the user, stating, "My thoughts and memories are now yours to live…for one night in my skin."

The historical and cultural content is not presented in a didactic manner, but is seamlessly integrated into the narrative. Users, embodying the protagonist, experience the emotional and psychological toll of the choices made during the Cambodian genocide. The use of metalepsis, as the protagonist directly addresses the virtual camera and hands over symbolic items like prayer beads, blurs the lines between the diegetic world of the narrative and the non-diegetic world of the user. This narrative metalepsis serves to intensify the emotional connection and sense of responsibility, making users active participants in the quest for redemption.

The inclusion of volumetric capture footage featuring real performers adds a layer of authenticity to the historical portrayal, and at the same time, as Peter Morris mentions, an "emphasis on history as discourse, history as a process of narrative, history as necessarily filtered through the perception of the historian[331]" (1999). Users encounter images of Yathay's family members as memory fragments, providing deeper insights into the personal impact of

[330] Morris, « The Specious Past: Reflections of a Film Historian in Canada », 161.
[331] Morris, « The Specious Past: Reflections of a Film Historian in Canada », 159.

the historical events. This technique not only educates users about the Cambodian genocide but also fosters empathy by humanizing the historical figures involved.

While the convergence of cinematic and gaming elements might be a subject of debate, *Stay Alive My Son* leverages both mediums effectively. Bousis' intentional choice to classify the experience as an "immersive and interactive film" highlights the seamless integration of video gaming mechanics with cinematic narrative techniques. This convergence enhances the user's identification with the characters, creating an “umbilical” relationship, as described by Rune Klevjer, that distinguishes it from traditional cinema. In this regard, *Stay Alive My Son* exemplifies a novel approach to the treatment of history in VR. By intertwining historical content with interactive storytelling, the experience transcends traditional educational methods, providing users with a profound and emotionally immersive journey through a significant historical event.

5.4. Conclusion

The analysis of the VR experiences *Stay Alive My Son*, *The Thrill of the Fight*, and *The VOID* collectively underscores the diverse and evolving landscape of Entertainment VR. *Stay Alive My Son* stands out with its multifaceted approach, seamlessly blending cinematic storytelling, interactive gameplay mechanics and historical elements. The 45-year odyssey, inspired by the memoirs of Yathay Pin, exemplifies Entertainment VR's goal of actively engaging users in shaping narratives. Director Victoria Bousis' intentional creation of an

“immersive and interactive film” successfully fuses cinematic narrative techniques with interactive gaming, allowing users the freedom to explore historical elements at their own pace.

The careful balance between entertainment and education in *Stay Alive My Son* introduces artistic and educational components that enrich the narrative, contributing to the ongoing debate on the convergence of cinema and video games. The user's role as a spect-actor is highlighted through metalepsis, fostering an emotional connection and a sense of responsibility in the quest for redemption. The inclusion of volumetric capture and the freedom of action contribute to the authenticity and humanization of historical figures, providing users with a firsthand, emotional experience of the Cambodian genocide.

Contrasting this narrative-driven approach, *The Thrill of the Fight* prioritizes bodily interactions and skill-based gameplay, emphasizing simplicity and authenticity. This unique spect-actor VR experience induces pure pleasure and engagement through its arcade-style gameplay, showcasing a different facet of user agency within Entertainment VR.

The discussion on spect-actorship, as seen in *The VOID*, introduces the concept that user freedom and playfulness are essential elements in Entertainment VR. The tension between narrative-driven experiences and those with minimal storyline and authorial control is evident, with Curtis Hickman's insights highlighting the challenges associated with character-driven narratives.

In this evolving landscape, these VR experiences collectively contribute to a nuanced understanding of Entertainment VR's potential. The synthesis of cinematic storytelling, user agency, authenticity, and spect-actorship showcases the varied approaches to delivering emotionally impactful narratives while accommodating diverse user preferences. As the boundaries between Entertainment VR, Artistic VR, and Educational VR continue to blur, the exploration conducted in the present dissertation provides valuable insights into harnessing immersive technologies for compelling narratives and educational experiences.

