

**'Being' Alyx Vance: An autoethnographic analysis of immersion as
experienced within narrative-based virtual reality video games**

by

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ABSTRACT

Human beings have been fascinated with the notion of submerging themselves *into* other spaces since antiquity (Therrien 2014). Immersion has been employed in image-making as a strategy to place viewers *with*, or *amongst*, the art of early landscapes, frescoes, and panoramas (Grau 2003). Today, immersion has become one of the fundamental objectives of video games (Brown & Cairns 2004; Gard 2010; Dansky 2021), a new medium that has quickly grown to become the largest in the entertainment industry (Read 2022:[sp]). As a diverse and multifaceted medium, video games immerse audiences in innovative ways, employing an amalgamation of the strategies used by various media. New technological advancements in emerging media, such as virtual reality (VR), have given rise to the advent of *VR* video games, which open new fields of enquiry about novel forms of immersion and the role these new kinds of games play in people's lives.

The novelty of VR is to elicit and sustain higher levels of immersion and presence by positioning the user *in* virtual spaces where they can interact using bodily movements (Lanier 2017; Slater 2018). As each iteration of head-mounted displays (HMDs) gets smaller, lighter, and more capable, bringing more of the user *into* the virtual world, major technology and media industries place this technology as a foundation for the 'metaverse'. Scholarly debates viewing VR as an emerging (mass) media, however, pivot around two polarising camps; on the one hand, 'utopians', 'instrumentalists', or 'evangelists', embrace the interactive and spatial affordances of VR and foresee its potential as a life-altering technology, while the 'dystopians', 'determinists', or 'sceptics' caution against the potential for such technology to drastically alter lived experience (Ihde 2012; Bender & Broderick 2021; Du Toit & Swer 2021).

Moreover, the concept of immersion has become diluted across the various fields where it is applied, including virtual reality research, video game studies, film studies, and music studies (McMahan 2003; Nilsson *et al* 2016). Loose applications of the concept of 'immersion' often equate the experience with feelings of 'presence'. Furthermore, many studies that analyse and measure various notions of immersion and presence within virtual environments (VEs) employ *quantitative* approaches, using focus groups and questionnaires (Jennet *et al* 2008; Bender & Broderick 2021).

Such research provides valuable insights into immersion and presence within various contexts, but may struggle to address the multidimensional layers that constitute immersive experiences, specifically when considering the multifaceted and lengthy nature of contemporary video games. Since insufficient research on extended reality (XR) derives from the social sciences (Girginova *et al* 2023: [sp]), more research is needed to understand the sensation of immersion as it relates to the *player's* experience in the growing medium of (VR) video games.

By analysing the various immersive strategies experienced in (VR) video games, the primary aim of this study is therefore to present a *qualitative* method for analysing immersion using autoethnography and phenomenology. Through this method, the researcher/player explores the subjective experience of immersion in (VR) video games in depth. The development of this method necessitated a new (revised) model of immersion – the Player's Immersive Experience (PIE) model – which more profoundly frames the player's multidimensional experience of immersion in (VR) video games. Through an application of the PIE model to the pertinent VR video game *Half-Life: Alyx* (2020), this study analyses the nature of, and extent to which, a player experiences immersion in emerging (VR) video games.

Key terms:

Autoethnography, digital embodiment, gameplay experience, Half-Life: Alyx, immersion, ludology, narrative, phenomenology, presence, video games, virtual reality (VR), world-building

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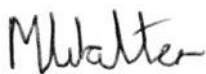
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TERMINOLOGY

Augmented reality (AR) is described by VR technology researchers William Sherman and Alan Craig (2019:22-23) as the experience of alternative reality that converges both the physical and the digital. They define it as: “A medium in which real-time interactive digital information is overlaid on the physical world that is in both spatial and temporal registration with the physical world” (Sherman & Craig 2019:22-23). AR can be experienced with a smartphone – the mobile game *Pokémon GO* (2016) uses AR.

Embodiment is a phenomenon that is referred to across a range of disciplines and thus has been referred to disparately. Discourse on video games often refers to ‘embodiment’ when discussing the player’s ‘sense of embodying’ a video game character. *Virtual* or *digital embodiment*, as applied in this study, refers to the sense of embodying or “inhabiting” a virtual or surrogate body of a virtual environment, following literary studies scholar James Paul Gee (2008:258). VR researchers Konstantina Kilteni, Raphaela Groten, and Mel Slater (2012:374-375) devise the term *Sense of Embodiment* (SoE) to refer to “the ensemble of sensations that arise in conjunction with being inside, having, and controlling a body” in a virtual space. Within this context, embodying a virtual character/avatar does not necessarily imply that the player is disembodied, but rather that the player ‘enfleshes’ the video game character/avatar’s virtual body as a surrogate in the virtual space. The concept of (virtual) embodiment is expanded upon in Chapter Five.

Extended reality (XR) is the collective term to refer to virtual reality (VR), augmented reality (AR) and mixed reality (VR).

First-person shooter (FPS) are video games where the player controls and assumes the character in first-person, through the avatar’s ‘eyes’. ID software, co-founded by John Carmack (who later joined the VR hardware company Oculus), pioneered the way for 3-D video games, with games like *Wolfenstein 3D* (1992) and *Doom* (1993). ID Software’s game engines and techniques were popularized and later influenced games such as *Half-Life* (1998). Currently, desktop computer first-person shooters require players to look and ‘turn’ the character’s head using the mouse and move

around using the keyboard (with the WASD keys).

Game mechanics, as the ludologists refer to them, are the game's functions, rules and gameplay systems. Computer, media, and video game scholars Malte Elson, Johannes Breuer, James Ivory, and Thorsten Quandt (2014:526) refer to mechanics as the rules of the game; much like a die is a tool used to determine player outcome in boardgames, it also refers to the feedback and response to player input. The mechanics and gameplay refer to what the game, in a sense, allows the player to do, both in the world of the game and the limits within the game engine – how the developers designed the game.

Haptics refers to the multidisciplinary body of knowledge concerned with the bodily sense of touch. Within media studies, however, the concept of haptics as an approach to 'feel' is often converged with the sense of 'sight', a concept pioneered by art historian Alois Riegl, who coined the term *haptic vision*, a notion in which the eye would assume a more tactile function while experiencing the textuality of an artwork (Parisi 2018:34-35). Within interactive media, haptic feedback refers to the subsequent *response* users may receive after engaging, generally in the form of a small vibration of the game controller.

Mediated, as referred to here, refers to experiences, communication, or immersion facilitated through a medium. As such, a mediated environment refers to created alternate worlds and environments that are experienced in media. These environments can be experienced through art, writing, film, radio, television or (VR) video games.

Non-player characters (NPCs) are computer-controlled (AI) characters with which players can interact and engage in a video game.

Player avatar or character Player 'avatars' are created and designed by the player and have no preconceived identity, only that which the player makes – such as in *World of Warcraft* (2004 - present). Meanwhile, player 'characters' have pre-established identities within the game world, from which the player experiences the game (Aldred 2014:356-358). Gordon Freeman – the protagonist of the *Half-Life*

franchise (1998-2020) – would be an example of such a player ‘character’.

Reality is defined by Sherman and Craig (2019:5) as “a place that exists and that we can experience”. This space can be physical, virtual, or imaginary.

Virtual, as referred to throughout the study, is not opposed to the ‘real’, following philosophy scholars Pierre Lévy (1998:26) and Jean Du Toit and Gregory Morgan Swer (2021:22), but is instead a *projection* of the real (Breuer 2020:2).

Virtual Environments (VEs) refers to the limited navigable space presented in video games. Sherman and Craig (2019:5) define VEs as: “an instance of a virtual world presented in an interactive medium such as virtual reality.” This space can also refer to the navigable environments of traditional video games.

Virtual Reality (VR) is defined by VR researcher Mel Slater (2018:432) as a “computer-generated world [...] that perceptually surrounds the participant, where perception is a function at least of head tracking”. VR spaces are explored and interacted with via physical movements. A more extensive definition of VR can be found in Chapter Two (2.3).

(VR) video games, as referred to throughout this study, refer to both traditional ‘flatscreen’ video games and video games played in VR, as many of the discussions apply to both forms of video gaming. I will specifically refer to *VR video games* in discussions around games played exclusively in VR.

Worldly refers to objects or observations concerning the physical world around us. I may often also refer to this term as ‘physical’, in contrast to the virtual. Following the definition of ‘virtual’ above, the ‘virtual’ here is not opposed to the ‘real’, but rather the ‘physical’. Players may become ‘un-immersed’ while playing (VR) video games due to worldly (or physical) distractions.

CHAPTER ONE

INTRODUCTION

1.1 Background and identification of research issues

Moving through a vodka distillery, my objective is simple – be as quiet as possible. Jeff, the hulking alien abomination who roams the liquor factory, may be blind but he has “an ear like Mozart” (*Half-Life: Alyx* 2020). He charges towards any sound he hears, and, of course, I need to make my way through a series of loud and dauntingly slow obstacles and puzzles. My only defence: the bottles of liquor decorating the establishment that I can throw to distract Jeff, who is less than pleased about my presence. The experience is masterfully crafted and terrifying, and (I am unashamed to admit) I have yet to complete the level without letting out the occasional ‘yelp’ while, in ‘reality’, I am standing in my office – wearing my VR headset. *Half-Life: Alyx* (2020) is the PC virtual reality (VR) exclusive, and the latest instalment in the *Half-Life* (1998-2020) video game franchise. VR seeks to further the immersive gaming experience by positioning the user ‘within’ the virtual gaming world, allowing players to physically look, move and interact in virtual spaces more freely.

Originally, VR games could be experienced only at arcades or theme parks, and it wasn’t until 2012, when Palmer Luckey’s Kickstarter for his low-cost *Oculus Rift* head-mounted display (HMD) gained significant financial support and the attention of computer gamers (Sherman & Craig 2019:676,783), that VR was taken more seriously as a potential platform for video games. VR’s presence within the video gaming realm is novel and experimental, featuring smaller, arcade-like games that may often feel like tech-demos that demonstrate the capabilities of the platform, rather than being fully-fledged gaming experiences. The popular VR game, *Beat Saber* (2018), for example, has players swinging ‘lightsabers’ at the ‘beats’ that come flying past them to the rhythm of music. By contrast, *Half-Life: Alyx* (2020) is a game that strives to revolutionise VR as a gaming platform, with a full-length gaming experience and a compelling narrative set in the *Half-Life* universe. As *The Guardian’s* VR and video game reporter Rick Lane (2020:[sp]) exclaims, *Half-Life: Alyx* (2020) is “a spectacular immersive experience”. Thus, the video gaming industry may have entered a new era of immersive experiences.

In a little over six decades, video games have gone from experimental games with limited interaction depicting (colourless and soundless) rudimentary pixels in the 1950s (Wolf 2008:xvii,1) to immersive experiences that transport players *into* convincing virtual worlds with rich narratives, creative gameplay, and physical interaction, as described in the anecdote above. In only a short time, when compared to more traditional media, “[t]he history of video games is dense and multifaceted”, according to preeminent video game scholar Mark J.P. Wolf (2008:xv). This history is briefly summarised below.¹

There seems to be some controversy over the very *first* video game. The first *experimental* ‘video game’ was William Higinbotham’s *Tennis for Two* (1958), which was displayed at Brookhaven Laboratory (Wolf 2008:xvii). However, video games (as the name suggests) output a *video* signal, as stipulated in an early legal case settled by the US Court of Law (Fox 2013:269). *Tennis for Two* (1958) utilised an oscilloscope, “which technically made it an ‘electronic game’” (Fox 2013:269). Thus, a finished version of *Spacewar!* (1962), created by MIT student Steve Russell is widely recognised as the first true video game (Wolf 2008:xvii; Fox 2013:269). What *Tennis for Two* (1958) did, however, was demonstrate “interactive control of on-screen game play...” (Wolf 2008:xvii). Games like *Spacewar!* (1962) were only played by those who had access to the expensive computers of the time, which were mainly available on university campuses. It was not until the 1970s that video games became more accessible and commercially successful. Inspired by *Spacewar!* (1962), video game pioneer Nolan Bushnell created the first *arcade* video game, *Computer Space* (1971), and soon after founded Atari, which quickly went on to create some of the most popular video games and consoles of the time. Ralph Baer’s *Magnavox Odyssey* (1972) was the first *home* video gaming console, and in the same year, *PONG* (1972) became the first hit game (Wolf 2008:xvii). While “[t]he home video game industry suffer[ed] its first crash” in 1977 (Wolf 2008:xviii), the late 1970s became what is referred to as the “golden age” of arcade games, with games like *Space Invaders* (1978) being released, which became the first global hit, and featured the first use of dynamic video

¹ Wolf’s (2008) *The video game explosion: a history from Pong to PlayStation and beyond* provides a thorough review of the rich history and development of video games over the decades, while Fox’s (2013) *The Video Games Guide: 1,000+ Arcade, Console and Computer Games, 1962-2012* catalogues significant games, consoles and developers since the medium’s inception.

game music (Fox 2013:15,267-268). *Pac-man* (1980) became what is possibly the most famous arcade game, which contrasted with the shooting and space-themed games that dominated the market at the time (Fox 2013:209).

By 1981, the video gaming industry had reached \$5 billion in The United States. However, by 1983, the industry suffered a major crash – affecting the arcade and home video game markets – which only began to subside with the help of the success of Nintendo Entertainment System (NES) in 1985 and its hit video game *Super Mario Bros* (1985) (Wolf 2008:xviii). Around the same time, Russian computer engineer Alexey Pajitnov created *Tetris* (1984), which was released with Nintendo’s Game Boy mobile device and on dozens of platforms since to become amongst the best-selling video games of all time (Sirani (2023:[sp])). Nintendo and Sega dominated the home video gaming industry – in what is often referred to as the console wars – until the 1990s when Sony released its PlayStation and Microsoft its Xbox (Wolf 2008: xviii-xix). The video gaming industry has since become the largest in the entertainment sector, surpassing the music and film industry (Entertainment Software Association (2019:[sp])). The Entertainment Software Association (2022:[sp]) claims that, “[t]oday, 66 percent of Americans [...] play video games regularly”.² The World Economic Forum’s Simon Read (2022:[sp]) argues that the video gaming industry is predicted to be worth \$321 billion by 2026.

The capability of video games to *immerse* players into virtual worlds and narratives was realised as early as the 1970s. Computer programmer and gaming-enthusiast Will Crowther (later assisted by “... fellow programmer and Tolkien fan, Don Woods ...”) created *Adventure* (1972) – also known as ‘*AVENT*’ – the first ‘text adventure’ video game experiment (Fox 2013:3). Unlike the video games of that time, which focused on skill based and high-score systems and became the prominent ludological strategies of arcade and home video games for the next two decades – Crowther “believed that evocatively described locations could conjure up far better images in the mind’s eye than the blocky graphics of the day ever could” (Fox 2013:3). Thus, the

² The Entertainment Software Association (2022:[sp]) surveyed approximately 4000 Americans regarding their video gaming habits. The annual study indicates that of the 215 million active video game players across the US, the average age is 33 years old (Entertainment Software Association (2022:[sp])).

'text adventure' genre was born, leading to games such as *Zork: The Great Underground Empire* (1977) and *MUD1* (or *Multi-User Dungeon*) (1978) that carried through to the 1980s (Fox 2013:3). The appeal of these games was a sense of adventure through narrative, world-building and exploration.

Less than three decades later, video games frequently incorporated both narratological and ludological elements, as well as immersive strategies from prior, more established media, to become the multifaceted cultural phenomenon it is today. As game designer Steve Swink (2009:xiv) writes, "[a] single game might include painting, music, cinematography, writing and animation", positioning video games as a complex medium to study, particularly when concerning the multidimensional experience of immersion.

Academic approaches to video game studies that address them as a form of artistic expression are still very much debated. Wolf (2008:307) suggests that such debates also characterised research into early cinema. Early video game studies led the field to a vulnerability, towards being hijacked by neighbouring, more established fields of study (Eskelinen 2004:36), such as film and literature (Aarseth 2004:45). In favour of impartiality, game studies scholar Markku Eskelinen (2004:36) argues that "what these emerging studies need is independence, or at least relative independence".

Initially, video game studies positioned two main schools of thought against each other: ludology, the study of games and play, and narratology, the study of storytelling techniques. Each positioned "a primary quality of video games against the other" (Girina 2015:6). Esteemed game studies scholar Espen Aarseth (2004:45) explains how "one side argues that computer games are media for telling stories, while the opposing side claims that stories and games are different structures that are in effect doing opposite things". Media and communications author and scholar, Henry Jenkins (2004:118), elaborates on the juxtaposition, suggesting that ludologists "wanted to see the focus shift onto the mechanics of game play", while narratologists "were interested in studying games alongside other storytelling media".

However, as the early debates over ludological versus narratological approaches in video game studies have largely come to an impasse, research on video games has

diversified into various new areas of the multifaceted digital medium. From design, content, narrative, and gameplay, to players' social and immersive experiences in the game world through advancing interactive and feedback technology, such as HMDs for VR, video games offer abundant of research opportunities.³ Studying immersion as it pertains to video games, in a sense, approaches the field from both a ludological and narratological perspective since immersion involves various strategies employed by an amalgamation of aspects from both schools of thought. A study of immersive strategies in VR video games will lead to a discussion on the possible effects of immersion on the individual (and his or her sense of embodiment), specifically as a catalyst of virtual narratives and experiences, suggestive of where video games and consequent research could lead. While immersion has been a strategy employed in image-making practices at least as early as ancient Roman art, recent technological advancements (such as VR) open up a new field of enquiry about new forms of immersion in video game experiences and the role these new kinds of games play in people's lives.

Like video games, the advent of VR has endured a complex development, and within academia, has broadly pivoted around two opposing camps.⁴ Philosopher Don Ihde (2012:132-133) describes how 'utopians' privilege the desirable new capacity in which VR can bring experiences that are often "not possible within the limits of our present experience", while 'dystopians' caution against VR's replacement of our current existence with a fantastical one. This polarised attitude towards emerging media is echoed throughout "[t]he formative years of the field of the philosophy of technology ...", which has often been "characterised as a debate over the nature of technology between the opposing positions of instrumentalism and technological determinism", according to philosophy scholars Jean Du Toit and Gregory Morgan Swer (2021:22). Broadly summarised, technology is viewed as a tool, which 'instrumentalists' would consider to be a means to further human proficiency, while technological 'determinists' view technology as the decisive factor of a society, determining "social change" that is often beyond the intent of the creators (Du Toit & Swer 2021:22).

³ VR research fields range from using VR for therapy or medical treatments, to understanding climate change, or the effects of experiencing violence in VR (The International Society for Presence Research [sa]).

⁴ In Chapter Two (2.3) I further contextualise the development of VR.

According to media scholars Stuart Bender and Mick Broderick (2021:197), this “paradoxical friction between evangelical and sceptical views on [VR’s] immersive power ...” is still prevalent today. For instance, immersive storyteller Chris Milk (2015:[sp]) described VR as “the ultimate empathy machine”, in his TED-talk showcasing his VR film *Clouds Over Sidra* (Arora & Milk 2015). However, the hype surrounding such claims of VR’s ability to engineer empathy has been met with increasing criticism (see Bollmer 2017:63; Murray 2020:24; Nash 2021:103). Sci-fi depictions of immersive technology such as VR, like in the film *Ready Player One* (Spielberg 2018), portray the technology as a means to escape a dystopian reality, into a utopian virtuality. The technology has been further brought into the limelight recently with its capacity to bring about the ‘Metaverse’. In October 2021, *Facebook* held its annual Connect conference (formally Oculus Connect conference) and announced their rebranding to Meta to reflect the company’s vision. Meta intends to help build the ‘metaverse’ – 3D spaces that “... will let you socialize, learn, collaborate and play in ways that go beyond what we can imagine” (Meta [sa]). This idea was arguably borrowed from Neal Stephenson’s 1992, novel *Snow Crash*, which coined the phrase ‘Metaverse’, describing a virtual world to escape to with the use of goggles. Essentially, Meta’s metaverse is a centralised virtual world, using VR and AR technologies to engage in it. Meta envisions this as a social space to connect people, as well as a place for work and recreation.