6 Conclusion

Giving freedom of action and agency in a VR experience is necessary to convey a feeling of immersion to its users. During the creation process, regardless of its context – whether artistic, educational or entertainment – the developer needs to take many factors into consideration in order to create a sense of presence. The developers must, first and foremost, reproduce our demeanors in the tangible world, but most importantly, enhance and adapt them in the virtual world to blur the realm of physical and digital realities, thus embracing total embodiment. Once these elements come together, emotions emerge from the user, allowing developers to guide their attention, creating an immersive experience that bridges the gap between the real and the virtual, enabling users to become spect-actors. As Curtis Hickman skillfully puts it, “the digital and physical worlds converge seamlessly, creating an experience that feels impossible. It's that fleeting instant when users forget they are interacting with technology and are completely immersed in the blended experience, feeling genuine surprise,

wonder, and awe[332].” But to what extent a VR piece needs to give freedom of action for it to be considered ideal? How much liberty and agency do spect-actors truly have to feel at the core of the experience to live a 'total experience'?

Advances in technology over the years pushed the feeling of immersion in media even further, whether it be literary, cinematic, or videogame-related, allowing users to live through a work, to be in direct contact with it. Some artistic productions, emphasize the emotional involvement of the viewer by immersing them cognitively, without requiring any narrative manipulation on their part. Educational VR pieces, on the other hand, give users a substantial of freedom while maintaining at the same time a more framed and structured narrative for educational purposes. Other works, known as Entertainment VR, require active participation from the viewer, involving real-time manipulation of narrative information to advance a story based on their own choices. The utopian idea of a user being the hero of a story with complete agency to choose their own path in the adventure they are in has been around for a long time. In this book *Electronic Literature*, Scott Rettberg contextualizes the key genres of electronic literature within historical, technological, and cultural frameworks. These genres encompass combinatory poetics, hypertext fiction, interactive fiction (including game-based digital literary works), kinetic and interactive poetry, and networked writing reflective of our collective internet experiences. He contends that electronic literature necessitates examination through the lens of experimental literary practices from the early twentieth century, as well as through consideration of the specific technologies and software employed in its creation. Viewing electronic literature comprehensively, the book serves as an essential primer to a dynamic field

[332] Curtis Hickman cited in Mingail, “How to Design Mixed Reality Experiences Like a Magician”.

that both responds to avant-garde literary and artistic traditions, and spawns novel narrative and poetic forms unique to the twenty-first century.[333]. Among them, notable examples in literature from 1930s such as *Consider the Consequences* (1930) by Doris Webster and Mary Alden Hopkins[334] and further popularized by the *Choose Your Own Adventures* series by Edward Packard in the 1970s[335]. In cinema, *Kinoautomat* (Radúz Činčera, 1967), an interactive film presented in the Czechoslovak Pavilion at the Expo 67 in Montreal was presented in a specially designed cinema featuring individual seats equipped with green and red buttons. Throughout the screening, the narrative pauses periodically, allowing a moderator to come on stage and prompt the audience to vote on questions that drive the storyline forward[336] (Mansky, 2022). These creations certainly call for a certain degree of creative freedom on the part of the user. The latter must choose from a limited number of options for customizing the "dynamic narrative." A series of options appears on the screen—or on the page—and the person must choose which option to take to continue the story. Once the choice is made, this decision influences the course of the scenario by taking a different narrative path on each occurrence.

As observed throughout this dissertation, VR experiences are recognized for their interactive qualities and branching narratives where the user interacts with the virtual environment in which their intervention dominates the course of the experience. Some of these VR experiences also have a pre-established narrative programmed by the designer, and the user progresses through the narrative in a structurally linear manner. In this case, the developer's goal changes by delivering an unfinished work, now relying solely on the user's participation

[333] Rettberg, *Electronic Literature*.
[334] Arnaudo, « Studying Gamebooks: A Framework for analysis | Analog Game Studies ».
[335] Ibid.
[336] Mansky, « The Surprisingly Long History of "Choose-Your-Own-Adventure" Stories ».

in their interactive story to complete it. This dissertation has undertaken a trifold inquiry into whether the combination of VR experiences that feature both an interactive platform and a decision-making interface, enhance spect-actors' immersion within artistic, educational, and entertainment VR contexts. Firstly, I problematized how less mediated Artistic VR experiences provide greater user agency and spect-actorship, allowing enhanced control and influence over actions and experiences. Secondly, I problematized how Educational VR operates within structured frameworks, investigating the intersection of educational objectives, pre-defined learning outcomes, user agency, and spect-actorship. Lastly, I problematized Entertainment VR, focusing on its synthesis of cinematic storytelling, user agency, authenticity, and spect-actorship to understand diverse approaches in delivering emotionally impactful narratives.