By contrast, VR authority and professor Jeremy Bailenson (2023:[sp]) maintains that the complexity of trying to recreate our perception of the physical world in virtual spaces results in many users feeling fatigued, motion sick, and uncomfortable, even in short sessions. As such, Bailenson (2023:[sp]) argues that activities such as office work, virtual meetings and/or watching films – which contemporary VR devices are marketed towards – are ideally suited for devices like laptops and that “... VR headsets just get in the way.” Bailenson (2023:[sp]), therefore, suggests that VR is better reserved as an alternative to engagements that would be “dangerous”, “impossible”, “counterproductive”, or “expensive” (DICE), rather than used as a medium for everyday work and entertainment. In other words, VR should remain a tool for niche applications and not for daily-use experiences, as insinuated by major media corporations.

However, the release and success of VR video games such as *Half-Life: Alyx* (2020) and *Horizon VR: Call of the Mountain* (2023) on Sony's recent PlayStation VR2 may suggest otherwise. While VR is relatively novel and experimental in the gaming realm, especially in expansive game worlds with rich narratives, the medium offers a life-like sense of scale, physical interaction, and a more convincing sense of embodiment than its flatscreen counterparts (Bender & Broderick 2021:32). The new experiences VR affords arguably positions the medium at a new frontier of immersive video gaming.

As an emerging medium, VR video games open new fields of enquiry in the video game space, offering novel immersive experiences that should be interrogated. Concerningly, however, in the first issue of *Social Grammars of Virtuality*, Katerina Girginova, Kyle Cassidy, Maxwell Foxman, Matthew O'Donnell and Katie Rawson (2023: [sp]) report that only five-percent of extended reality (XR) research derives from the social sciences, while the majority of XR research derives from the fields of medicine, engineering and computer science.⁵ A major reason for this imbalance, according to Girginova *et al* (2023: [sp]), is that the latter disciplines represent fields in which VR is actively used and developed. Clearly, more studies are needed from the perspective of the humanities and social sciences to better understand the effects of these emerging mediums on users and players, and their implications on social practices.

Studying *the experience of immersion* in (VR) video games, one can better understand the emerging medium, the multiple systems and strategies it incorporates to induce immersion, and how these strategies affect players. Conversely, the concept of immersion is often trivialised as the sensation of being submerged in water and has become an increasingly vague concept, according to media scholar Alison McMahan (2003:67). However, the same unambiguity is not held when referring to a user's experience in mediated environments (Nilsson, Nordahl & Serafin 2016:109). Immersion is often interchangeably and inconsistently referred to alongside concepts such as 'presence'. Nilsson *et al* (2016:109) suggest this is exacerbated by the variety of fields it is applied to, including virtual environment research, video game studies,

⁵ *Social Grammars of Virtuality* is a new publication dedicated to reviewing extended reality (XR) research in the social sciences, headed by the University of Pennsylvania's *Annenberg Virtual Reality CoLABorative* (VRCoLAB).

film studies, and music studies, amongst others.

Video games, being a diverse multifaceted medium, can immerse audiences, at a variety of levels, often employing an amalgamation of strategies used by various media – some strategies date back to the early illusionistic practices of frescoes and panoramas as far back as the classical world (Grau 2003:5). Immersion in video games has been further complicated over the years by the rapid development of virtual environments (VE), the convergence of VEs with video games and the growing use of HMDs. The combination of video games and HMD technology gives rise to a new genre of gaming which has been termed VR video games, in which video games are played through the use of VR technology.

Video game research has gained significant traction over the past decade due to the growth and advancement of the video game industry: technically and aesthetically, from how video games are purchased, consumed, and how the stories are played out, to social interaction within multiplayer games. Research in this regard has to keep up to date, and not much has been written specifically about *immersion* as it relates to the latest VR games, technology, and new capabilities, which are now arguably at the pinnacle of immersive video gaming experiences, with reference to games like *Half-Life Alyx* (2020).

Video games are multifaceted, thus multi-disciplinary, phenomena with countless aspects and areas to be studied. Video game research is further complicated by the interactive nature of the medium, and the constant evolution of the field. Thus, when approached for analysis, as Aarseth (2003:1) suggests, the field has borrowed research methods and models from various disciplines. Consequently, another research issue is the lack of consistency regarding research methods, which will be explored in this study, while at the same time seeking a valid research method. In doing so, an analysis of immersion in (VR) video games, positioned around the VR video game *Half-Life: Alyx* (2020) as a case study, will seek to establish an appropriate method that contributes towards understanding the phenomenon of immersion in VR video games.

This study, therefore, analyses the nature of immersion as experienced in (VR) video

games. As my study is situated with the humanities, I focus on philosophical as well as technical aspects of video gaming in order to understand how video games, and the platform of VR, induce immersion and presence ‘in’ the virtual world and analyse how these phenomena are experienced. To demonstrate how video games and related research bring new ways of seeing and understanding immersion within mediated environments – specifically within the realm of VR – the study will involve an autoethnographic study of the video game *Half-Life: Alyx* (2020).

1.2 Research aims, objectives and research questions

1.2.1 Research aims

The aim of the study is to analyse and contextualise immersion as a concept, specifically how it pertains to video games, and to further examine and describe the nature of the sense of immersion in video games, furthered by the advent of VR. The secondary aim of the study will be to establish a method for gathering experienced-based and digitally-based qualitative data using autoethnography as means to research immersion in video games, specifically the immersive experience within the realm of VR, using *Half-Life Alyx* (2020) as a case study.

1.2.2 Research objectives

- i. To analyse, contextualise and philosophically explore the concept of immersion and to search for examples of immersion in visual culture, such as the works discussed by Oliver Grau in *Virtual Art: From Illusion to Immersion* (2003).
- ii. To analyse, contextualise and philosophically explore the concept of immersion and examine immersion in video games in particular, with reference to Laura Ermi and Frans Mäyrä’s (2005) sensory, challenged-based, and imaginative immersion (SCI) model and Gordon Calleja’s (2011) Player Involvement Model of immersion in video games. This will include the contextualisation of VR as it pertains to video games and video game immersion.
- iii. To examine and describe how (VR) video games (using *Half-Life: Alyx* (2020) as a case study) employ various immersive strategies, and to gain a better

understanding of the nature of these strategies.

- iv. To explore previous methods used to understand immersion in VR and video games.
- v. To develop and expand on previous research and establish an autoethnographic method as a qualitative tool for video game research, specifically research regarding immersion, presence and VR. This enriched method will consider a combination of autoethnographic methods, digital techniques and philosophical underpinnings.

1.2.3 Research questions

- i. How can the multidimensional nature of immersion as experienced within narrative-based (VR) video games, such as *Half-Life: Alyx* (2020), be qualitatively accounted for and analysed using autoethnography?
- ii. How does the platform/novelty of virtual reality further the nature of the immersive experience within a narrative-based video game?
- iii. How do players' experiences within VR video games give rise to new ways of theorising and understanding immersion?

1.3 Theoretical framework(s)

The analytical study will be conducted using a materialist theory approach, as it looks to analyse the material effects of video game immersion rather than the meaning of it. Materialist theory derives from medium theory, in which philosopher Marshall McLuhan (1964:9) – one of its founders – asserted the well-known idea that “the medium is the message” and suggested that the message of the medium should be analysed within the context of the medium that carries it, and not by looking only at the content. Since media “do things through their materiality” (Bollmer 2019:5), it is critical to understand and contextualise media beyond questions of representation or meaning alone, but to also examine a medium with regard to its physicality, from how it stores information to how it communicates and, in this case, how it *immerses* users. Furthermore, since the study will not only look at how the physical aspects of VR immerse players, but also at the medium’s ability to position me in virtual worlds, I employ *new materialist* theory as an extension of the materialist framework. New

materiality considers material systems not only by their *properties* but also by their *capacities*, according to new materialist philosopher Manuel DeLanda (2015:17). In this case, the *capacity* here would be the *capability* and *extent* to which players are immersed *into the virtual worlds* of (VR) video games.

Video games, being interactive and multifaceted in terms of experience and the level of engagement, require an approach that looks beyond only the content and meaning(s) of the game. They require an approach that analyses, in this case, the strategies that evoke a sense of immersion: from game design, decisions of gameplay mechanics, narrative, and world-building, to the illusionistic and physical elements, such as HMD and VR hardware and technology. This study aims to analyse immersion in video games – with a focus on the physical and affectual effects of the immersion – which suggests analysing video games beyond the content of the game itself.

In developing a method for analysing the nature of immersion in (VR) video games, I turn towards the *phenomenal experience* of gameplay. Thus, the philosophy of phenomenology proves useful, specifically in understanding the relationship between the player physically playing the video game, and his/her experience ‘as’ the character on screen, a phenomenon referred to as ‘digital embodiment’. Maurice Merleau-Ponty’s *Phenomenology of Perception* (2002, 2012) and Don Ihde’s (2009) ‘postphenomenology’ inform my arguments about digital embodiment as an immersive strategy in the gameplay experience. Phenomenology can be broadly described as the philosophy of the *experience* of being in the world. This theoretical framework is used to explore – in this case – the medium beyond meaningful or reflective content, focusing instead on the *experience* of it.⁶ In order to construct a model for understanding the nature of immersion in (VR) video games, it is first necessary to define the concepts of virtual reality and immersion. The following provides a brief literature review that will be further fleshed out over the succeeding chapters.

⁶ I return to phenomenology in my arguments around digital embodiment in video games. I briefly discuss it in this chapter, specifically in 1.4.6, and return to it in more depth in Chapter Five.

1.4 Literature review

1.4.1 The concept of Virtual Reality

Computer scientist Jaron Lanier (2017:11-12) coined the phrase 'virtual reality' (VR) in 1989, describing it as a frontier of science, philosophy, and technology. VR can be broadly described as a medium that tracks the user's physical movements in space and simulates their *feeling* of being in another space, according to Sherman and Craig (2019:5). Preeminent VR researcher Mel Slater (2018:432) emphasises that a fundamental factor of any VR experience is at least the ability for the user's visual perception to be altered by their head movement. In other words, as a VR user turns his/her head, their perceptual environment will change accordingly, similar to our lived experience. As such, VR attempts to immerse users in innovative and increasingly sophisticated ways: by employing artificial intelligence (AI) and real-time body tracking in HMDs that attempt to mimic the user's perceptual experience to bring 'more of' the user 'into' the virtual realm. In Chapter Two (2.3), I contextualise and define VR in more depth.

1.4.2 The concepts of immersion and presence

The concept of immersion has become ambiguous when referring to mediated experiences, according to media scholars Niels Christian Nilsson, Rolf Nordahl and Stefania Serafin (2016:109), and Alison McMahan (2003:67). 'Immersion' is often used as a 'blanket term' to describe the many forms of engrossment one experiences while engaging with various media. Preeminent media scholar Janet H. Murray (2017:124) describes immersion as engaging our entire perception and attention in another reality. Similarly, video game scholar Carl Therrien (2014:451) associates immersion with the feeling of being *transported* into another reality. This *transportation* is what closely relates immersion to the notion of *presence*, a term that VR and computer science researchers Mel Slater and Sylvia Wilbur (1997:4) define as the psychological experience of the individual's *presence* or *consciousness* in a virtual environment. Broadly construed, presence is understood as the feeling of 'being in' a mediated environment, and immersion is understood as the systems and strategies used to 'transport' the user there. In Chapter Two (2.4-2.5) I further explore and define the meanings of the concepts of immersion and presence, respectively. The following

section contextualises how immersion has been incorporated as a strategy in early art forms, many of which are still prevalent in the experience of modern video games.

1.4.3 Contextualising immersive strategies in images

To help understand the nature of immersion in (VR) video games, it is beneficial to contextualise how immersive strategies have been incorporated into other visual and visualising strategies. For this endeavour, I draw from art historian and media theoretician Oliver Grau's seminal work titled *Virtual Art: From Illusion to Immersion* (2003). Grau (2003:5,8) suggests that the desire to 'be in' art is evidenced by landscapes, frescoes, and panoramas, which made use of illusionistic practices for immersive effects. Early illusionistic practices can be found in frescoes, with surviving remains dating back from the classical Roman world. These include large wall paintings that would address observers from all sides in an attempt to create a sense of being part of the image (Grau 2003:25). Realism and detail were seen as paramount to achieving immersion in artworks, as artists began to experiment with portraying believable perceptions of depth and perspective (Grau 2003:35).

Recurring immersive strategies in these immersive artworks included the lack of framing elements to fill the observer's field of view, in a sense blocking out any 'worldly' elements that may distract from the image, and surrounding the audience in the 'other' world. Creating the image with as realistic a sense of detail as technology at the time would allow, along with a sense of perspective and three-dimensional extensions from the two-dimensional artworks (a technique known as *faux terrain*). The amalgamation of illusionary practices meant audiences would look at images and landscapes as if standing *in* the depicted scenes. In the sixteenth and seventeenth centuries, innovations in illusion and immersive strategies were a collective effort that combined art and technology in new ways (Grau 2003:45). The panorama, developed in the late seventeenth century from illusionistic landscapes, fulfilled many of these immersive strategies. Figure 1, depicting the *Panorama of the Crucifixion of Christ*, illustrates how these immersive strategies came together into a single experience.⁷ Panoramas such as these surround the viewer in 360-degree images, with three-dimensional

⁷ The *Panorama of the Crucifixion of Christ* depicted here is a reconstruction of the original panorama of 1884.

extensions in the form of *faux terrain* (seen by the sculptured features in the foreground of the painting).



Figure 1: Hans Wulz and Josef Fastl, *Panorama of the Crucifixion of Christ in Einsiedeln*, 1961/62. Panorama. Oil on canvas, approx. 100m x 10m. Einsiedeln, Germany. Panorama Einsiedeln [sa].

Artforms such as the panorama – which merged technology and art – were met with a sense of ambivalence. People questioned the dangers panoramas posed to perception or consciousness, while others praised the medium’s potential to transport viewers into depicted worlds (Grau 2003:62; Andjelkovic 2020:22,23). The same dichotomy of opinion has emerged in debates about early 3-D cinema and, more recently, contemporary VR: both have been dismissed as nothing more than gimmicks, presenting dangers to time or consciousness spent in the virtual world. The new media of film that developed in the late 1800s was partly to blame for the declining interest in the panorama, which resulted in the end of the medium (Grau 2003:127).

Since the commercialisation of film by the Lumière brothers in the late 1800s, the medium quickly adapted to more closely reflect the world around us, with the introduction of recorded sound in the late 1920s, the incorporation of colour in the 1930s, to the integration of 3D in the 1950s. However, the first two iterations of 3-D cinema of the 1950s and early 1980s were met with criticism. Grau (2003:152)

highlights the cyclical nature of emerging illusionistic media: each time a new one is presented, it is met with an initial hype, followed by an inevitable decline in interest. This fleeting novelty can be seen in the ‘rise-and-fall’ of interest in the panorama or the popularity of early 3-D cinema. Following film pioneers and authors such as Heilig (1992), Paul (1993), Belton (2012), Benson-Allott (2013), Elsaesser (2013), and Bordwell and Thompson (2008, 2019), in Chapter Two (2.6-2.7), I discuss immersion in cinema in more detail, particularly the aim to use 3-D as a strategy to recreate our perception of the lived-world, and to involve the viewer *in* the film. Below, I briefly highlight the significance of 3-D cinema’s development in the evolution of immersive strategies.

Film scholars David Bordwell and Kristin Thompson (2019:297) argue how the failed implementation of early 3-D cinema in the 1950s and the early 1980s was met with criticism. According to film scholars John Belton (2012:193-194) and William Paul (1993:323), a prevalent reason for 3-D’s initial failure was the lack of memorable, story-driven film at the time, as viewers were instead subjected to having 3-D objects hurled at them – and quickly grew weary. It was not until the standardisation of digitalisation in the 2000s (Bordwell & Thompson 2019:713), and the major success of the 3-D film *Avatar* (Cameron 2009), that 3-D cinema was resurrected. Scholars have claimed that the success of James Cameron’s *Avatar* (2009) as a 3-D experience was partly due to it not drawing attention to itself (Belton 2012:194). In this sense, strategies such as 3D that attempt to immerse users *into* fictional worlds need to be subtle enough as not to be a distraction, but rather to aid or complement the narrative and medium as a whole. This dichotomy between ‘spectacle’ and ‘narrative’ in film theory is echoed in video game theory, as highlighted above in the early debates between ‘narratologists’ and ‘ludologists’ (which I return to in Chapter Four).⁸

While 3-D cinema immerses viewers through the *illusion* of a shared space using stereoscopic imaging, theorists and philosophers have also argued how viewers are *actively involved* in the cinema experience through a mode of *somatic engagement*. This bodily relationship of the cinematic viewing experience is reflected in cinema and media theorist Vivian Sobchack’s (1992, 2004) seminal work, on what she refers to as

⁸ Similarly, the ‘narrative paradox’ refers to the balance between “pre-authored” story and the player’s agency (Louchart & Aylett 2003:244), a concept which I also discuss Chapter Four.

the 'film body', which accounts for the *phenomenological experience* of the film. Similarly, film scholar Jennifer Barker (2009:2-3) refers to 'haptic visuality', in which film is experienced as a sensuous exchange between viewer and film that involves and affects the entire body. Following authors such as Sobchack (1992, 2004), Marks (2000), Barker (2009), and Jackman (2015), I discuss this 'active bodily exchange' between viewer and film in more depth in Chapter Two (2.6-2.7). In Chapter 5, I discuss this 'bodily relationship' as it pertains to video games and VR more specifically. The following section highlights the multidimensionality of immersion in video games and VR.

1.4.4 Immersion in video games and VR

As I establish throughout the study, many factors induce an immersive experience, arguably more so within video games and virtual environments, as they comprise an amalgamation of technical hardware, software, and strategies previously discussed. Moreover, video games place the player at the centre of the experience through their most distinct feature – player interaction. Game designers, therefore, consider immersion as the fundamental objective of the video gaming experience (Gard 2010:[sp]; Dansky 2021:17). As such, researchers refer to various areas when discussing the concept, particularly as it pertains to video games. In proposing a taxonomy of immersion within the study of video games, media scholars Niels Christian Nilsson, Rolf Nordahl and Stefania Serafin (2016:110) review prominent definitions of immersion and distinguish four general views of immersion as: *a property of the system, a perceptual response, a response to narratives, a response to challenges*. In Chapter Three, I explore the various means or strategies that reflect these four views of immersion in video games by reviewing the relevant texts of video game scholars such as Heeter (1992), Brown and Cairns (2004), Nitsche (2008), Swink (2009), and Girina (2015). I then explore how video games affect the 'feelings' of players, discussing the concepts of empathy (Massumi 2002; Tronstad 2008; Bollmer 2017), game feel (Shouse 2005; Swink 2009 & Keogh 2018) and affect (Shinkle 2005; Paterson 2007, 2009; Anable 2018).

Since video games are multifaceted, and immersion is experienced through several dimensions, it is useful to explore two prevalent models for analysing immersion in

video games, namely, Ermi and Mäyrä's (2005:7) sensory, challenge-based, and imaginative immersion (SCI) model, and Calleja's (2011:36-37) Player Involvement Model. In Chapter Three, I explore these models more extensively, but briefly establish their significance and the need for a revised model that more profoundly accounts for the nature of immersion in (VR) video games here. The SCI model importantly establishes that immersion in video games is experienced at multiple levels or dimensions, often simultaneously, and that by categorising its dimensions and understanding them in this way, begins to lessen its often-ambiguous delineations and solicitations of the immersive experience. However, the three dimensions it incorporates only broadly cover the immersive experience during gameplay, often compounding similar concepts or experiences that are best understood individually.

The Player Involvement Model expands on the SCI model, positing six dimensions of what Calleja refers to as 'involvement', which are experienced unconsciously and work in relation to each other. Calleja's (2011:36-38) six dimensions that reflect the player's immersive experience are: *kinesthetic involvement*; *spatial involvement*; *shared involvement*; *narrative involvement*; *affective involvement*; and *ludic involvement*. These six dimensions more profoundly explore the various strategies of immersion than the SCI model and, importantly, distinguish between various concepts, such as *spatial* and *narrative involvement*. However, as I further highlight in Chapter Three, neither of these models satisfactorily account for *all* the immersive strategies and insights that I explore throughout the study. Furthermore, these models do not consider emerging media such as VR, which introduces new immersive insights into the gameplay experience. To address these gaps, it is necessary to further revise older models and develop a new model to analyse the nature of immersion in (VR) video games. The development of this new model is the basis for Chapter Six.

The medium of VR further expands upon (and improves upon) many of these various immersive strategies. The premise of VR is to place the user in a virtual space by blocking out external diversions of the physical world, and much like the panorama, attempts to fill the viewer's entire field of vision with an artificial world. Like 3-D cinema, VR creates a sense of depth by presenting stereoscopic images to the user, and like video games, it is centred around user interaction. The fundamental feature of VR, however, is the novelty of user interaction in the form of bodily movement tracking

(Lanier 2017:280; Slater 2018:432). Shinkle (2008:907) argues that the act of gameplay itself is an essential part of enjoying the gameplay experience. VR caters to and, arguably, expands upon the proprioceptive response of video game interaction, through *bodily* interaction. In Chapter Three (3.8.1), I more thoroughly explore how VR, through physical interaction, induces immersion, following authors such as Sanchez-Vives and Slater (2005), Shinkle (2008), and Slater, Spanlang and Corominas (2010). Since I have briefly contextualised and explored the ludological aspects of immersion in video games, I now turn towards the narratological experience of immersion.

1.4.5 Immersion through world-building and narrative

Murray (2017:123) argues that, through enthralling narratives, one is able to immerse oneself *into* a story, almost to the extent that one may begin to feel present *there*. Similarly, humans have always had an innate desire to visit imaginary worlds (Wolf 2012:4). ‘Imaginative immersion’ (Ermi & Mäyrä 2005:8), or ‘fictional immersion’ (Arsenault 2005:1), refer to how one is immersed by either the narrative or the world presented by a particular type of media, rather than only the illusionistic or ludic characteristics of it. Although world-building and narrative share similar qualities, and have overlapping elements – as I further explore in Chapter Four – they refer to distinctive strategies that immerse one in various ways, which I briefly highlight here.

World-building refers to the expansive process of establishing a fictional world that entices viewers, readers, or players to return to and learn more about the imaginative world’s history, culture(s), or geography. Unlike narrative, which involves the linear process of establishing a determined story, world-building refers to the expansion of the *world* that the story is based in (Wolf 2012:2). According to video game scholar Wendi Sierra (2021:30), in video games, world-building is often used as an “umbrella term” referring to various aspects, from designing of levels, aesthetics to expansion. Aarseth (2004:50-51) and Jenkins (2006:121) maintain that the purpose of playing through a video game is not to reach the narrative climax, but rather the journey through, and experience of, the game world. In Chapter Four, I expand upon how – through world-building – player immersion is sustained during gameplay. I explore how, through the exploration of, and interaction within, the virtual game world, players can plot

their own narratives – a concept (or world-building strategy) referred to as ‘micronarratives’ (Sierra 2021:51).

Similarly, one can be immersed by the *story* presented in a medium. Literary scholar Marie-Laure Ryan (2001:122,140,148) argues that narrative can evoke presence *in* the fictional world, through emotional attachment to characters and their character arcs, as well as through narrative beats and anticipation to see the story through to the end. Video games further perpetuate the experience of narrative immersion players experiences and interact with the story as their own agents. Murray (2017:159) describes this kind of agency as the satisfaction of fulfilling pre-determined decisions. The narrative experience of the game, thus, also considers and includes the player’s interaction and journey through the game world, as well as their experience of the intended story (Dansky 2021:3). The ‘story’ of a video game, therefore, provides further meaning or rationalisation for the ludological encounters, and experience of the game world (Nitsche 2008:44; Girina 2015:28; Dansky 2021:6).

In Chapter Four, I expand upon how world-building and narrative are used as strategies to immerse players during the gameplay experience. I also explore how VR perpetuates these immersive strategies, as the agency afforded by VR has provided new opportunities for users to experience stories and virtual worlds in new ways, eliciting greater feelings of presence. However, this also presents new challenges in directing viewers’ attention towards narrative elements and story beats.

1.4.6 The sense of embodiment in (VR) video games

As previously established, the body is affected in the experience of immersion. During gameplay, the player perceives the video game world ‘through’ or ‘as’ some form of a digital body, character, or avatar. This experience is referred to as a ‘sense of embodiment’ or ‘digital embodiment’. Human-computer interaction (HCI) scholar Frank Biocca (1997:11-12) argues that the sense of embodiment plays a pivotal role in the design of digital environments and can be measured by the varying degrees of presence the user experiences. Literary studies scholar James Paul Gee (2008:258) argues that when the player digitally embodies a game character, he/she “inhabits” the digital body, inheriting the goals of the playable character and, by extension, brings

their own goals and morals to the surrogate character. VR further perpetuates the sensation of digital embodiment – as the user perceives the virtual world more intrinsically, using physical body movements. The ‘Sense of Embodiment’ (SoE), according to VR researchers Konstantina Kilteni, Raphaela Groten and Mel Slater (2012:376-377,384), is experienced through the sense of ‘self-location’, ‘agency’, and ‘body ownership’ in a virtual world – which they argue, dramatically affects the sense of presence *there*.

Ihde (2012:133,143) argues that the sense of embodiment is not always emphasised in simulated experiences (such as VR) and that a more critical account of embodiment is fundamental in developing new immersive experiences. Thus, VR scholars often turn towards phenomenology – broadly described as the philosophy of the *experience* of being in the world – to better understand the ‘relationship’ between the *physical* player and the *digital* character (Tham *et al* 2018:183). Merleau-Ponty’s *Phenomenology of Perception* is extensively referenced in this regard.

The discernment of the *virtual* is an active, lived experience, according to Merleau-Ponty (2012:260). The *virtual* is not opposed to the ‘real’ (Lévy 1998:26; Du Toit & Swer 2021:22), but is instead a *projection* of the real (Breuer 2020:2). As such, Merleau-Ponty (2012:260) argues that one can *inhabit this virtual plane*, as his/her “phenomenal ‘place’” is defined by the task at hand. Following this notion, philosopher Irene Breuer (2020:5) suggests that one instinctively ‘re-orientates’ or ‘re-anchors’ one’s somatic intentions with the “perceptual field” of the virtual realm. Thus, video game scholars such as Klevjer (2012:29,34,36) and Keogh (2018:22,32) use phenomenology to understand the player/character as a single entity – as one and the same. In Chapter Five, I further explore how phenomenological insights of digital embodiment in video games helps shape a better understanding of the sensation of *being both* player and character. Drawing from phenomenology, I further discuss scepticism over (see Farrow & Iacovides 2012, 2014) and enthusiasm for (see Crick 2011 and Klevjer 2012) the ability to reach (full) digital embodiment.

1.5 Research methodology

The aim of the study is to analyse and contextualise immersion as a concept and strategy in image-making practices, specifically as it pertains to video games. This context allows me to further examine and describe how video games can induce a sense of immersion, and, in particular, how the advent of VR has impacted immersive experiences in VR video games. Studies that analyse and measure the experience of immersion and/or presence in video games often employ quantitative approaches, using focus groups or questionnaires (Jennet *et al* 2008). This study, instead, relies on qualitative research, analysing immersion as it is experienced in the VR video game *Half-Life: Alyx* (2020) to arrive at its conclusions. I summarise the study's research methodology below.

Nitsche (2008:1) suggests that video games, being interactive, offer a multi-layered experience and thus require a multitude of analytical approaches to contribute towards understanding video games as a cultural phenomenon, and that no single theory or approach would suffice. Being multifaceted – and multidisciplinary – video games have been approached with methods borrowed from various research fields, as I have shown above, and thus, have not consistently been approached from or formulated into a common method.

According to Aarseth (2003:3), there are three main ways to acquire knowledge about a video game: firstly, one could learn about the game from the developers, secondly by observing others play the game or go through reviews, or thirdly, for the researcher to play the game. Aarseth (2003:3) argues the importance of play, suggesting that any informed approach to video game studies should first and foremost involve the researcher playing the game to truly understand the experience. New media scholar Sybille Lammes (2007:25,28) furthers Aarseth's argument about the importance of play by proposing the tools of 'reflexivity' and 'situatedness'. Reflexivity refers to a level of 'self-awareness', which means the researcher can reflect (and take note) of their involvement within the game both through the lens of the player as well as the evaluating researcher (Lammes 2007:28). Situatedness, on the other hand, emphasises the context of the game and the role of the digital character, more specifically (as in the case of this study), the embodied relationship between *player*

and *character*, as it is understood within the game environment (Lammes 2007:28). In other words, situatedness substantiates the confidence that the study is faithful to an authentic video gaming experience.

Therefore, as a study about the nature of the immersive ‘experiences’ of a player, this research will employ an autoethnographic method as a means to experience the gameplay first hand, in combination with the application of the theoretical perspectives on immersion in (VR) video games that I have highlighted above and will further explore in the following chapters. Originating from anthropology, in which researchers study particular cultures, ethnography allows researchers to embed themselves within an environment, gaining context to study the *experiences* of others first hand, according to video game researchers Petri Lankoski and Staffan Björk (2015:78). It is owing to this “embeddedness” in the environment – in which the *experience* of the subjects or the researcher is considered data – that Lankoski and Björk (2015:78) argue ethnographies have become a prevalent method for video game research. As a form of ethnography, autoethnography recognises the researcher’s own experience as data. Furthermore, the study explores cyber or digital autoethnography, which communication studies scholar Ahmet Atay (2020:271) argues accounts for the researcher’s *virtual* experience.

Moreover, to guide my analyses of immersion within the gameplay experience, I employ a phenomenological theoretical framework – particularly what Bender and Broderick (2021:28-29) refer to as ‘VR phenomenology’.⁹ VR phenomenology validates the subjective experience of the “researcher-critic”, who immerses themselves in VR environments and conducts phenomenological descriptions of their own experience (Bender & Broderick 2021:48). Phenomenological description provides a detailed account of the VR gameplay experience to readers who may not have access to the same material (Bender & Broderick 2021:9), and further allows for a more rigorous analysis of nuanced, immersive experiences that the researcher observes and experiences.

⁹ VR phenomenology draws from film phenomenology, in which Bender and Broderick (2021:28-29) reference Sobchack’s (1992) seminal work on the embodied experience of film, as well as Barker’s (2009) arguments about touch, both of which are discussed in Chapter Two (2.7).

Lastly, as a structural framework, the qualitative analysis is presented through the application of my own model of immersion, which I have named the *Player's Immersive Experience* (PIE) model. This model draws from and revises both Ermi and Mäyrä's (2005) SCI model and Calleja's (2011) Player Involvement Model, and incorporates insights obtained throughout the study to provide a method that more profoundly accounts for the immersive experience in (VR) video games. The development and description of the PIE model is discussed in Chapter Six.

The *Half-Life* franchise (1998-2020), specifically *Half-Life: Alyx* (2020), is an appropriate game from which to draw insights about immersive strategies and will be the game from which the study will conduct its qualitative analysis. Each iteration of the game series – since the original 1998 release – has revolutionised video games, specifically the First-Person Shooter (FPS) genre, both technically and aesthetically (Bates 1998:[sp]; Adams 2004:[sp]; Rossignol 2004:[sp]). The *Half-Life* (1998-2020) series is well known for its exceedingly linear experience in terms of narrative and level design. Each level, situation, puzzle, or fight has been hand-crafted by the developers. Valve (Half-life [sa]) describes how *Half-Life: Alyx* (2020) is a “[a] full-length game built from the ground up for virtual reality”. The developers remain in control of the entire experience – a step back from the more open world, procedural direction many games and franchises have leaned towards, such as the *Assassin's Creed* (2007-2020) franchise, for example.

Half-Life Alyx (2020) is the first attempt by any major triple-A company at a full-length VR title,¹⁰ and has kept the crafted linear experience. Gabe Newell (IGN, 2020), one of Valve's founders, refers to *Half-life* (1998-2020) as the game that solves game design problems and suggests that the franchise is used to push technological boundaries and attempts to revolutionise the gaming experience. The fact that the game is a VR exclusive (and that it has been for over a decade since the last *Half-life* game) suggests that Valve looks for breakthroughs in technology (in hardware as well software) and believes VR is at a capable point for a mainstream, revolutionised gameplay experiences. Therefore, *Half-Life: Alyx* (2020) makes for an appropriate

¹⁰ As an unofficial rating system within gaming culture, 'AAA' or 'triple-A' games refer to games created by larger developers or publishers, such as Electronic Arts (EA), Activision and Ubisoft, with significantly higher budgets and workforces, and thus higher expectations for the game as a whole.

game to analyse in a study about video game immersion since it incorporates an amalgamation of immersive tools and strategies.

The playthrough sessions of the *Half-Life: Alyx* (2020) are recorded, both from the gameplay perspective and of myself physically playing the game. This allows me – as researcher – to analyse my physical and virtual experience of immersion during gameplay. From these recording sessions, as well as my phenomenological descriptions, I analyse my immersive experience of VR gameplay with a focus on key themes of immersion as established in the various dimensions (or strategies) of the PIE model, namely: *sensory immersive strategies; bodily immersive strategies; game feel, affective and empathetic immersive strategies; world-building immersive strategies; narrative immersive strategies; ludological immersive strategies; social immersive strategies; and immersion disruption*. My analysis of immersion, as experienced in *Half-Life: Alyx* (2020), is discussed in Chapter Seven.

1.6 Outline of chapters

In the introductory chapter – Chapter One – I provide the context, aims, and objectives of this study. Thereafter, I sketch the condensed theoretical framework and literature review that briefly contextualises and highlights the relevant areas of immersion, from early media to video games, which will be the basis of the following chapters. Chapter One concludes with a brief description of the methodology applicable to the study and a brief outline of the chapters to follow.

Chapter Two begins with more in-depth definitions and contextualisation of virtual reality, immersion and presence. Thereafter I contextualise immersion in image-making practices. Oliver Grau's seminal text *Virtual Art: From Illusion to Immersion* (2003) is closely followed in this chapter as I review the literature on immersion in media from the Renaissance era to modern 3-D cinema. Throughout the chapter, I examine how increasingly sophisticated immersive strategies were employed in emerging media to transport viewers 'into' depicted worlds. The chapter concludes with a discussion of how contemporary film and cinema, in a sense as a forerunner of video games, integrates many of the immersive strategies that have evolved since antiquity.

In Chapter Three, the discussion moves towards immersion in video games more specifically. I begin by outlining the ludological immersive elements of video games more generally, following ludologists such as Brown and Cairns (2004:1), Nitsche (2008), and Girina (2015). I then focus on the lesser-ludic immersive strategies that video games employ, beginning with empathy, where I argue the capacity to which video games can elicit significant feelings of empathy in its players through “narrative empathy” and “embodied empathy”, following video game scholar Tronstad (2008: 251-256). I then explore how video games ‘move’ the player on an ‘emotional’ level through the related concepts of ‘game feel’ and affect. I navigate through these concepts by drawing on prominent scholars in the area, such as Massumi (2002), Shouse (2005), Swink (2009), and Anable (2018). Subsequently, I analyse pertinent models that frame the experience of immersion in video games, particularly, Ermi and Mäyrä’s (2005:7) SCI (sensory, challenge-based, and imaginative immersion) model and Calleja’s (2011:36-37) Player Involvement Model, both of which frame the immersive experience through the occurrence of multiple dimensions. I highlight the need for a revised model, that frames (more of) the immersive experiences and strategies established throughout this study, as well as account for the prospects of emerging media such as VR – which is set as the basis for Chapter Six. I conclude Chapter Three by considering these (video game) immersive strategies in VR. By reviewing literature from authors such as Sanchez-Vives and Slater (2005), Slater, Spanlang and Corominas (2010) and Nilsson *et al* (2018), I explore how VR strives to extend and sustain immersion for the user.

Chapter Four focuses on the narratological aspects of immersion, particularly world-building and narrative as immersive strategies. In the first half of the chapter, I contextualise world-building in media more generally, with reference to authors such as Wolf (2012, 2017), before discussing world-building in video games more specifically. I navigate through this section referring to examples from the *Half-Life* series (1998-2020) and *The Elder Scrolls V: Skyrim* (2011), each of which have fundamentally different world design philosophies, and look to immerse players into the game world in different ways. I also discuss the prominent world-building strategy of ‘micronarratives’, specifically Sierra’s (2021:51) *static, dynamic, and emergent micronarratives*, as a means to further sustain immersion in virtual worlds. The second half of the chapter then shifts towards narrative as an immersive strategy, beginning

by contextualising how immersion through storytelling was predated by the ancient Greek concept of *enargeia* (Allan *et al* 2017:36). Thereafter, I analyse narrative in video games specifically, where the works from scholars and game designers such as Nitsche (2008), Dansky (2021), and Bateman (2021) prove insightful. Chapter Four concludes with a discussion of how VR alters the storytelling experience. More specifically, I explore how the ‘newfound’ agency afforded by VR challenges storytellers by analysing four prominent VR short films, namely *Clouds Over Sidra* (Arora & Milk 2015), *Henry* (Lopez Dau 2015), *Dear Angelica* (Unsel 2017), and *Wolves In The Walls* (Billington 2018). I then argue how emerging VR video games can address these challenges, by analysing a scene from *Half-Life: Alyx* (2020).

In Chapter Five, I discuss how the sense of embodiment is experienced in (VR) video games as an immersive strategy. I begin by highlighting significant elements, features, experiences, or affects that are attributed to the sense of embodiment in video games, reviewing pertinent scholars such as Biocca (1997), Yee and Bailenson (2007), Gee (2008), and Denisova and Paul Cairns (2015). I then discuss how VR furthers the sense of embodiment, with reference to researchers such as Kiltner *et al* (2012), and Argelaguet *et al* (2016). Subsequently, I turn towards a phenomenology of the video game experience to further understand the ‘relationship’ of the player ‘as’ the video game character/avatar. I specifically look at Maurice Merleau-Ponty’s *Phenomenology of Perception* (2012) in this regard, and using his ‘centrality of the body’, I discuss both scepticism and enthusiasm for the ability to reach ‘full’ digital embodiment in video games. I then apply these insights to the VR (gaming) experience.

In Chapter Six, I develop my autoethnographic method for analysing the nature of immersion in (VR) video games. Following insights presented throughout the study, I construct a new (revised) model of immersion – which I call the *Player’s Immersive Experience* (PIE) model – that better reflects the immersive strategies I explore throughout the study, to understand immersion as it is experienced in (VR) video games. After developing my method, Chapter Six concludes with a description of my autoethnographic application to the pertinent VR video game *Half-Life: Alyx* (2020).

Chapter Seven contains an application of my model and analysis of the immersion – as it is experienced – using *Half-Life: Alyx* (2020) as a case study. This chapter both

highlights how players can experience immersion in emerging VR video games, as well as demonstrate how the PIE model allows researchers (and potentially game designers) to better account for and understand the respective strategies that immerse the player during gameplay. In Chapter Eight I conclude the study, beginning with a summary of the chapters. I then highlight the study's contributions to the field of digital culture and media, after which I note the limitations of this study and suggest possible areas for future research in the area.

CHAPTER TWO

DEFINING AND CONTEXTUALISING IMMERSION IN IMAGE-MAKING

2.1 Introduction

I can't have been older than five, because we needed dad's permission to play on his home office computer. He would have to start-up the command prompt to play the 8-bit games on the Atari floppy disk; *Trolls* (1992), *Commander Keen* (1990) and *Wolfenstein 3D* (1992) are some of my earliest memories. We also had what we called 'tv games' – the 8-bit consoles that played '64-in-one' cartridges with games like *Contra* (1987) and *Adventure Island* (1986). Years later (around 2003), a friend introduced me to *Half-Life* (1998), where I had to learn to use the mouse to 'look' and the WASD keys on the keyboard to move. It was the first traditional first-person shooter (FPS) I played: it was a revolution to me.