For instance, the ultimate inquiry in user experience in VR, due to its interactive platform, is to examine how much freedom of action a VR experience should have to be considered a successful one. It was also a question I asked myself, and it was also the guiding principle for each interview with every developer of the VR experiences I analyzed, belonging to the genres of Artistic VR, Educational VR, and Entertainment VR. The analysis of Artistic VR experiences in Chapter 3, including *After Dan Graham*, *ArtGate VR*, and *Belongings VR*, have revealed a profound connection between less mediated encounters and the heightened agency experienced by users. I conclude that these experiences deliberately minimized artificial control, providing users with a greater sense of influence over their interactions within open-ended environments. The pursuit of higher immersion was a common thread in these less mediated VR experiences, achieved through the reduction of interruptions and constraints. Notably, *After Dan Graham* stood out as a catalyst for this research, showcasing a unique

approach where the ending of the experience depended on the user's decisions and actions. I argue that a pure spect-actorial moment occurs in less mediated experiences, allowing for a more profound emotional impact when users are actively making intuitive decisions, and thus furthering the sense of true embodiment in that sense.

The comparison between Artistic and Educational VR further delves into the dichotomy of less mediated and more mediated experiences, emphasizing the importance of user agency and interaction in both contexts. This transition to Educational VR in Chapter 4 introduced a shift in dynamics, with a focus on structured frameworks and predetermined learning outcomes. *MLK: Now is the Time*, *Anne Frank House VR*, and *The Battle of Vimy Ridge* were examined to understand how educational objectives influenced the spect-actor engagement. Each Educational VR experience demonstrated a tailored approach to achieve specific learning goals, with varying degrees of user agency and interaction. User agency in an experience such as *Anne Frank House VR* can be meaningful in an educational setting if compared to museum visits where some prefer guided tours while others explore independently, which is an option this experience suggests. Challenges, particularly for location-based Educational VR experiences like *The Battle of Vimy Ridge,* were identified, raising concerns about the long-term sustainability of such initiatives amid technological advancements. As observed in the first two other Educational VR experiences, a more nuanced and guided, yet still present, freedom of action allows the developer to convey the intended educational message to the spect-actor through embodiment. However, I argue that the lack of freedom of movement as experienced in *The Battle of Vimy Ridge* hinders the fluidity and spect-actor involvement, leading to a more restricted experience. It is noteworthy, however, to mention the complexity of providing user

choices in a military museum context with sensitive subjects and firearms. On a different note, the conclusion of the experience allows for greater freedom of action and exploration, bringing a significant balance to the overall experience. These experiences, each uniquely prioritizing historical accuracy, user agency, or documentary-style immersion, collectively contribute to the nuanced understanding of the challenges and potential in historical education through VR. However, I noticed an important shift in the agency and freedom of actions that is imparted to the users. While still focused on interactivity, *MLK: Now is the Time*, for instance, emphasizes the importance of tailoring the level of freedom to the subject matter. I argue that the goal for Educational VR is to strike a balance between spect-actorial engagement and conveying the intended educational message.

As the dissertation transitioned to Entertainment VR in Chapter 5, the focus sharpens on spect-actor engagement, embodiment, agency, and emotional resonance. The analysis of *The VOID, The Thrill of the Fight* and *Stay Alive My Son* unveils the evolving landscape within Entertainment VR, showcasing diverse approaches to user interaction and narrative delivery. *Stay Alive, My Son*, for instance, epitomizes a multifaceted approach that seamlessly blends cinematic storytelling, interactive gaming, and historical elements. The spect-actor is actively engaged in shaping the narrative, especially during its prologue with the main protagonist, experiencing metalepsis that fosters emotional connections and a sense of responsibility. In contrast, *The Thrill of the Fight* prioritizes bodily interactions and skill-based gameplay, providing a different facet of embodiment, user agency and engagement with an almost complete absence of narrative and a focus on pure arcade gameplay. The discussion on spect-actorship in *The VOID*, introduces the notion that user freedom and playfulness are essential

elements in Entertainment VR. The tension between narrative-driven experiences and those characterized by minimal storyline and authorial control is evident, particularly in highlighting the challenges associated with character-driven narratives. In the evolving landscape of Entertainment VR, these experiences collectively contribute to a nuanced understanding of spect-actor engagement, user agency, and emotional impact. In this regard, I argue that the synthesis of cinematic storytelling, user agency, authenticity, and spect-actorship showcases varied approaches to delivering emotionally impactful narratives while accommodating diverse user preferences in Entertainment VR experiences.