I have been a determined gamer ever since, specifically playing computer games. I have always tried to keep my computer specifications up to date to ensure that it is capable of playing the latest games. I paid little attention to console platforms outside of computer gaming,¹ however the novelty of VR was something I kept a weather eye on. I had seen demos and showcases, and I recall a video of someone essentially 'suited up' with a full-body haptic suit in a designated room with a moving floor, to play a modified version of *Battlefield 3* (2002-present), and experience what it was 'really' like to be 'in' the game in the heat of combat as a soldier. I never thought it was affordable or obtainable, until relatively recently.

In 2019 for the first time, I played a game in VR, on the original Oculus Rift – it was surreal: I was won over. Not long after, I had my own VR headset, the Oculus Rift S, and I started playing VR games. Amongst my close gaming community, I'm the only one who has a VR headset. Most haven't tried it, some find it expensive, others are

¹ I am referring specifically to game consoles like Microsoft's Xbox and Sony's PlayStation consoles. Regardless of platform, "a gamer" refers to one who plays (video games) regularly, and is familiar with, and shares the culture of video games and the industry. Various consoles have different benefits or drawbacks; computers are more powerful, capable of playing more games at higher framerates, but are more expensive than PlayStations, for example.

not yet convinced by VR. It is difficult for me to explain what the VR gaming experience is like, even to my experienced gamer friends. I have recorded and livestreamed myself playing in VR to show them, to explain its brilliance, and convince them to join me in virtual adventures. The only way to truly understand VR, however, is to experience it first-hand.

Video games, being interactive and multifaceted in terms of player experience, levels of engagement and design, require an approach that looks beyond only the content and meaning of the game. They require an approach that analyses, in this case, the strategies that evoke a sense of immersion: from game design, engagement, gameplay mechanics, embodiment, world-building, and narrative, to the illusionistic and physical elements and systems, such as HMD and VR hardware and technology.

In order to construct a method for understanding the nature of immersion in virtual reality video games, it is necessary to first understand and define the concepts of virtual reality, immersion, and presence, respectively. Thereafter, immersion, particularly in artwork, is further contextualised, to underpin and understand the use of immersive strategies in mediated works. Finally, the strategies of immersion incorporated in cinema and film are analysed, in a sense as a forerunner of video games. As such, since this study requires analysing video games beyond the content of the game itself, a materialist approach is necessary.

2.2 Theoretical framework

The study looks to analyse the material effects of video game immersion rather than the meaning or interpretation of it. Therefore, the analytical study will be conducted using a materialist theory approach – specifically a new materialist approach. As there are various perspectives on how materialist theories are approached, it is informative to explore materialist theory in the context of this study.

Materialist theory derives from medium theory, in which McLuhan (1964:9) – one of its founders – asserted the well-known idea that “the medium is the message”. McLuhan (1964:9) further argues that the message of the medium should be analysed within the context of the medium that carries it, and not by looking only at the content for

meaning. Bollmer (2019:3,5) suggests that “Medium Theory is a comparative study of the physical, communicative capacities of technologies [...] [which] do things through their materiality”. Thus, it is critical to understand and contextualise media beyond aspects of representation or meaning alone, but also to examine the particular medium in its physicality, from how it stores information to how it communicates, and in the case of (VR) video games, how it immerses users.

McLuhan (1964:45) argues that “[a]ny invention or technology is an extension or self-amputation of our physical bodies” Media demands us to extend certain senses while prohibiting the use of others (Bollmer 2019:128). Bollmer (2019:128) illustrates this by describing the nature of VR:

Virtual reality, for instance, requires the use of headsets that isolate the body, placing it into a different “virtual” world. VR extends the body and its senses outward. But, in isolating the body, VR also amputates it, cutting it off from the physical space in which the body exists. A VR headset fundamentally reorientates the body’s sensation, extending it in some ways, amputating it in others. Like VR, all technologies transform a body’s extension in space and time; all rearrange and reconfigure how the body senses its world.

VR is interesting to analyse materially, as it culminates (in this case) the immersive strategies from other media to extend the user’s body in time and space.

Bollmer (2019:6) puts forth a typology of different forms of materialism, namely ‘performative materialism’, ‘spatiotemporal materialism’, ‘neurocognitive materialism’, and ‘vital materialism’. The first three outline useful sub-fields of materialism that will be referenced and discussed throughout this study. Performative materialism looks at what media *are* to understand what they “do materially” (Bollmer 2019:6 emphasis in original). As this study analyses the immersive strategies employed by media, specifically (VR) video games, it is crucial to understand and contextualise the materiality of these media to determine *how* they immerse audiences and users. Spatiotemporal materialism looks at how media transforms our experiences relations in space and time (Bollmer 2019:6). Analysing the notions of immersion in (VR) video games raises discussions of space (specifically notions of immersion and presence in the virtual environments) and time (with regards to engagement ‘flow’ and

consciousness in the virtual world). According to Bollmer (2019:6), neurocognitive materialism refers to how “[m]edia alter the neurological materiality of the brain, resulting in different conjunctions between brain, body, and the world.” Analysing virtual reality as a medium to transport users to virtual environments, specifically in narrative-based video games, naturally raises discussions and questions regarding the relationship between the user’s brain, (the user’s physical and virtual) body, and the (physical and virtual) world.

Bollmer (2019:12) argues that when one considers the materiality of a media, one must also emphasise how media and technology also participates in the communication process, without dismissing questions of human agency, meaning, or representation. Furthermore, Bollmer (2019:12) argues that “the physicality of media plays a part in defining the limits and possibilities in which all of these come to matter and make sense.” This is arguably more pertinent within the context of video games and even more so, virtual reality, which are both types of new media where communication involves immersing users in virtual environments.

Moreover, a new materialist approach is employed in this study as an extension of the materialism viewpoint. DeLanda (2015:17) describes how new materiality considers material systems not only by their properties but also by their capacities. He argues:

Properties are always actual, since at any given point in time [a] knife is either sharp or it is not. But the causal capacity to cut is not necessarily actual if the knife is not currently being used. This implies that capacities can be real without being actual. The technical term for this ontological condition is *virtual*. (DeLanda 2015:17 emphasis added).

French philosopher Gilles Deleuze (1994:208-209) further argues that:

The virtual is not opposed to the real but to the actual. The virtual is fully real in so far as it is virtual. [...] Indeed, the virtual must be defined as strictly a part of the real object – as though the object had one part of itself in the virtual into which it is plunged as though into an objective dimension.

Therefore, the *virtual* worlds and narratives explored in video games, specifically within VR, can be analysed by their materiality, as our experiences within them are

real.

Furthermore, new materialist professor Nick Fox and social scientist Pam Alldred (2019:[sp]) suggest that new materiality embraces perspectives on affect and embodiment, and thus its materialities also include:

...human bodies; other animate organisms; material things; spaces, places and the natural and built environment that these contain; and material forces including gravity and time. Also included may be abstract concepts, human constructs and human epiphenomena such as imagination, memory and thoughts; though not themselves 'material', such elements have the capacity to produce material effects.

(VR) video games constitute a multitude of the abovementioned (new) materialities, many of which are also considered when exploring immersion in video games. While immersion and the sense of presence are immaterial, the strategies and methods employed by a medium to evoke these sensations can be tangible. In addition, immersive strategies can be immaterial, such as the lengths a (VR) game may go to embody the player as a virtual character. What the player perceives through sight, sound, and affect are augmented virtually to further the immersive experience. As such, these immersive strategies employed by media produce material effects.

Therefore, video games, being interactive and multifaceted in terms of immersive experience and the level of engagement, require an approach that looks beyond merely the content and meaning of the game. They require an approach that analyses, in this case, the strategies that evoke a sense of immersion: from game design, decisions of gameplay mechanics, narrative, and world-building, to the illusionistic and physical elements, such as HMD and VR hardware and technology.

In considering the materiality of (VR) video games, I will therefore also revisit the debate between narratology (the study of narrative) and ludology (the study of game mechanics and play), and the role each play in the immersive experience of the player. I must note here that I am on no 'side of the fence' and acknowledge the role each school of thought plays in the overall (immersive) gaming experience. If asked what my favourite game is, I would probably argue for the *Half-Life* series (1998-2020), and that would be because of the story, as well as the gameplay mechanics, which at the

time at least changed the industry. However, since the materiality of a game also includes the materiality of the platform, discussions may lean towards the ludological effects on the user's gameplay experience. For example, the narrative of *The Elder Scrolls V: Skyrim's* (2011) is experienced the same, whether played on a computer, X-box, or even VR. However, the ludological elements in *The Elder Scrolls: Skyrim VR* (2017) are altered. Combat in *The Elder Scrolls V: Skyrim* (2011) VR is very different from its 'traditional flat-screen' counterparts, in that the player uses physical movements to swing swords, cast spells, or fire their bow. While VR as a medium also brings new narrative opportunities and challenges, such as directing attention in VR stories (discussed in Chapter Four (4.3)), *ludological* elements of video games are largely re-imagined in VR and thus will be discussed throughout the study.

This study aims to analyse immersion in video games, and the physical effects of particular forms of immersion on the player's body. This requires an approach that looks beyond only the content of the video game itself. Having established the need for a materialist approach to immersion in media, particularly (VR) video games, in Chapter Five, I shift towards phenomenology to help underpin the experience of digital embodiment in (VR) video games. Furthermore, I employ phenomenological description in Chapter Six to construct a model for understanding the nature of immersion in (VR) video games. I now explore various definitions of the concepts of virtual reality, immersion, and presence.

2.3 Virtual reality defined

In his 1965 seminal paper titled *The Ultimate Display*, pioneer of computer graphics and VR, computer scientist Ivan Sutherland (1965:506-508) envisioned the ultimate display as a "wonderland" – a computer "space that communicated directly to the senses" (Grau 2003:162). Sutherland went on to develop what is largely considered the first computer head-mounted display (HMD) named *The Sword of Damocles* and published his paper titled 'A head-mounted three-dimensional display' in 1968. The HMD was cumbersome as it required suspension from the ceiling, consequently limiting the user's ability to move in a space. What the HMD achieved, however, was the ability to change the image as the user moved his/her head. Instead of looking through a window into a space, as on a computer screen, users could be 'in' it.

According to Sutherland (1968:757), “[t]he desire to surround a user with information has forced us to solve the ‘windowing’ problem”. Sutherland sought to merge the digital and physical worlds, changing how users interacted with computers. Sutherland (1965:506) argues that “[a] display connected to a digital computer gives us a chance to gain familiarity with concepts not realizable in the physical world. It is a looking glass into a mathematical wonderland.”

Often referred to as the father of VR, Lanier (2017:11) coined the phrase ‘virtual reality’ and founded the first VR start-up, VPL Research, Inc., in 1984. At the time virtual reality referred to a heterogeneous body of research on computer-human-body interfaces alongside utopian dreams (Grau 2003:169). VR allows for physical interaction with the digital environment and thus expanded into multiple fields during its early development, such as: targeting systems for the U.S Air Force in the 1970s (Grau 2003:167), sharing and exploring virtual image spaces at NASA in the 1980s (NASA 2014:[sp]) and picking up virtual objects using physical gloves in the 1980s (Lanier 2017:217).

At a consumer level, VR did not take off the way it was probably predicted to have in the 1980s and 1990s. This is mainly due to the fact that the computing power at the time was limited to science, research, and military labs, which cost a considerable amount. However, the revival of (consumer) VR, at least in its current ‘third wave’, is largely attributed to Palmer Luckey, who was 17 when he created the first prototype of the *Oculus Rift* HMD, which was crowdfunded on Kickstarter in 2012.² Luckey went on to co-found the company *Oculus*, which was sold to Facebook two years later for two billion dollars. At the time, within the entertainment industry, VR was primarily considered a platform for video games, as Luckey’s original Oculus Rift was marketed as a platform that would allow gamers to “step into the game”, according to author Blake Harris (2019:140).

² VR’s first wave was initiated when computer scientist Ivan Sutherland (1968) developed what is largely considered to be the first computer head-mounted display (HMDs) named *The Sword of Damocles* and published his paper titled ‘A head-mounted three-dimensional display’ in 1968. VR’s second wave was in the 1980s-1990s, where pioneers like computer scientist and author Jaron Lanier (who coined the phrase ‘virtual reality’), founded the first VR start-up VPL Research, Inc., in 1984 (Lanier 2017:11). VR’s third wave began around 2015 when consumers could obtain HMDs such as the Oculus Rift and Google Cardboard.

In his book, *Dawn of the new everything: encounters with reality and virtual reality*, Lanier (2017:11-12) discusses VR's potential to challenge what it means to be human, our understanding of consciousness, and its progressive influence on the human future. He writes:

VR is one of the scientific, philosophical, and technological frontiers of our era. It is a means for creating comprehensive illusions that you're in a different place, perhaps a fantastical, alien environment, perhaps with a body that is far from human. And yet it's also the farthest-reaching apparatus for researching what a human being is in the terms of cognition and perception. Never has a medium been so potent for beauty and so vulnerable to creepiness. Virtual reality will test us. It will amplify our character more than other media ever have (Lanier 2017:11-12).

VR differs from 'traditional media' in its function to reflect human sensory motion (Lanier 2017:83) in attempts to position one's presence in a virtual world. VR was never intended simply to make movies or games flashier but rather to be a medium through which one could express and jointly experience dreams or "a new type of consensus reality" (Lanier 2017:18,79,81). The fundamental element of any VR experience, according to Slater (2018:432), is where the user's "perception is a function at least of head tracking",³ allowing users to interact and move more naturally, as opposed to interacting with the digital realm via mouse and keyboard. By turning his/her head with a head-mounted display (HMD), the virtual environment would change or 'react' as it would in 'reality'.⁴ Lanier (2017:280) argues that VR is not just a visual but rather a participatory experience, one where interactivity trumps high visual fidelity: he argues that "the quality of the visual display on its own is not the most important part of the quality of the visual experience of VR. What is much more important is the tracking. How fast and how well does the visual imagery respond to head or eye motion?" Sherman and Craig (2019:11) suggest that a user's physical body positioning and movements affects his/her vantage and potentially the events within the virtual world (Sherman & Craig 2019:10-11). They describe VR as:

³ Lanier (2017:279) defines trackers as, "devices that can tell where an object is in a space". Trackers 'read' and predict a user's physical movement in space, to mimic them in the virtual world. The delay between the physical movement and the virtual 'mimicry' is referred to as latency. Typically, technology has strived to get latency down to as low as possible. Tracking and latency issues are the main cause for nausea in VR (Lanier 2017:287).

⁴ When referring to reality in this study, unless otherwise prefaced (as in the case of *virtual reality*), reality will refer to the actual world or environment, that can be physically experienced.

[T]he medium through which we can use our physical scenes to experience an imagined reality; that is we use less of our imagination during the experience and rely more on the imagination of the content creator... VR is a medium that allows us to have a simulated experience approaching that of physical reality (Sherman & Craig 2019:11).

User interaction within the virtual world should be the cornerstone of any VR experience, as Lanier (2017:214) argues: “Input is more important than display. Your input in VR is you... If you can’t reach out and touch the virtual world and do something to it, you are a second-class citizen within it”. While applications for VR are not compelled to employ interactive features, VR is built around these structures and, unlike most other media, offers interaction using bodily motion. Thus, VR is not only a mere spectacle to watch 360-degree videos, but rather, it is a space built for user interactive experiences.

When referring to or defining the concept of VR, one may limit it to only the HMD or VR headset. However, VR refers to the entire system(s) used to immerse users through sensory illusionistic strategies into a virtual space and allow them to experience the space with natural body movements. Lanier (2017:85) argues that these systems include limitless gadgets such as goggles, gloves, and scrolling floors – and that the “ultimate VR system” would essentially allow users to experience *anything* “with effectively perfect realism”. This explanation echoes Sutherland’s (1965:508) description of an almost *The Matrix*-like (Wachowski & Wachowski 1999) ultimate display:

The ultimate display would, of course, be a room within which the computer can control the existence of matter. A chair displayed in such a room would be good enough to sit in. Handcuffs displayed in such a room would be confining, and a bullet displayed in such a room would be fatal. With appropriate programming such a display could literally be the Wonderland into which Alice walked.

These descriptions of the ‘ultimate VR system’ border on science fiction, offering ‘life-like’ experiences that are indistinguishable from our lived experience, which Farrow and Iacovides (2014:231) describe as “techno-utopian fantasy”. While the prospects for VR may offer exciting possibilities with new ways of experiencing, it is important

not to fall into the hype that surrounds the medium, but rather, like Bender and Broderick (2012:17) argue, be “... grounded in a *cautious optimism* about the future of VR ...”, and maintain a critical perspective.

Sherman and Craig (2019:5) suggest that to understand VR experiences, one has to consider five elements:⁵ the *virtual world, immersion, interactivity, participants* and *creators*. With these elements in mind, Sherman and Craig (2019:16) define VR as:

...a medium composed of interactive computer simulations that sense the participant's position and actions and replace or augment the feedback to one or more senses, giving the feeling of being mentally immersed or present in the simulation (a virtual world).

These mentally immersive VR experiences are not only for entertainment purposes. VR has developed and expanded into various industries for an amalgamation of uses, including combat mission training, real-time medical training, the handling of dangerous materials, business, virtual exhibitions, live sports games, and virtual shopping (Forbes Technology Council 2020:[sp]; Schwab 2018:206; Lanier 2017:92). Founder and executive chairman of the World Economic Forum, Klaus Schwab (2018:206), argues that due to their immersive nature, and more than other digital media, AR and VR technologies distort the lines amongst “the external world and the role of human intuition and agency”. Moreover, VR's ‘selling point’ is the “promise of unparalleled immersion” (Lane 2020:[sp]), bringing virtual spaces to users in a new, recognisable,⁶ interactive manner. In order to analyse strategies evoked by VR to immerse users into virtual spaces, a more detailed understanding and definition of immersion is required.

⁵ While the study will focus on virtual reality and immersion, these five elements are interconnected, and a discussion on immersion in VR will include discussion of the other four elements.

⁶ It is interesting to note that users can learn to move and interact more naturally with modern VR controllers than they do with a mouse and keyboard on computers (Seibert & Shafer 2018; Hufnal, Osborne, Johnson & Yildirim 2019). Referred to as *natural mapping* (a system's ability to keybind control in a VE, in an expected, natural manner), Paul Skalski, Ron Tamborini, Ashleigh Shelton, Michael Buncher, Pete Lindmark (2011:225) argue that: “game controllers higher in natural mapping will lead to more perceived controller naturalness, which should positively affect spatial presence and resultant game enjoyment.” Since VR allows users to interact in the virtual world with bodily motion, physically moving one's hand to pick up virtual objects in VR comes more ‘naturally’ than pressing a dedicated shortcut on a keyboard. My wife, for example, who does not play video games, struggles with the basic movements of a first-person shooter when using a computer. To the inexperienced, using the mouse and keyboard to ‘walk’ up to a door in a game, and press ‘e’ to open it, may not come naturally. In VR, interactivity with objects comes more instinctively.

2.4 Immersion defined

Media and video game scholars Laura Ermi and Frans Mäyrä (2005:1) suggest that, due to the interactive nature of video games, understanding them also requires understanding the player's experience. Studying immersion in video games requires looking at the capabilities of video games and the lengths they go to immerse players, as well as studying the interactions and experiences of players throughout the virtual environment (VE). This section will elaborate on the broader philosophical meanings and definitions of immersion. In Chapter Three, I examine immersion as it pertains to video games and virtual reality, respectively.

The common understanding of immersion is often trivialised and compared to the sensation of being submerged in water. However, within academic discourse, the same unambiguity does not occur when referring to a user's experience in mediated environments, according to Nilsson *et al* (2016:109). One might suggest that outside academic literature, the term has been 'watered down' and has become "an excessively vague, all-inclusive concept", as McMahan (2003:67) suggests. The use of the term *immersion* is also often interchangeably and inconsistently referred to alongside concepts such as *presence*. Nilsson *et al* (2016:109) suggest this is exacerbated by the variety of fields it is applied to, including virtual environment research, video game studies, film studies, and music studies, amongst others. Being such a broad and vague phenomenon, philosophy professor Saulius Geniusas (2022:5-6) suggests four broad 'categories' of immersion that describe various areas the term is associated with: *digital immersion* (which encompasses the broad range of digital experiences, including video games), *immersion in the inner world* (which refers to dreams, memories and thought), *aesthetic immersion* (referring to cinema, paintings, music and fiction), and *immersion in the world of play* (referring to immersion in sports games or physical board games). Due to the complexity and lack of consensus concerning the meaning of immersion, it is important to define upfront what is meant by immersion for this study (Calleja 2011:32). Similarly, Girginova *et al* (2023:[sp]) recommend that XR researchers and practitioners be specific in their explanations of key industry terms.

In her frequently cited book, *Hamlet on the Holodeck: The Future of Narrative in*

Cyberspace (1997), Murray (1997:124) defines immersion as “the sensation of being surrounded by a completely other reality ... that takes over all of our attention, our whole perceptual apparatus.” Similarly, behavioural researchers Bob Witmer and Michael Singer (1998:225) refer to immersion as the “perception of being enveloped”. Within the context of mediated experiences, Therrien (2014:451) associates immersion with the feeling of being *transported* into a non-immediate reality. This *transportation* is what closely relates immersion to the notion of *presence*,⁷ which VR and computer science researchers Mel Slater and Sylvia Wilbur (1997:4) define as the psychological experience of the individual’s presence or consciousness in a virtual environment. According to these authors, immersion means to be transported to, surrounded, and enveloped by a completely different or non-immediate reality.

Delving into the qualities of immersion more deeply reveals that researchers identify different intensities of immersion. Computer science and game researchers Emily Brown and Paul Cairns (2004:2-3) provide three levels of immersion, namely *engagement*, *engrossment*, and *total immersion*, the latter being the final stage of immersion which they define as being synonymous with *presence*. Ermi and Mäyrä (2005:4) argue that “the ‘concept’ of presence has been used to assess the so-called ‘immersivity’ of a system” within media studies. In other words, presence emerges as a result of being immersed in a system (Slater 1999:3), such as a VE. As such, Slater (1997:3) defines immersion as the *extent* to which the computer displays are capable of delivering an inclusive, extensive, surrounding and vivid illusion of reality to the senses of a human participant.” Slater *et al* (2010:92:1) explain that, “system A is more ‘immersive’ than system B, other things being equal, if A has a wider field-of-view than B, or, say, A can generate real-time shadows and reflections but B only ‘Gouraud shading’, or A has head-tracking but B does not”.⁸ In other words, immersion can be described as the quantitative elements, characteristics, or strategies employed by a medium to evoke a sense of presence by the participant. At the same time, the quality of an immersive experience can fluctuate from merely engrossing to completely immersive, depending on the strategies used and what the medium allows.

⁷ Like immersion, *presence* is understood and used differently across various disciplines. The concept of presence is further examined and defined in section 2.5 below.

⁸ Gouraud shading is a common and simple shading technique in 3D computer objects that does not produce shadows or reflections (PC Magazine [sa]).

One may, therefore, feel immersed in media in various ways: perceptually by blocking out the senses to worldly distractions through the use of audio/visual technology (so that the senses are only engaged with the VE), through challenges, the task at hand or through narrative, plot, and world-building. As such, immersion can be viewed as the strategies incorporated within a medium or mediated environment to engross (engage) one into a space, evoking a sense of presence as an effect of those strategies. Immersion may be achieved by an amalgamation of strategies employed by various digital, physical, and technological advancements, with virtual reality (VR) arguably at the forefront of the most immersive means available to ‘enter’ virtual worlds.

However, immersion may also be broken or interrupted. If a user is reminded of their actions, the sense of immersion may be lost. If a video game crashes, or freezes, for example, the gamer is immediately ‘brought back’ and reminded that they are sitting in front of a system playing a video game. Worldly distractions, such as hearing a phone ring or noticing the screen while playing a video game or watching a film, can disrupt immersion for a user. In a sense, immersion is the ‘blocking out’ of these immersion-breaking distractions and experiences.

Immersion as a quantitative description of a system intended to induce a sense of presence will be further discussed throughout the study, specifically in sections 2.6-2.8. Furthermore, the concepts of affect, engagement, embodiment, worldbuilding, and narrative as strategies to immerse users into virtual worlds, specifically within video games, will be analysed later. As the concepts of presence and immersion are interrelated, and often used synonymously (as I have hinted above), I now explore different ways to understand and define the notion of presence.

2.5 Presence defined

In the disciplines of communication, computer science, and psychology, presence is understood as being short for telepresence (Lombard & Jones 2007:197)⁹ and is frequently discussed in analyses of mediated environments (Cummings & Bailenson

⁹ Researcher of haptics, bodily sense and technologies, Mark Paterson (2007:127) describes ‘telepresence’ as a sense of presence at a distance, which was derived from the field of robotics.

2015:3). The concepts of presence and immersion are often used interchangeably or synonymously, resulting in an ambiguous mismatch of meaning between the two phenomena within scholarly studies and research methods (Nilsson *et al* 2016:128). Slater (1997:4) differentiates between the two: “Immersion can be an objective and quantifiable description of what any particular system does provide. Presence is a state of consciousness, the (psychological) sense of being in an environment.” This suggests that the state of presence is achieved via the immersive qualities of a medium. However, it can be difficult to untangle the two notions, as both concepts refer to the experience received by the viewer or user of the medium with varying degrees of intensity.

Pivotal to the notion of presence is the *feeling* or sensation of being in another location. Grau (2003:14) argues: “[t]he technological goal, as stated by nearly all researchers of presence, is to give the viewer the strongest impression possible of being at the location where the images are ... not only to the eyes but to all other senses.” Biocca (1997:12) argues that the “there” that is referred to in the discourse of presence does not have to be a physical space.

Lanier (2017:9) reminisces about his early experiences with VR in the 1980s and the novelty of having oneself in a *virtual* space: “When you could bring your body there, you were not just an observer, but a native”. Presence is associated with the feeling of ‘being there’ by users of technological media such as VR according to presence researchers Matthew Lombard and Matthew Jones (2007:198). The International Society for Presence Research ([sa]) reviews various uses and definitions of the term and describe (tele)presence as:

... [a] psychological state or subjective perception in which even though part or all of an individual’s current experience is generated by and/or filtered through human-made technology, part or all of the individual’s perception fails to accurately acknowledge the role of the technology in the experience.

The reference to technology here includes both traditional and new media, suggesting that presence can occur while reading a book or watching a film. Furthermore, it is distinct from immersion, as a description from The International Society for Presence

Research ([sa]) suggests, presence is not a property of a system:

Presence is a property of an individual and varies across people and time; it is not a property of a technology or one of the technologies commonly referred to as a medium, although technologies or media with specific constellations of characteristics are likely to evoke a similar set of presence responses across individuals and across time....

As such, the personal experience of presence varies from medium to medium, depending on how immersive the medium is. A higher sense of presence is achieved if the viewer or user forgets that the experience is mediated through a technology and thus feels *present* in the experience. The more immersive a medium is, such as allowing for user interaction, the more capable it is at achieving this higher sense of presence.

Since presence is a subjective experience, it can vary in degree or ‘intensity’, similar to immersion, as previously argued by Brown and Cairns (2004:2-3). However more technologically sophisticated (or immersive) media such as VR may incite users to yield higher degrees of presence more often than others, as illustrated in this account by The International Society for Presence Research ([sa]):

... a television viewer might accurately perceive that s/he is watching a human-made technology and that the images on the small box in her/his living room are merely representations of objects, events, and people that may or may not exist elsewhere [...] [whereas] the user of a sophisticated flight simulator may, at least for short periods, be completely unaware of the technological channel through which the experience has been generated and perceive that s/he is actually flying an aircraft.

Within the context of virtual environments, media and video game scholar Carrie Heeter (1992:263) delineates the subjective experience of presence into the following three dimensions:

- i) *Personal presence*: “the extent to which and reasons why you feel like you are in a virtual world” (Heeter 1992:263). These could include, among others, seeing your own virtual body in a space for example and the environment ‘reacting’ as expected to interaction.
- ii) *Social Presence*: the “extent to which other beings (living or synthetic) also exist

in the world and appear to react to you...” (Heeter 1992:263). If characters react naturally to your *presence* in an environment, you may respond by reacting and engaging back, furthering your part in the world.

- iii) *Environmental presence*: “the extent to which the environment itself appears to know that you are there and to react to you...” (Heeter 1992:263). If the environment responds as expected to your interaction within it, for example throwing a glass cup in a virtual world would cause it to shatter as it would in reality, may extend your sense of presence in that environment.

While these three dimensions may describe the various states or methods of presence (the notion of ‘being’ in another space), the means of ‘getting there’, in line with Slater’s (2018:432) contention, could be described as *immersion*, or as “an objective property of a system”.

Being a subjective ‘feeling’, across multiple disciplines, there is no agreed-upon approach to measuring the ‘feeling’ of presence. Slater *et al* (2010:2) note that various methods have been used, each with their discrepancies. As such, Sanchez-Vives and Slater (2005:333,335) review the definition of presence as the sense of ‘being there’, to describe it instead as the human *response* to a system. They argue that: “If participants within a virtual environment behave as if they were in an equivalent real environment then this is a sign of presence” (Sanchez-Vives & Slater 2005:333,335). This understanding of presence as if the user is experiencing something *real*, echoes new media scholar Kwan Min Lee’s (2004:37) definition of presence as “a psychological state in which virtual (para-authentic or artificial) objects are experienced as *actual objects* in either sensory or nonsensory ways.” Slater *et al* (2010:2) substantiate their review of presence as a means to measure the feeling of presence:

In this approach ‘response’ is considered as multilevel, from low level automatic physiological responses, through non-conscious behavioral reflexes, volitional behavioral responses, emotional responses through to high level cognitive responses and thoughts (including the sensation of being there). This response profile is what defines presence [...]
Presence is exhibited when people behave as they would in reality, and the extent to which this occurs is measureable in principle. In other words presence is identified with its operationalization as a measureable

property of the actions of people within [immersive virtual environments] IVEs compared with their expected or actually observed behavior within similar real-world settings.

This suggests that immersive experiences attempt to recreate the sensations of reality. The more immersive a medium, the more real it may feel to be present in the experience.¹⁰

As I have tried to show in the above discussion, both presence and immersion are relatively difficult to measure. Likewise, both concepts have been used inconsistently across various studies. A noteworthy example of how these concepts are used interchangeably is Grau's (2003:44) reference to "immersive presence" in his description of sculptures and models that extend from 2-D artworks into 3-D space,¹¹ to further immerse viewers into the image. Grau's concept thus further illustrates the fluctuation between immersion and presence. Unlike immersion, however, presence is more consistently attributed to the notion of *feeling*, or *'being' in another space*, through the use of mediation, while immersion is associated with being a *property of a system, a perceptual response, a response to narrative contents, a response to challenges*, according to Nilsson *et al* (2016:109).¹²

As there are significant discussions that differentiate between immersion and presence, for this study, these concepts are understood as described by Slater (1997:4): "Immersion can be an objective and quantifiable description of what any particular system does provide. Presence is a state of consciousness, the (psychological) sense of being in an environment." In other words, presence is the feeling of 'being in' a mediated environment, and immersion is the systems and strategies used to 'transport' the user there.

¹⁰ Literary theorist Hans Gumbrecht (2003:xiii) refers to presence as being tangible in a sense, a "spatial relationship to the world and its objects", and refers to the "production of presence". Gumbrecht (2003:xiii) uses "production" here from its Latin origination, *producere*, referring to the act of "bringing forth". Gumbrecht (2003:17) writes that:

... 'production presence' implies that the (spatial) tangibility effect coming from the communication media is subjected, in space [...] any form of communication implies such a production of presence, that any form of communication, through its material elements, will "touch" the bodies of the persons who are communicating in specific and varying ways ...

¹¹ Known as *faux terrain*, artists would extend their paintings into 3-D space to immerse viewers. The following section, 2.6, further explores such immersive strategies.

¹² Nilsson *et al*'s (2016:109) taxonomy of immersion is further analysed in section 3.5.

Achieving presence is the goal in designing mediated environments, according to virtual environment (VE) and presence researchers James Cummings and Jeremy Bailenson (2015:2), as evoking a sense of presence in the user increases the effectiveness of the environment and experience. Since maximising presence is essential to mediated experiences in virtual environments, creators of these systems strive to innovate in this area. As Slater (1999:3) claims: “[w]hat characteristics does a system have to have in order to increase the likelihood that an individual will experience a high degree of presence?” These characteristics are contextualised historically in the next section. In subsequent chapters, this study will also explore how (VR) video games employ immersive strategies to evoke a sense of presence.

2.6 Contextualising immersive strategies in mediated images

Since the study will look at immersive strategies incorporated into VR video games, it is useful to contextualise immersion and illusion strategies in art and, as Grau (2003:11) suggests, the strategies that distinguish the two. As the notion of virtual reality (VR) becomes more commercially viable and relatively affordable to mainstream consumers for entertainment (mostly gaming) purposes,¹³ VR and the concept of immersion are increasingly being analysed in the context of video games and gameplay experiences.¹⁴

While immersion is the cornerstone of VR video games, it has a history in art, however, and the discussion below will contextualise immersive strategies used in artworks of the Renaissance period as interest in creating immersive environments grew. Immersion is the initial step in experiencing imaginary worlds, according to Wolf (2017:204), which is not only characteristic of video games, but also cinema or novels. Scholars of ancient Greece, Rutger Allan, Irene de Jong and Casper de Jonge (2017:34-36), note the growing interest in the notion of immersion, perpetuated by the

¹³ In 2014 Facebook bought Oculus, one of the original and leading VR manufacturing companies for \$2 billion (Solomon 2014:[sp]). This has since led to a surge in the popularity of VR as headsets such as the Rift, Rift S and, more recently the Quest 2, which have become cheaper and more accessible to consumers.

¹⁴ See for example Murray 1997; Slater & Wilbur 1997; Witmer & Singer 1998; Slater 1999; Ryan 2001; McMahan 2003; Brown & Cairns 2004; Ermi & Mäyrä 2005; Jennet, Cox, Cairns, Dhoparee, Epps, Tijs, & Walton 2008; Calleja 2011; Therrien 2014; Cummings & Bailenson 2015; Nilsson, Nordahl & Serafin 2016; Wolf 2017; Murray 2020.

rapid development of new media such as 3D cinema, computer games, and virtual reality, and argue that the concept of immersion – the experience of being absorbed into another world – is predated by the Greek term *enargeia*, in which “the story world appears so clearly to the listener that he experiences the illusions of being present at the events reported in the narrative.”¹⁵ According to Allan *et al* (2017:34-36), Homer is unanimously praised by Ancient Greek critics for his ability to achieve *enargeia* in his literary works, suggesting the visuality of it and turning listeners into spectators. This suggests that the conception of immersion, as well as strategies to achieve a sense of presence in mediated worlds, is no new practice.

Grau’s (2003:5,11) extensive seminal study *Virtual Art: From Illusion to Immersion* (2003) reflects the complexity of (new) media art, particularly virtual reality, as a means to be *amongst* the image rather than distanced from it.¹⁶ This concept of being *with*, or *among* the art is precluded by landscapes, frescoes, and panoramas, which made use of illusionistic practices for immersivity. As such, Grau (2003:3,8) suggests it is important to understand and contextualise immersive strategies used in historical art forms in contrast to strategies used in new media, as this allows for a new understanding of both. He argues that:

The evolution of media of illusion has a long history, and now a new technological variety has appeared; however, it cannot be fully understood without its history. With the advent of new techniques for generating, distributing, and presenting images, the computer has transformed the image and now suggests that it is possible to “enter” it [...]. In many ways, this method changes our perception of the old and helps us to understand history afresh. Thus, older media, such as frescoes, paintings, panoramas, film, and the art they convey, do not appear passé; rather, they are newly defined, categorized, and interpreted. Understood in this way, new media do not render old ones obsolete, but rather assign them new places within the system (Grau 2003:3,8).

I discuss a few examples below to explain Grau’s contention that the contemporary fascination with creating a sense of immersion via new media technologies is firmly

¹⁵ Allan *et al* (2017:34-36) use of the term “presence” here highlights the synonymic concerns raised by the shifting meanings attributed to “immersion” and “presence”.

¹⁶ Oliver Grau’s *Virtual Art: From Illusion to Immersion* (2003) is used extensively in this chapter to help contextualise immersive strategies used in image-making practices in a historical context. As Therrien (2014:452) notes, Grau’s study illustrates “that human cultures have tried to submerge the senses completely since antiquity at the very least”.

cemented in older image-making practices. Early illusion practices can be found in frescoes, with surviving remains dating back to the Classical Roman World. These include large wall paintings that would address observers from all sides, “hermetically” surrounding users with a lack of interface in an attempt to create a sense of being part of the image, and to blur the lines between the real world and the depicted world (Grau 2003:10,25). To further the illusion, artists painted in great detail and also began to convey a sense of depth and perspective. Grau (2003:27, 35) notes that “although contemporary painting techniques were unable to render a horizon effectively, the desire to create a pictorial illusion and the attempt to portray in perspective are apparent”.

Other early illusion painting systems and techniques practiced were linear perspective and *trompe l'oeil*. Linear perspective, generally – but mistakenly – believed to have been ‘invented’ by architect Filippo Brunelleschi in the 15th century (Edgerton 1973:172),¹⁷ is a system that allows artists to create the illusion of depth in a painting or drawing. Art researchers Robert Pepperell and Manuela Haertel (2014:395) describe linear perspective as:

... a projective technique for representing the three-dimensional world on a (normally) two-dimensional plane. Among its most important principles are that parallel lines leading away from the viewer converge at the vanishing point in line with the viewer’s eye, that objects diminish in size as they recede and increase as they approach

Art historian Samuel Edgerton Jr (1937:173-174) suggests that Brunelleschi’s initial linear perspective experiment of the Florentine Baptistery depicted realism unlike artwork seen before it. As such, the technique has since been generally considered as the “trademark of pictorial “realism”” in the Western world (Edgerton 2009:3). Edgerton (1973:174) further explains that the realism depicted by linear perspective most likely derived from the idea of merging art and optical science. The “never-ending

¹⁷ In his book titled *Florence and Baghdad: Renaissance art and Arab science*, art historian and theorist Hans Belting (2011: 2,26) argues that the theories and mathematics that led to the ‘invention’ of linear perspective during the Renaissance can be traced back to the 11th century by Iraqi mathematician Abu ‘Ali al-Hasan ibn al-Haytham (known in the West as Alhazen). Initially, the term perspective dealt with theories of optics (the field Alhazen is well-known for), and not art (Belting 2011:26). “The creators of perspective in art,” Belton (2011:2) argues, “asserted that they were using perception as the standard for their works, but they based this claim on a definition of perception that they had not invented themselves. In fact they had found it in the legacy of an Arab mathematician that had reached the West.”

quest” to depict “reality” requires the merger of art and science, according to Edgerton (2009:174). This trait that can be found in many immersive media, such as in 3-D cinema or virtual reality.