In my research detailed in this dissertation, and through numerous observations and analyses, I have concluded that embodiment in VR experiences holds more significance than mere immersion. While immersion can occur in various activities such as reading a book, listening to music, watching a film, playing a video game, or attending a theatre play, embodiment addresses the user's physical presence through proprioception. Specifically, it encompasses the user's 'reality transfer' — the moment of transition from the tangible world to the virtual world. Once individuals truly begin to embody someone or something in a virtual universe, it enables them to experience deep emotional impact when they make intuitive decisions. It enables them to embody the image. This transformation turns them into what I term 'spect-actor'. As observed in an interview I conducted with Thomas Wallner, we discussed the about the actions users display when they are instinctively reacting and how they can elicit deep emotions. As Wallner states,

> I think perhaps we elicit deep emotion in that sort of transcendent state in a linear medium. Because we're not clicking on something, we're not making intellectual decisions. We're not weighing intellectually, should take path A should take path B should take path C. Blue pill or red pill, right? Because then the transcendence breaks down, at least for a moment. And if it breaks down more and more, because we have more and more agency, the less and less we'll be in a position to sort of feel those things in a way where it just works upon us[337].

By organically prompting intuitiveness to the user rather than mechanically provoking it to further a narrative,

> […] what if we create a desire and intent in the viewer through the experience? So, we're already pushing them psychologically, in a particular direction, and then we give them the agency outcome, to express that desire. And at that moment, that would feel organic. And we will be doing something that we feel we need to do in the scene[338].

Exploring the dynamics between agency and narrative coherence in VR experiences reveals a nuanced interplay between freedom and structure. There is a recognition that excessive agency may disrupt traditional narrative frameworks, particularly those rooted in linear storytelling traditions or those focused on education. Instead, there is a call for a delicate balance, where users are empowered with agency through embodiment while maintaining a cohesive narrative thread. This tension highlights the challenge of ensuring that users feel both

[337] Baillargeon, "VR Remote Learning, Interactive/Branching Storytelling, XR and Its Future Potential."
[338] Baillargeon, "VR Remote Learning, Interactive/Branching Storytelling, XR and Its Future Potential."

engaged and guided within the virtual environment. Consequently, finding the right amount of agency emerges as a crucial aspect of crafting VR experiences.

As this dissertation draws to a close, it becomes apparent that while significant strides have been made in understanding the spect-actor concept and the balance between agency and narrative structure in VR experiences, whether in artistic, educational and entertainment contexts, there remain interesting avenues for future exploration. One such area deserving of further scrutiny is the orchestration that is at play in the creation and development of VR experiences. The challenge lies in crafting experiences that encourage agency without diluting the emotional impact and narrative integrity as there is potential to foster a sense of organic engagement, where users can feel compelled to participate in the narrative trajectory without sacrificing their autonomy. Again, human nature is at the center of spect-actorship. Consequently, live interactions between spect-actors in a VR experience, regardless of the genre, where they would be able to organically mold the narrative according to their decisions, could be an interesting avenue to explore in the future.

In the broader context of VR experiences, whether Artistic, Educational or Entertainment based –-or possibly belonging to another genre that has yet to be studied and defined, this nuanced perspective on agency refines our understanding of spect-actor engagement in this constantly evolving landscape of immersive storytelling. As VR continues to push the boundaries of interactive narratives, the synthesis of intentionality, agency, and narrative structure becomes the backbone for crafting experiences that captivate, resonate, and transcend the traditional dichotomy between spectatorship and active participation.

As the boundaries between Artistic VR, Educational VR, and Entertainment VR continue to blur, the exploration conducted in this dissertation provides valuable insights into harnessing immersive technologies for compelling narratives and educational experiences. The concept of spect-actorship remains central, guiding future considerations for the design and implementation of VR experiences across various domains.

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