Trompe l'oeil (French for ‘to deceive the eye’) is an art technique that involves realistic illusions that appear to exist in 3-D space, a practice that dates “very likely back to ancient Rome” according to philosopher and art scholar Susan Feagin (1998:237). Artist and philosopher Paul Ziff (1951:470) argues that *trompe l'oeil* initially deceives onlookers, tricking them into thinking that “the picture of an apple is not a picture but a real apple.” Feagin (1998:238) argues that *trompe l'oeil* raises questions of reality and the capabilities of art in that it “produced visual puns, paradoxes of self-reference, and puzzles about the nature and value of painting ...”. However, Grau (2003:13-14) argues that “nonhermetic” illusion painting techniques such as *trompe l'oeil* are fleeting experiences, as the observer almost immediately recognises the medium and illusion. As such, unlike more inclusive or immersive media experiences, such as frescoes, panoramas, or VR, that encompass the viewer’s senses, *trompe l'oeil* “leave[s] the observer outside” (Grau 2003:14). Through a deceptive optical illusion, *trompe l'oeil* is the “type of painting where the artist has amused himself, and possibly his audience” (Ziff 1951:470), if even for a moment, but cannot sustain the sense of presence ‘within’ the depiction. Grau (2003:15-16) iterates the notion:

The decisive factor in *trompe l'oeil*, however, is that the deception is always recognizable; in most cases, because the medium is at odds with what is depicted and this is realized by the observer in seconds, or even fractions of seconds. This moment of aesthetic pleasure, of aware and conscious recognition, where perhaps the process of deception is a challenge to the connoisseur, differs from the concept of the virtual and its historic precursors, which are geared to unconscious deception.

The *Chambre du Cerf* (Chamber of the Stag) (1343) (Figure 2) presents some of the earliest immersive strategies used to surround viewers hermetically to draw them ‘into’ the painting. These include the lack of framing elements for the 360-degree painting and the depiction of various pleasures of nature, including fishing and hunting. The artwork is realistic, with figures painted in detail, some with 3-D features. Grau (2003:34) suggests that the distinctive species of wildlife depicted within a dense forest and surrounding skyline creates the impression of an absorbing panorama. Realism

and detail were seen as paramount to achieving immersion in artworks.



Figure 2: *Chambre du Cerf* (Chamber of the Stag), 1343.
Fresco, 8 x 9 m.
Tour de la Garde-Robe, Papal palace at Avignon.
Photograph by Marianne Casamance (2015).

Gaudenzio Ferrari's *Calvary* (1518-1522) (Figure 3) impressively exhibits the literal extension of a depicted image reaching into 'our' world using a technique known as *faux terrain*. Grau (2003:44) suggests the term "was first used in the mid-nineteenth century to describe three-dimensional objects that appear either to grow out of the picture's surface or stand free in the area between the observer and the image." *Faux terrain* was later used in panoramas which are arguably the forerunners of modern 3-D cinema. The inclusion of life-sized figures painted in realistic detail, extending into three-dimensional space, plays with observers' sense of depth, achieving a powerfully immersive experience. As Grau (2003:44) argues: "The combination of illusionistic fresco and three-dimensional sculptures, which the observer views in close proximity, endows the scene with an immersive presence that draws the observer in to become a part of the *mise-en-scène*."



Figure 3: Gaudenzio Ferrari, *The Calvary*, 1518.
Fresco.
Sacro Monte, Varallo, chapel 36.
Photographed by Mattana (2007).

As in *Chambre du Cerf*, recurring immersive strategies used in *The Calvary* included a lack of framing elements to fill the observer's field of view, thereby, in a sense blocking out any 'worldly' elements that may distract from the image, surrounding the audience in the 'other' world. To create the image with as realistic a sense of detail as technology at the time would allow, along with a sense of perspective and the three-dimensional extension from a two-dimensional image via *faux terrain*, the amalgamation of illusionary practices meant audiences would look onto these images and the landscapes they represent as if standing in the depicted scenes.

Grau (2003:45) suggests that innovations in illusion and immersive strategies were a collective effort in the sixteenth and seventeenth centuries, that combined art and technology in new ways. For a time, the panorama culminated and maximised these strategies into an immersive experience. The now commonly used word 'panorama' was originally used to describe a "purpose-built structure that contains a large 360-

degree painting, creating an illusion of standing in the middle of a place and/or event”, according to Molly Briggs and Sara Velas ([sa]) of The International Panorama Council. The medium and phrase ‘panorama’ was created in the late eighteenth century (The International Panorama Council [sa]) from illusionistic landscapes. The idea was arguably conceived by British portrait painter Robert Barker, whose patented innovation, titled *la nature a` coup d’oeil* (which translates to ‘seeing all’), was a completely circular canvas intended to create an entire 360-degree landscape that surrounds the viewer with an unbroken horizon, in as much detail as possible (Andjelkovic 2020:22; Grau 2003:56). From its inception, the technological development of the panorama and its ability to place observer’s *in* the picture gained the interest of military strategists as an instrument for military planning (Grau 2003:57). Centuries later, the development of VR would follow the same fate.

The job of a panoramist included assembling artists, who specialised in composition, detailing, landscaping, and figures and architects, who were responsible for the purpose-built rotundas (Grau 2003:113-114,118). In order to realistically capture precise detail and perspective, artists of the time often used the *camera obscura* and similar inventions, which allowed for tracing over the optical illusion to achieve an accurate composition and perspective, an early utilisation of science to enhance artistic endeavours. Grau (2003:53) describes the impact of the *camera obscura* as “a pioneering achievement in the history of cinematographic modes of perception because it introduced a restructuring of possibilities for visual experience”. According to Grau (2003:119), immersion and illusionism were the overarching premises: as such, there was no room for artistic style or theme in the paintings, which would detract from the immersion.

Panoramas were built to be experienced from viewing decks, mostly inside dedicated rotundas (many of which were disassembled after the dissolution of the medium). The first purpose-built rotunda opened in 1793 based on Robert Barker’s plans (Figure 4), a space that allowed for 360-degree panoramas to be exhibited. Rotundas were designed for the observer to view the image at a distance from certain heights and perspectives to amplify the illusions. While the intent of both illusionistic landscapes and the panorama were analogous, rotundas that housed panoramas were built specifically for illusion, whilst the landscapes I discussed above were created in

existing structures. As a medium built to transport audiences into the image, the panorama has been regarded as a forerunner of cinema and an important inspiration for VR by “endeavour[ing] to blur the lines between reality and simulation” (Bourbaki Panorama [sa]).

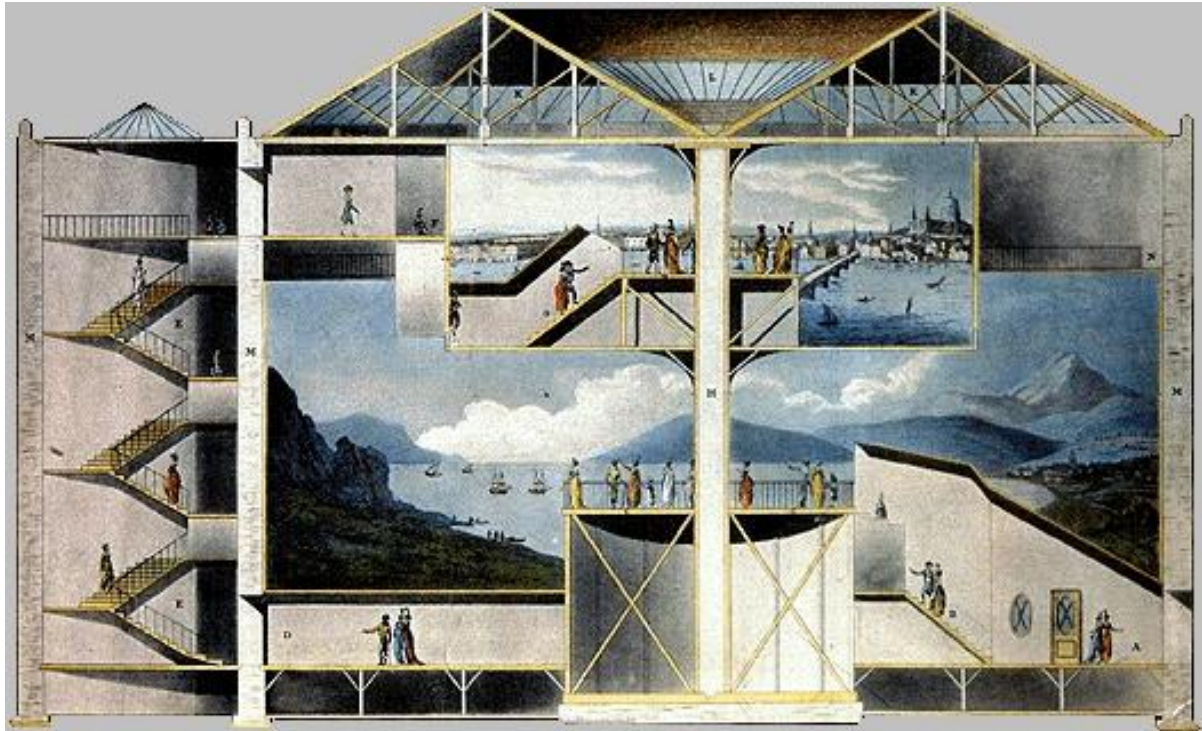


Figure 4: Robert Barker, *Panorama Rotunda at Leicester Square, London, 1793*.
Panorama, 11 x 26 m.
Cross-section, by Robert Mitchell, 1801.
Art Blog by BibliOdyssey, 2008.

The paintings were lit from lights out of sight to the observer, as if the paintings were their own ‘natural’ sources of light, a lighting technique that Grau (2003:59) suggests was perfected by modern media such as cinema, which has the spectator in the dark, shutting out the outside world. Electric lighting was a “modern”, “progressive” concept in the 1880s, and when adapted for use in the panorama, it was used in the marketing of the artworks, advertising the number and type of lights that were used, while extending the opening hours of the experience (Wray 2020:51, 53). Since painters cannot literally create three-dimensional space on two-dimensional surfaces such as canvas, Grau (2003:105) describes the physiological phenomenon panorama creators made use of, paired with illusionary painting techniques of the time. Grau (2003:105) observes that “with large canvases placed at some distance from the observer, the eyes can hardly distinguish between the two images they see. Thus, the observer

cannot be certain if he is looking at depth of field or a flat surface”. Earlier innovations in the art of illusion towards immersing observers into the images culminated in panoramas, which later also adapted the use of *faux terrain*. Still on display today, Edouard Castres’s *Bourbaki-Panorama* (1881) (Figure 5) distinctly exhibits the illusive effect of *faux terrain* integrated into a panorama. The artwork depicts painted and life-sized models of French soldiers finding refuge in Switzerland after defeats during the Franco-Prussian war. While the artwork had been renovated and the fore area renewed in the early 2000s (Bourbaki Panorama [sa]), the panorama illustrates the seamless merger between the painted background and 3-D foreground. Thus, the image, in a sense, extends to involve the observer. Grau (2003:58,59) describes the evolution of the panorama as an immersive medium as follows:

With its suite of innovations in presenting images, the panorama was able to heighten the illusion considerably and more lastingly, compared with the illusionistic landscape room. [...] Building on traditions and mechanisms of illusionistic landscape spaces, the panorama developed into a presentation apparatus that shut out the outside world completely and made the image absolute.



Figure 5: Edouard Castres, *Bourbaki-Panorama*, 1881.
Oil on canvas panorama, 10 x 112 m.
Bourbaki Panorama, Lucerne

Photograph by Alessandro Gallo (2013)

Anton von Werner's *The Battle of Sedan* (1883) panorama (Figure 6), perfected illusionistic qualities used in previous panoramas, landscapes, and illusion artwork. The panorama, which opened to the public in Berlin on the anniversary of the clash on 1 September, 1883, depicted the Franco-Prussian battle near the fortress of Sedan. "The attempt by the French cavalry to break through the closing [German] encirclement is the subject of the Sedan panorama [...] [which] shows in detailed, almost photorealistic quality, the alleged situation of the battle field of Sedan at 13.30 hours on September 1, 1870" (Grau 2003:93). In fact, Grau (2003:91) suggests that von Werner's panorama is highly comparable to digital virtual reality. He argues:

[N]o panorama had more time, energy, and money lavished on it than *The Battle of Sedan* by Anton von Werner. This work, which until now has only been researched superficially, is most suitable for drawing an exemplary comparison with a contemporary computer-generated work of virtual reality (Grau 2003:91).



Figure 6: Anton von Werner and fourteen other painters, *The Battle of Sedan*, 1883. Panorama. Oil on canvas, approx. 115 m x 15 m. Sacro Monte, Varallo, chapel 36. Die Speck-Seite.

Much like a modern cinema experience, visitors to the Sedan panorama entered through a dark passage that led to the viewing deck, their gaze and attention fully drawn to the painting that was lit out of sight so that nothing may detract from the experience (Grau 2003:97). The panorama's *faux terrain* which "had the function of integrating the observer", consisted of elements of close-quarter combat, broken down wagons, weapons, tools, grass, branches, and "[t]ogether with the photorealism of the painting [...] heightened the illusion of being in the image" (Grau 2003:106). The viewing platform of the panorama rotated unnoticeably over time, allowing observers to see all sections of the panorama without physically moving and to immersive

themselves fully into the image – in a sense, letting the art piece ‘play out’ before them, a freedom, Grau (2003:108) argues, would later be perfected by cinema. The Sedan rotunda was disassembled in 1904, after a decline of interest in the panorama medium – in part due to the new media of film – and since World War II, all traces of the Sedan panorama have since been lost (Grau 2003:127).

The panorama was also accompanied by the sound of military marching played on an orchestration to further immerse observers into the midst of battle. Sound and music were recognised as tools to further the absorbing experience of cinema, as Bordwell and Thompson (2008:265) argue. Silent films were often accompanied by music before recorded sound was introduced to film in the early twentieth century. Bordwell and Thompson (2008:265) argue that the audience’s perception and interpretation of an image are greatly influenced by sound and music and that “the audience would construe the same images differently, depending on the sound track”. This use of music as an enveloping, immersive device was adopted by video game creators because, as Cummings and Bailenson (2015:8) suggest, music may influence players’ experience of presence. Nitsche (2008:132) argues that sound plays an important role in the player’s “telling of space” and is an essential element in a player’s immersive experience of a virtual world.

From their inception, panoramas were seen as a contentious art form. Grau (2003:62) suggests that this probably had to do with some commentator’s belief that illusion was a danger to perception and consciousness. On the other hand, other commentators praised the very idea of it “as a space for projecting their fantasies and visions of fusion with all-pervasive image worlds”. Architect, scholar and artist, Katarina Andjelkovic (2020:22,23), suggests this ambivalence is due to the panorama’s relationship between art and science, with “the making of the panorama combin[ing] visual methods and mathematical procedures.”¹⁸ The same dichotomy of opinion has emerged in debates about early 3-D cinema and, more recently, contemporary VR video games. Both have been dismissed as nothing more than gimmicks, presenting dangers to time or consciousness spent in the virtual world.

¹⁸ In a sense, this culmination of disciplines is, at its core, also the nature of VR, which is a physiological, visual, interactive medium birthed in the computer sciences, with the core purpose of inducing a sense of presence.

While the panorama was praised for its illusionistic methods of immersing observers within the images, there was a desire to have the experience in a smaller format so that the experience could be transported to larger audiences (Grau 2003:64). As Andjelkovic (2020:23) states, “[a]s time passed, people found progressively more and more ingenious means of capturing panoramic images of real scenes without the painstaking manual process of painting or the use of elaborate structures to house multiple photographs or projectors.” One such method was the stereoscope (1838), a handheld device that employed the binocular parallax, a physiological phenomenon that enables users to perceive depth and combine two images into one three-dimensional image by peering through two eyeglasses (Grau 2003:141). This phenomenon would later be used in 3-D cinema (Jackman 2015:854). Art critic and scholar Jonathan Crary (1990:124) suggests that during the nineteenth century, the stereoscope conflated the real and the optic, so much so that nineteenth century viewers referred to its life-like, “natural vision”. Crary (1990:118) references inventor Charles Wheatstone, one of the figures most closely associated with the stereoscope’s invention. He writes:

In devising the stereoscope, Wheatstone aimed to simulate the actual *presence* of a physical object or scene, not to discover another way to exhibit a print or drawing. Painting had been an adequate form of representation, he asserts, but only for images of objects at a great distance. When a landscape is presented to a viewer, “if those circumstances which would disturb the illusion are excluded,” we could mistake the representation for reality. He declares that up to this point in history it is impossible for an artist to give a faithful representation of any *near solid object* (Crary 1990:122).

Apart from the popularity of the stereoscope, the new media of film that developed in the late eighteenth-hundreds was also partly to blame for the declining interest in the panorama. This resulted in the end of the panorama medium, as film seemed capable of fulfilling the unkept promises of its predecessors (Wray 2020:56-57; Grau 2003:127,146) by offering motion pictures with narrative arcs. However, traces of the immersive experiences that the panorama evoked can be found in the cinema experience: the dedicated seating in a dark environment to avoid distractions and the ever-increasing screen sizes,¹⁹ gradually increasing the field of view, accompanying

¹⁹ An example of this would be the ScreenX cinema experience, utilizing three screens for a 270-degree panoramic image that surrounds the audience’s full field-of-view, an innovation that effectively

sound, and music – all to enhance audiences’ immersive experience in the mediation. Furthermore, 3-D cinema could be viewed as a form of *faux terrain*, the extension or illusion from a two-dimensional screen into three-dimensional space via 3-D glasses, enticing observers into scenes.

As such, the sense of presence evoked by panoramas was fleeting, as the novelty wore off the longer or more often one experienced it. This is iterated by Grau (2003:98) as he describes early impressions of *The Battle of Sedan* panorama: “[t]he illusionistic effect decreased the longer one spent in the panorama but, nevertheless, the first deep impression of feeling personally involved in what was taking place remained”. This is arguably similar to the illusionistic novelty of 3-D cinema and furthermore, VR (gaming). While the initial novelty of experiencing a virtual world that moves and reacts as one turns their head inside an HMD may be immersive, the feeling may soon be lost once users adapt to it. Thus, these new media have striven to evolve beyond only the initial novelty of illusion alone to immerse audiences.

One such innovation is that of tactility and haptics employed in mediated experiences.²⁰ Barker (2009:3, emphasis added) describes the immersive experience of visual tactility – or ‘haptic visuality’ - and defines it as:

... a mode of perception and expression wherein all parts of the body commit themselves to, or are drawn into, a relationship with the world that is at once a mutual and intimate relation of contact [...] [T]actility contains the possibility for an infinite variety of particular themes or patterns: caressing, striking, startling, pummeling, grasping, embracing, pushing, pulling, palpation, *immersion*, and inspiration, for example, are all tactile behaviors.

Different authors apply the term haptic in slightly different ways. According to researcher of haptic media studies David Parisi (2018:34), the term ‘haptic’ is a multidiscipline phrase and, as such, has an unsolved genealogy stemming from the

builds upon the IMAX format (Jackman 2015:858), with a similar visual appeal to that of the panorama.

²⁰ Vibration, or haptic feedback from touchscreens is perhaps the most familiar mode of tactile input to consumers (Paterson 2017:1542). Game console and VR controllers also make use of haptic force-feedback in response to player input and engagement, such as vibration while firing a weapon in a video game. Haptic feedback with regard to the sense of embodiment – as an immersive strategy – will be further explored in Chapter Five.

various fields of psychology, engineering, computer sciences, and media studies alike. Media theorists link (at least in part) the term 'haptic' to art historian Alois Riegl, who developed a theory of haptic vision, in which the eye would assume a more tactile function while experiencing the textuality of an artwork (Parisi 2018:34-35). Riegl's *Late Roman Art Industry* (1901) is regularly cited for his distinction between haptic and optic, according to film and media scholar and author Susanne Sæther (2020:205-206), who writes:

... the haptic was associated with close-range, tactile perception (Nahsicht/nearsighted) and the optic with long-distance, disembodied vision (Fernsicht/farsighted) [...]. A binary scheme is thereby put in place between on the one hand, surface, planarity, proximity, nearsightedness, and materiality, and on the other, depth, volume, distance, farsightedness, and abstraction.

According to Parisi (2018:33), haptics as a science of touch was intended to be analogous to the fields of optics and acoustics. In Greek, *haptikos* means "capable of touching," while in German *hapteln* means to seize or grasp (Gandelman 1991:5). As such, Parisi (2018:35) references Riegl's differentiation between the terms 'haptics' over 'tactile', claiming that 'haptic' (unlike tactile), did not oppose or distance the senses of touch and optics, but rather harmoniously combined the two; "haptic vision, in comparison to tactile vision, indicates a synergistic coupling of the touch and vision, a vision capable of becoming like touch". This harmonious distinction of haptic as 'sight' and 'feel' is frequently discussed in film and media theory. For instance, French philosopher Gilles Deleuze and psychoanalyst Félix Guattari (1987:492) maintain that "haptic' is a better word than 'tactile' since it does not establish an opposition between two sense organs but rather invites the assumption that the eye itself may fulfil this nonoptical function." Researcher of haptics, bodily sense, and technologies, Mark Paterson (2017:1544) argues Deleuze and Guattari's take on Riegl's haptic distinction is a revaluation of space, acknowledging the eye as more than an optical sensor, but also allowing one to 'feel', creating a "haptic space", merging the tactile, auditory and visual. In this sense, haptics is mediated through engagement with technology. The artist Rosalyn Driscoll (Driscoll 2020:2) differentiates hapticity as a broader concept than tactile because it includes both the movement and contact aspects of touch. In her opinion, haptic perception should be used as an "umbrella term" for describing the body engaged in "a combination of contact and movement" (Driscoll 2020:2).

Whichever position on hapticity is more accurate, there is no doubt that the concept refers to touch in its relation to the other bodily senses, including movement. Parisi (2018:35) suggests that the role of haptics helps to break down the barriers between the senses and that haptics “endeavour[s] to show how touch can be active as an agent in the process of seeing.” In this sense, haptics attempts to immerse viewers at a psychological level so that they may ‘feel’ what they physically see as a “crossover” or “enhancement” of sensory modalities (Paterson 2017:1544). By contrast, the fields of psychology, engineering, and computer science attribute the term ‘haptic’ to the field Riegl initially borrowed it from, physiology, by which it maintains a more pragmatic, scientific connotation to physical touch. Parisi (2018:35-36) explains that:

...“haptic” relies on a radically corporeal and embodied touch: it refers to both a body of knowledge about touch and a set of instruments, protocols, and processes used to further specify the components and subcomponents of tactual perception. It is, in short, an epistemic framework for knowing touch. [...] The two traditions imply radically different notions of touch. For media theorists, “haptic” is a model of touch that can operate without touching, where the senses are capable of becoming synesthetically active in one another. For psychologists and engineers, the material act of touching is fundamental to the formation of haptics ...

Philosopher and critical theorist Walter Benjamin (2010:47-48) also ‘touched on’ the distinction between haptic and optic, describing an almost invasive ‘physicality’ in the cinema experience in contrast to traditional art, in his comparison of a painter as a magician and a cameraman as a surgeon. He argues:

The surgeon represents the polar opposite of the magician. The magician heals a sick person by the laying on of hands; the surgeon cuts into the patient’s body. The magician maintains the natural distance between the patient and himself; [...] The surgeon does exactly the reverse; he greatly diminishes the distance between himself and the patient by penetrating into the patient’s body [...] Magician and surgeon compare to painter and cameraman. The painter maintains in his work a natural distance from reality, the cameraman penetrates deeply into its web (Benjamin 2010:47-48).

What is evident is the innate yearning to be ‘in’ or ‘amongst’ art or mediated worlds, as Grau (2003:143) contends, “using all technological means to remove the boundary between observer and image space”. Haptics is one such effort to allow for “closer”

contact. As Benjamin (2010:21) argues; “the desire of contemporary masses [is] to bring things ‘closer’ spatially and humanly [...] Every day the urge grows stronger to get hold of an object at very close range by way of its likeness, its reproduction”. This stands true in the ‘evolution’ of image-making practices, such as in 3-D cinema, which extends the screen stereoscopically to include audiences, and virtual reality, positioning users within virtual environments, with the world at their ‘grasp’. As such, the broad field of haptics is often polarised or oversimplified in approach. However, haptics is largely recognised as a “sensory channel” for users, which is increasingly being naturalised and implemented seamlessly into media (Paterson 2017:1546-1547; Parisi 2018:40). This study analyses haptics as an immersive strategy for users of video games and VR where force-feedback is utilised, allowing users to ‘feel’ their interactive input. In order to analyse immersion as it pertains to (VR) video games, it is informative to first analyse and contextualise immersion strategies incorporated in film, as a forerunner in a sense to video games as an immersive new medium.

2.7 Immersion in film

This section contextualises and examines immersion in film, particularly inclusive immersion strategies such as 3-D and the sensations of tactility and haptics. This section will also discuss how some films have incorporated familiar video game tropes to immerse audiences. The discussion is necessary to further understand and distinguish the role of immersion in film, how immersive strategies in film have been adopted from prior artforms, and how immersive film tropes have been adopted in video games (and *vice versa*).

Film maker and VR pioneer Morton Heilig (1992:281) argues that prior to film, the “pure arts” – arts in which its materials are received through a single sense (but are apprehended at a perceptual level), such as music, painting, or poetry – merged to form “combined” or “secondary arts” such as opera, ballet, and theatre, in order to create “fuller, more spectacular” experiences. However, these experiences did not fulfil the desire “to convey the full richness of experience in more *lifelike* form” (Heilig 1992:281). These ‘combined arts’ lacked control, according to Heilig (1992:281), meaning no creation “could remain exactly the same whenever and wherever played.” However, the integration of machines, such as the “printing press, lithograph, radio,

phonograph, [and later] television”, freed artists for more creative work (Heilig 1992:281). For Heilig (1992:281), the cinema was the first of the ‘combined arts’ that captured the essence and perceptual experience of the ‘pure arts’. He writes:

Rather than attempting to portray the whole through the part, [cinema] now began attempting to portray the whole directly. But with this tremendous difference from all other composite arts—it could do it without losing control or permanence. With the help of the machine two radically different sense materials, light and sound, could be dynamically combined into one work without losing any of the control, subtlety, or concreteness formerly attained only by the pure arts. Cinema was no longer just a visual art [...] but had set itself the task of expressing in all its variety and vitality the full consciousness of man (Heilig 1992:281).

In a sense, opera or theatre was limited, only capable of encapsulating a portion of the immersive, “lifelike” experiences Heilig (1992:281) claims artworks strived for. The invention of the motion picture however, allowed for exact motion and likeness to be captured and reproduced (Heilig 1992:282). Cinema merged immersive strategies from prior artworks to attempt to create an all-encompassing, more authentic experience.

Since the commercialisation of film by the Lumière brothers in the late 1800s, the medium quickly adapted to more closely reflect the world around us, with the introduction of recorded sound in the late 1920s, the incorporation of colour in the 1930s, to the integration of 3D in the 1950s²¹. “Like the panorama before it,” writes Grau (2003:150), “film began by replicating what could actually be experienced to establish its potential as a medium.” Art history and cinema studies scholar Antonia Lant (1995:45) iterates Heilig’s stance on the capabilities of cinema to adhere to our perceptual experience and immerse audiences in a more natural sense, explaining that “the novel spatiality of cinema, an utterly flat medium of presentation, insubstantial, without texture or material, and yet evoking, in a wafer, a fuller illusion of the physicality and exactness of human beings than any prior art.”

However, for Heilig (1992:282), it was 3-D cinema that “clearly and dramatically revealed to everyone what painting, photography, and cinema have been

²¹ 3D film was experimented with since the 1920s, but only in the 1950s did studios commit to 3D feature films (Paul 1993:323).

semiconsciously trying to do all along—portray in its full glory the visual world of man as perceived by the human eye.” According to social science scholar Anna Jackman (2015:858-859), 3-D cinema attempts to employ realistic and immersive strategies by exploring engineering techniques exhibiting perceptual mimicry or what she terms “mimetic engineering”. 3D films use stereoscopic vision by using multiple projectors to display the image at slightly different angles on the screen. Audiences would wear 3-D glasses to view the image,²² allowing the brain to ‘combine’ the two images to create one image, from which they can perceive the illusion of depth to recreate how our eyes naturally perceive the world (Jackman 2015:857).

Grau (2003:152) argues that each time a new illusionistic medium is presented, audiences marvel at its powerful effect. However, prolonged exposure to the illusions wears down the novelty, and the illusion soon loses its ‘magic’, until a new illusion with ‘greater’ immersive power is presented, thereby starting the cycle all over again. This fleeting novelty can be seen in the ‘rise-and-fall’ of interest in the panorama or the popularity of early 3-D cinema.

Early 3-D cinema of the 1950s and the early 1980s was met with criticism, as a gimmick or “passing fad” (Bordwell & Thompson 2019:297). Film scholars Thomas Elsaesser (2013:219) and Nick Jones (2015:53) suggest it was originally seen as Hollywood’s desperate attempt to lure audiences back to the cinema after losing them to television in the 1950s and VCRs in the 1980s. “3-D always had to find very direct ways of announcing its status to the audience”, writes Paul (1993:323), essentially hurling things at viewers, until audiences grew weary of the novelty. A prevalent reason for 3-D’s initial failure was the lack of memorable, story-driven film at the time (Paul 1993:323). In addition, early 3D’s failure is also attributed to competition with other cinema formats like the Cinerama,²³ saturated exhibition technologies and formats, increasing costs for exhibitors, and displeasure at the requirement of wearing

²² Anaglyph glasses were used in the 1920s, which had a red and blue lens, allowing each eye to see slightly different images, which the brain would perceive as one. In the 1950s polarized 3-D glasses, which filtered certain light from the image, were utilised in films such as *House of Wax* (De Toth 1953). However, this resulted in a duller image in early films (Paul 1993:334).

²³ Fred Waller’s *Cinerama* housed a 180-degree screen that was projected by three synchronised projectors. The films were shot with special cameras that filmed three pictures simultaneously, and utilised stereophonic sound. Waller publicised *This Is Cinerama* in 1952 to promote the motion picture experience, which was considered successful through the 1950s to 1960s (Grau 2003:157).

3D glasses (Paul 1993:327). Paul (1993:327) also argues that poor 3D projection themselves would often deter audiences from the format, as “the separate strips of films were constantly getting out of alignment, often causing more headaches than extra dimensions.”

The 3-D fad was over by 1954, according to Bordwell & Thompson (2019:298), later to be revived by the standardisation of digitalisation in the 2000s. “Even more short-lived” than 3-D, write Bordwell & Thompson (2019:298), was the endeavour to include other human senses, particularly smell, as part of the cinema-going experience. ‘Smell-O-Vision’ would release various scents so audiences could smell what they see – further immersing viewers. However, by 1958 audiences responded negatively to the concept (Bordwell & Thompson 2019:298). Likewise, VR developers have experimented with similar concepts that “give consumers a whiff of the virtual world”, according to PC Magazine journalist Jon Kalish (2019:[sp]). However, Oculus’s John Carmack (The Joe Rogan Experience 2019) argues that incorporating smell to amplify the experience in a virtual world has yet to be feasible, and no device could condense enough scent to ‘trick’ the brain into believing the smell is aligned to, and accurately reflects the visuals. Regardless, Grau (2003:146,153) argues that, unlike landscapes and panoramas, which, at their core, were centred on illusion, film is more heterogeneous, as film directors have more influence “over the feelings of the audience”. As such, Grau (2003:146,153) references Russian director Andrey Tarkovsky’s (1989:176) characterisation of film (cinema):

Cinema is the one art form where the author can see himself as the creator of an unconditional reality, quite literally of his own world. In cinema man's innate drive to self-assertion finds one of its fullest and most direct means of realisation. A film is an emotional reality, and that is how the audience receives it—as a second reality.

Consequently, film has been used to immerse viewers at a multitude of levels “toward extending the system of illusion beyond the visual to include the other senses” (Grau 2003:153). In 1955 Heilig (1992:283) envisioned *The Cinema of the Future*, an immersive experience that he intended to be totally encompassing, featuring a screen that would fill the entire field of view and target each sensory organ. He writes:

for the eye, peripheral imagery—180 horizontal x 150 vertical, three dimensionality, color and movement; for the ear, pitch, volume, rhythm, sounds, words, and music; for the nose and mouth, odors and flavors; and for the skin, temperature, texture, and pressure. [...] Open your eyes, listen, smell, and feel—sense the world in all its magnificent colors, depth, sounds, odors, and textures—this is the cinema of the future! (Heilig 1992:283).

However, Heilig's *Cinema of the Future* never came to fruition as envisioned, as did other attempts to innovate the immersive cinema experience (Grau 2003:157). Nevertheless, Heilig's (1992:285) vision of future immersive experiences positioned realism and audience participation – employing sensory engagement – as critical to the immersive experience. He writes:

"Realism," or in aesthetic terms, "experience," is that something which is created by the unity of the outer world with the inner. No matter how extensive the artist's means, he must use them to provoke more of the spectator's participation, not less. For without the active participation of the spectator there can be no transfer of consciousness, no art. Thus art is never "too" realistic" (Heilig 1992:285).

In a sense, Heilig's vision of a multi-sensory experience was somewhat realised in the *Sensorama*. Closer to a standalone VR experience than cinema, users of the *Sensorama* could experience the sensations such as rollercoasters or riding a motorbike. The depicted environment would envelop users as they see, hear, smell, and feel the experience believably. However, it was not interactive. Nonetheless, it never gained much traction, and by 1962, Heilig's *Sensorama* was predominantly only found in Californian amusement parks (Grau 2003:158).

Belton (2012:193-194) argues that the flaw of early 3-D cinema was that it relied on its novelty, calling unnecessary attention to itself by invading the audience's space. As such, the following decades proved futile for 3-D cinema. After the momentum of the 1950s, 3-D productions were scarce; that is, until the mid-2000s, during the push for cinemas to converge to the digital format (Bordwell & Thompson 2019:713). In order to create a sense of novelty around digital convergence, advocates of the technology used 3-D to more broadly "rollout digital cinema" (Belton 2012:190). Thus, "[t]he digital conversion enabled 3D to take off," write Bordwell and Thompson (2019:713), as "[m]ost multiplexes that converted to digital could show 3D in some auditoriums, so it

made sense to release films in that format as well as in 2D.” Consequently, 3-D had ‘returned’ with growing success, the pinnacle of which was in December of 2009, with the monumental success of *Avatar* (Cameron 2009),²⁴ after which more cinemas world-wide adopted the digital 3D format (Bordwell & Thompson 2019:709-710).

Film scholar Caetlin Benson-Allott (2013:15) suggests that 3D cinema has been criticised as a gimmick that hinders or distracts from narrative development. Paul (1993:321) contest this notion, referencing Tom Gunning and Andre Gaudreault’s “cinema of attractions” – films that prioritise the spectacle and visual pleasure over narrative and storytelling (Benson-Allott 2013:15). Benson-Allott (2013:16) suggests that the ‘traditional’ film viewing experience allows for the viewer to ‘forget’ about their senses, allowing for a more ‘natural’ experience. She argues that:

... many proponents of stereoscopy claim that it mimics natural human depth perception, while detractors claim that it looks and feels unnatural. I suggest that emergence effects do look and feel unnatural in cinema precisely because they draw the spectator's attention to the differences between her visual perception and the formal conventions of anthropocentric, monoscopic realism [...]. Emergence effects disrupt the "genuine' experience," and of suture by denaturalizing the process of visual perception. They force the spectator to recognize her act of vision as participation in the film's physical production of spectacle ... Benson-Allott (2013:16).

In light of this, however, Belton (2012:194) claims that the success of James Cameron’s *Avatar* (2009) as a 3-D experience was in part due to it not drawing attention to itself. Film is experienced by co-habiting the screen space and being transported to the film world while also rooted in our own world (Barker 2009:103-104), and that this “genuine” film experience is lost when one stops to think about it. In this sense, strategies such as 3D that attempt to immerse users into fictional worlds need to be subtle enough not to draw attention to themselves but rather aid or complement the narrative and medium as a whole. This dichotomy between ‘spectacle’ and ‘narrative’ film theory is echoed in video game theory, according to video game scholar Ivan Girina (2015:14), “through the tension between the *interactive* nature of the

²⁴ *Avatar* became the highest grossing film of all time, earning \$2.7billion globally, of which 80 percent came from 3D cinema screenings (Bordwell & Thompson 2019:710).

medium and its *narrative* aspiration frustrated in the struggle between author and player.” This is known as the narrative paradox within VE and video game studies, which refers to the conflict between accommodating for user agency within a VE while establishing a “pre-authored” narrative (Louchart & Aylett 2003: 244). While in film, the experience of the *narrative* may be the priority when decisions are concerned throughout production, in video games, the narrative often plays second fiddle to gameplay.²⁵

On the other hand, while some viewers may find 3-D a fleeting distraction from the plot or film experience, others may find it involving. Benson-Allott (2013:17) argues that by creating a kind of “kinesthetic spectatorship”, particularly in horror franchise films, “viewers become newly aware of their physical—and by extension their psychic—interaction with the film's body”. Within this context, these audiences may have entered the cinema for a purely audio-visual experience, the ‘thrill of the ride’ – over a narrative journey. As Benson-Allott (2013:24) puts it:

This ironic enactment [of] the film's fourth wall defies cinematic suture and pushes the spectator outside of the world of the film while at the same time rewarding the spectator for recognizing the movie's very artificiality. By emphasizing its visual effects as illusions, the movie encourages the spectator to understand herself as a 3D connoisseur.

Nevertheless, since its ‘return’ in 2009, 3D cinema turnout has been decreasing over the past years. The Motion Picture Association of America’s (2020: [sp]) 2020 THEME report indicates a steady decline in the 3D global box office from \$8.8 billion in 2016 to \$6.5 billion in 2019. According to *The Hollywood Reporter’s* Carolyn Giardina and Pamela McClintock (2017: [sp]), due to reduced earnings, IMAX reduced their number of 3-D exhibitions in 2017, as 2-D was the “clear preference”. In 2020, 3D films totalled only six percent of the global box office, earning \$0.7 billion (Motion Picture Association of America 2020: [sp]), understandably due to the global COVID-19 global pandemic. As 3D films profit from physical cinema attendance, eliciting higher ticket prices, many 3D blockbuster films, such as *Black Widow* (Shortland 2021), *Free Guy*

²⁵ This is not to say that a game’s narrative is any less important. On the contrary, without a narrative, a game may lack meaning or purpose to the actions of the player. The narrative is often used as the drive, and reward for the player’s (ludological) actions. The correlation between interaction and narration and their liaison with the immersive experience of the player will be further discussed in Chapter Four.

(Levy 2021), and James Bond *No Time to Die* (Fukunaga 2021), all delayed their initial 2020 releases. However, prior to the 2020 global pandemic, in the United States and Canada, 35 3D films were released in 2019, as opposed to the 3D's peak at 56 in 2012 (Statista 2021).

As such, Elsaesser (2013:218-219) iterates how 3-D's 2009 'return' as a cinema experience has been met with familiar criticism, and is seen as another panic from Hollywood in response to competition from new media like the Internet. However, in defence of 3-D cinema, Elsaesser (2013:220) proposes four counternarratives that suggest 3-D is the natural progression of film – the first being that in the long term, 3-D will influence other visual media regardless of its success on the big screen. This is evident in the increasingly cost-effective, less cumbersome (Cummings & Bailenson 2015:2) and more accessible HMDs available to consumers of VR, which gives users an enhanced 3-D experience, placing one 'in' virtual worlds – such as those used in virtual environments or video games. The platform of VR is still being experimented with in the film industry; however, as Bordwell and Thompson (2019:722) suggest, the problem of directing the audiences where and when to look for narrative purposes remains a challenge,²⁶ thus “commercial uses of VR lay in video games”.

Elsaesser's (2013:220) second counternarrative suggests the 'return' of 3-D in cinema complements innovations in audio and its role in augmented experiences and suggests that 3-D should not be thought of only as a visual representation. Here one could think of 3-D as a means to further extend the mediated world to the audience. Coupled with a compelling narrative, dynamic audio or what Bordwell and Thompson (2019:710) refer to as “3D audio”, amongst other immersive strategies, audiences are further brought into virtual worlds.

Thirdly, Elsaesser (2013:221) contends that 3-D preceded 2-D in mechanical imaging, in the form of stereoscopic slides used in the nineteenth century and that the technology was used in a wide range of fields, including entertainment and military

²⁶ I would agree that this 'directing' remains a challenge for designers of narrative based VR games. In my own experiences playing through games like *Half-Life: Alyx*, I may miss details or events, be it a narrative or spectacle, as I could simply have my head turned in another direction. In Chapter Four (4.3) I explore the challenges VR poses to storytelling in more depth.

industries. As an effort to “simulate the actual presence of a physical object or scene,” stereoscopic images of the 1800s were described as “true to nature” and “lifelike” (Crary 1990:122,124). This alone confirms that 3-D technology (in entertainment) should hardly be viewed as a passing fad or gimmick but instead as a part of the ongoing search for mediated immersive perceptual experiences, as I have argued throughout this chapter.

Lastly, Elsaesser (2013:221) suggests that the 3-D effect seeks to become unnoticeable in films rather than being used as an obvious special effect. 3-D should enhance the experience rather than distract from it. As Elsaesser (2013:221) contends: “much of the effort of directors, designers, and draftspersons working in 3-D goes towards naturalizing this type of technologically produced spatial vision, making it increasingly indiscernible”. In this sense, much like early panoramas using faux terrain, 3-D could be seen as an immersive strategy to further involve audiences in the film. However, this could be an area of contention amongst some 3-D cinemagoers, as some may find wearing the 3-D glasses cumbersome or distracting,²⁷ which, along with “restricted angles of vision” amongst other technological limitations, were in part to blame for 3-D’s failure in the 1950s (Elsaesser 2013:220). Heilig’s (1992:283) envisioned *Cinema of the Future* would be a 3D experience without the need for glasses, which is somewhat realised in cinemas such as *ScreenX*.

As a means to involve viewers, 3D extends the cinema screen with a tactile potential almost “close enough to touch”, according to film scholar Mariam Ross (2013:407). While 3-D cinema differentiates itself from 2-D by engaging audiences with stereoscopic imagery, 3-D screens are still exhibited with a sense of frontality, a process essential for 2D cinema, with no actual 360-degree experience (Ross 2013:407).²⁸ In this context Ross (2013:408) contends that the reminder of the screen exists, which is enhanced by the physical surfaces of the cinema auditorium. As previously established by the 360-degree artworks of the panorama, and innovations

²⁷ The same argument could be made for VR experiences, as the HMDs can be cumbersome and heavy after long use. Over time many users could feel sweaty and uncomfortable, negatively affecting the gaming and immersive experience. However, HMDs have become less cumbersome over the years (Cummings & Bailenson 2015:2), as newer technology allows for smaller and lighter headsets.

²⁸ While IMAX attempts to fill the viewer’s entire peripheral vision, it is still viewed from a certain (mostly seated position), distanced from the viewer.

towards increasing cinema screen sizes, efforts are made towards increasing the image size in immersive experiences. These include hiding or blending borders of the physical world so that the viewer's surroundings would not distract from engagement with the image or that the audience is reminded by the fact that they are looking at a depiction. In essence, 3-D cinema intends to expand the screen stereoscopically and, according to film philosopher Christiane Voss (2011:139), embraces audiences in a sense of embodied or affective entanglement.

Ross (2013:406,408) illustrates this embodied sensation by describing the effect of the alien luminescent seeds that float around the cinema auditorium during a scene from James Cameron's *Avatar* (2009); "jellyfish-like luminescent seeds appear to float through the auditorium directly towards the viewer – the shared sensory space created between the viewer and the content intensifies that entanglement". This is referred to as the negative parallax²⁹ (also known as emergent images), in which the 3D image seems to appear in front of the screen, encompassing the 'negative' space between the viewer and the screen. While negative parallax ostensibly "break[s] traditional cinema aesthetics by breaking the frame", Benson-Allott (2013:26) argues its advantages, as it creates a more physical, interactive relationship between the screen and the viewer who is essentially recognised and addressed by the film, and, in this scene, possibly brought to a sense of being on an alien planet. According to Jackman (2015:858), such experiences may have audiences grasp or flinch involuntarily at 3-D illusions, creating a sense of "tangibility" or visual tactility.

Scholarly discussions around the notion of tactility in cinema are not only associated with parallax effects created from 3-D, but also include the "tactile appeal" of 2-D cinema (Jackman 2015:858). In *The Skin of the Film*, film scholar Laura Marks (2000:xi,129,131,162) discusses the "multisensory quality of perception", and how all senses are used in the act of watching a film, in what she terms haptic visuality, in which film can appeal to the non-represented senses (touch, smell, taste).³⁰ Marks

²⁹ Positive parallax is essentially the opposite, in that the 3D image seems to appear behind the screen, for example, landscaped mountains may appear 3D, in the background within screen.

³⁰ Stereoscopic cinema and the field of haptics have different approaches to tactility (Jackman 2015:859), however, immersive 4-D and 5-D cinemas are more recent innovations that attempt to practically employ the illusive spatial depth of 3-D and non-represented senses such as touch, smell and taste. 4-D builds off 3-D cinemas by including chairs which may vibrate and move to the action of the film. While 5-D expands on 4-D by incorporating other sensory experiences such as air, water or

(2000:147,148) further argues that spectatorship is participatory, as perception (of a film) engages a viewer's memory and, therefore, the *feelings* that may accompany that memory. As such, according to Marks (2000:162), "[i]n haptic visuality, the eyes themselves function like organs of touch." Thus, "haptic cinema" includes visual properties, such as changes in focus, graininess, or under and over-exposure, to colour and sound, to further engage with viewers (Marks 2000:171,172). She writes:

All of these discourage the viewer from distinguishing objects and encourage a relationship to the screen as a whole [...]. Haptic images may also encourage a more embodied and multisensory relationship to the image in films that use haptic imagery in combination with sound, camera movement, and montage to achieve sensuous effects Marks (2000:172).

In a sense, haptic visuality thus immerses audiences at an affective level towards a more interactive, bodily experience. In her book titled *The Tactile Eye: Touch and the Cinematic Experience*, Barker (2009:2,3) argues that touch (in the cinematic experience) is a "style of being" shared by film and viewers that can be experienced at skin surface using haptic touch, to a more visceral level influencing the heart, all the way through to "total immersion" that encompasses all levels. Barker (2009:2) argues that:

Exploring cinema's tactility thus opens up the possibility of cinema as an intimate experience and of our relationship with cinema as a close connection, rather than as a distant experience of observation, which the notion of cinema as a purely visual medium presumes [...]. As a material mode of perception and expression, then, cinematic tactility occurs not only at the skin or the screen, but traverses all the organs of the spectator's body and the film's body.

Barker (2009:7) further asks us to consider our position in the picture of the film, as we are "[s]eated in the theatre but invested bodily in the actions on (and of) the screen."³¹ Since 3-D cinema ostensibly elevates this intimate sensation by invading the 'physical' space of the audiences with 3-D illusions that are 'within grasp', stereoscopic cinema drives audiences to consider the position of the screen itself, as

smell, to engaged viewers. These experiences are mostly experienced at theme parks and arcades.

³¹ While Barker is not referring to 3D cinema here, this can be applied to the 3D cinematic experience.

Ross (2013:406) contends, as 3-D situates audiences amongst the screen images, one considers “whether that screen is there at all.” Ross (2013:406) argues that:

Stereoscopy’s multiple optical illusions suggest that certain objects are within reach of our fingertips or that we are situated in a 3D landscape that stretches back to infinity. Swift editing means that we move between various positions and depth fields in short amounts of time. In each case, there is no longer a viewing body opposite the screen but a shared screen space in which action is tantalisingly close but never fully touchable.

This bodily relationship of the cinematic viewing experience is reflected in Sobchack’s (1992, 2004) seminal work on what she refers to as the *film body*, which accounts for the phenomenological *experience* of the film. Sobchack (1992:8-9) describes the cinema experience as an exchange with an “other”, a body through *who’s* “expressed perception” we see the film, and to whom we “express our perceptive experience”. Sobchack (2004:152 emphasis in original), explains how the film body perceives:

“articulated as separate shots and scenes, discontinuous spaces and discontinuous times are synthetically gathered together in a coherence that is the cinematic lived body: the camera its perceptive organ, the projector its expressive organ, the screen its discrete and material center of meaningful experience. In sum, the cinematic exists as an objective and visible *performance* of the perceptive and expressive structure of subjective lived-body experience.”

The film not only reflects the filmmaker’s vision and direction, but as a film body, it also perceives and expresses as its own *being*, thus “the film transcends the filmmaker to constitute and locate its own address” (Sobchack 1992:9). This viewer thus engages with and acknowledges the film, “*interpret[ing]* and *signify[ing]* the film as experience...” (Sobchack 1992:9 emphasis in original).³²

As such, through a mode of somatic engagement sustained by a sense of haptic visuality, film attempts to immerse the audience, evoking a sense presence.

³² Contrarily, contemporary American philosopher Don Ihde (2012:134, 142, emphasis added), argues that though film has expanded the perceptual dimensions experienced since the Lumière brothers’ debuted *The Arrival of a Train*, with the advances in 3-D IMAX cinema, “adding audiovisual to visual, and ultimately kinesthetic-tactile to audiovisual, one could see a trajectory toward, although not reaching *whole body*, motile experience.” The concept of embodiment is further discussed in Chapter Five.

Understanding the film viewing experience this way acknowledges the full-bodily role in the experience. Film viewing is not the act of passively staring at a “*picture frame*”, “*window*” or “*mirror*”, but rather an *active* experience that incorporates the whole body (Sobchack 1992:12-15). Endeavouring to engage audiences more intimately, stereoscopic 3-D arguably perpetuates this experience by bringing the screen closer to the viewing body. Echoing Therrien’s (2014:452) sentiment of human culture’s innate yearning to be ‘in’ or ‘amongst’ art or mediated worlds, 3-D cinema is focused on its sensory appeal, centred on immersion, and is thus marketed as such (Jackman 2015:854).

Moreover, immersion has slowly become a cinematic trend beyond 3-D film. As immersion is pivotal to a video game’s success (Brown & Cairns 2004:1; Gard 2010:[sp]), video game tropes have helped normalise certain concepts in film, such as the POV shot and subjective shot (Girina 2015:217). Examples can be found in the POV shots of Spiderman swinging through New York in *The Amazing Spider-man* (Webb 2012) to entirely ‘immersive films’ such as *Hardcore Henry* (Naishuller 2015). I would also argue that ‘single shot’ films, which appear to be one single take, such as *1917* (Mendes 2019), have a video game aesthetic.³³ Praised as a technical achievement, it could be argued that the design of the critically acclaimed³⁴ war film *1917* (Mendes 2019) resembles that of video game design in terms of narrative structure, spatial world design, and immersion.

Director Sam Mendes wanted to present this story as a one-take film, to evoke a sense of immersion so that it feels like one is in the trenches with the soldiers (Universal Pictures Canada 2019). The film follows two soldiers, Lance Corporals Schofield and Blake, as they journey across enemy lines to deliver an urgent message to stop an attack into a German ambush that could potentially save the lives of sixteen hundred soldiers.

³³ To form the ‘illusion’ of a single take throughout the film, long takes are stitched together, hiding the cuts between takes that audiences may not notice, furthering the immersive experience. While *1917* may be the most recently praised one shot achievement, long takes are not a new immersive strategy, *Birdman* (Iñárritu 2014), is also known for its one shot look throughout the film. The opening scene of the Bond film *Spectre* (Mendes 2015), also directed by Sam Mendes, begins with a seemingly single shot of Bond walking through a Day of the Dead parade in Mexico City, that lasts several minutes.

³⁴ Amongst many others awards, *1917* (Mendes 2019) was awarded an Academy Award and BAFTA for best cinematography for the ‘single take’ war film.

The fact that the film is shot in what appears to be one take (several long, one-take shots stitched together, cleverly hiding the cuts in editing) enhances the film's immersive quality.

The lack of visible cutting makes the audience constantly aware of the character's surrounding and place through the narrative and effectively keeps viewers locked into the story and film world, unable to rest as the characters press on into unknown territory, in what film critic Mark Kermode (2020:[sp]) describes as a "Homeric odyssey". He writes:

Mendes puts his audience right there in the middle of the unfolding chaos. There's a real sense of epic scale as the action moves breathlessly from one hellish environment to the next, effectively capturing our reluctant heroes' sense of anxiety and discovery as they stumble into each new uncharted terrain... (Kermode 2020:[sp]).

The camera follows them constantly, characteristic of the 'virtual camera' in video games, following the avatar through the virtual world. Much of the walking is filmed from the back, giving the audience a third-person perspective – an iconic composition of many video games.

The 'single-camera shot' works effectively in video games, as it allows the player to constantly 'stay with' every experience of their in-game character, as illustrated in IGN's review of *God of War* (2018) by Jonathon Dornbush (2018:[sp]) of IGN:

God of War's single-camera shot style that, unless you die, never cuts once from title screen to ending credits – is a subtle effect that didn't really strike me at first. [...] At some of the most tense and heartbreaking moments, the camera never leaves Kratos' mindstate. You're forced to sit with him – sometimes in silence, sometimes in anguish as a haunting choir echoes around him, and sometimes in relief – through every second of it. That intimacy makes those emotions all the more real and impactful.

This 'forced empathy' for the character, due to the camera never leaving him/her, is arguably the dominant strength and reasoning for the 'one-shot' experience. The plot of *1917* resembles that of a quest, delivering a message across a great distance in a race against time, indicative of what Jenkins (2004:122) refers to as spatial stories –

often employed by video games, in which the character is chosen, and is set along a treacherous path in the hopes of accomplishing a mission.

As a quest, the characters are constantly moving toward their objective, and being a 'one take' film meant that the sets had to be large enough for the take, often lasting several minutes. The sets, therefore, had to be built as long as the action/scene needed (Universal Pictures Canada 2019), unlike traditional film but similar to video games. Thus, much like theatre, actors had to prepare their lines on location to time their action and scenes, so sets could be measured and built to match the action. This kind of set building and stage design is reminiscent of video game world-building – which will be analysed in Chapter Four (4.2.2) – as game designers could be referred to as architects, building worlds where the action and narrative take place.³⁵

Since there is no visible cutting, the audience 'never leaves' the protagonists on their journey – the concept of time in the film is ostensibly fast-tracked. The mission is set to take the two Lance Corporals several hours as they journey to deliver a message to stop the attack into a German ambush by the following morning. All of this takes place in the span of the 'uncut' two-hour movie. Time seems cleverly condensed as the heroes journey across various hostile terrains, in what the viewers perceive as two hours, but several hours for the characters. The *Half-Life* (1998-2020) video games have a similar format. *Half-Life* (1998-2020) games are known for their structured and set linear world,³⁶ in which there are no loading screens or cutscenes that break away from the game narrative or experience. This 'uncut' or uninterrupted experience poses challenges in narrative structure and world design, which will be analysed and discussed in Chapter Four. However, the concept of 'condensed time' is similar. The protagonist, Gordon Freeman's journey in *Half-Life 2* (2004), takes place over three days, in what is around thirteen hours of 'uncut' or uninterrupted playtime for the player.

³⁵ While designing creatures for players to fight in *Half-Life* (1998) "Valve designers learned that creature design and level design must be coordinated at every stage of game development" (Valve 2004:27), suggesting the importance of world design's influence on player combat, or even narrative experience.

³⁶ Video game world-building as an immersive experience (specifically concerning the *Half-Life* (1998-2020) franchise), is analysed in section 2.10.

While *1917* (Mendes 2019) uninterruptedly follows the characters throughout the story, *Hardcore Henry* (Naishuller 2015) places the audience ‘as’ the protagonist. Filmed almost entirely with GoPro HERO3 action cameras attached to a mask, *Hardcore Henry* is a feature-length film entirely from the POV (Figure 7) of the protagonist. The film inhabits Henry, who wakes up in a Russian lab after being brought back to life as a cyborg. Henry does not remember his past and has to fight his way through a private army to save his wife. Influenced by his love for first-person video games and coming off the success of his POV music videos, first-person immersion was Russian director Ilya Viktorovich Naishuller’s intent (Godfrey 2016:[sp]). Arguably similar to *1917*, *Hardcore Henry* situates audiences at ground level with the characters, never ‘cutting away’ from the action, but rather, having audiences as close as possible to it, without rest.

Sharlto Copley, who stars as Jimmy in the film, defends against criticism that describes the POV perspective as a gimmick, arguing that the familiar video game first-person shooter genre will have a pioneering impact on film – as many have now grown up to know it, and that this type of storytelling would create a reason to go to the cinema (Dread Central 2016). As previously discussed, however, novel immersive technologies and strategies (such as the panorama, early 3D cinema, and VR) are often met with initial criticism. One is reminded of Grau’s (2003:152) contention that prolonged exposure to new immersive strategies may wear down the novelty, rendering it a gimmick.



Figure 7: Henry meets Jimmy, *Hardcore Henry*, 2015.
Screenshot by author.

2.8 Conclusion

Mediated experiences, from ancient artworks to 3-D video games, have borrowed and adapted from various bygone and new media to immerse viewers into the depicted world. Video games are arguably centred around and culminate these immersive tropes, allowing for a more immersive and fluent sense of embodied engagement and heightened sense of presence. As video game author Steven Poole (in Nitché 2008:209) argues, “[i]n the cinema, the world is projected *at* you; in a video game, you are projected *into* the world”. This immersive experience is heightened when the prospect of VR is incorporated.

This chapter has defined virtual reality, immersion, and presence respectively. Subsequently, the chapter contextualised immersion from early image-making practices right through to film, which is, in some ways, the predecessor of video games. The recurring motifs for immersive media are a sense of the ‘realism’ of the image or experience, that it mimics the physical world and how we perceive it, without frames, borders, or windows that remind audiences of the mediation. Furthermore, a sense of inclusion, through tactility and haptics to the extent of interactivity, is prevalent, as immersive media edge toward including audiences in the experience. Consequently, user interactivity is what differentiates video games from other new

media. The following chapter, therefore, explores how video games and virtual reality can immerse players in virtual environments.

CHAPTER THREE

IMMERSION IN VIDEO GAMES AND VR

3.1 Introduction

According to Lara Croft/*Tomb Raider* creator Toby Gard (2010:[sp]), immersion is a fundamental element of video games that should be the goal of all involved in game design. He writes:

I would argue that the power to immerse the player, to absorb his [or her] attention completely, is the common attribute of the greatest and most successful games. Gathering and studying reference is critical to creating immersion for the player. It is something that the entire team should do, not just the artists [...] When we are creating worlds in games, immersion is only possible for the player if we can convince the players that the space is authentic (whether stylized or not.) If the critical features on screen don't match up with the critical features of the player's schemata, then he or she will not be fooled by it (Gard 2010:[sp]).

As previously established, many strategies may induce immersion in visual media experiences, arguably more so within video games and virtual environments, as they involve an amalgamation of technical hardware, software, and the formerly discussed strategies. Video games address players via an engaging multi-sensory experience. For example, “[a] single game might include painting, music, cinematography, writing and animation” (Swink 2009:xiv), and yet differ from other media as the emphasis of video games is placed on player interaction. Thus, researchers of immersion refer to various areas when discussing the concept, particularly regarding video games. For example, “[i]mmersion involves a lack of awareness of time,” write Jennet *et al* (2008:32), “a loss of awareness of the real world, involvement and a sense of being in the task environment. Most importantly, immersion is the result of a good gaming experience.” Within video games, immersion is often related to the realism (visually or audibly) of the game world: however, video games may have realistic game worlds with immersion not being achieved (Brown & Cairns 2004:1; Nitsche 2008:204).

Very few studies have qualitatively analysed immersion as it pertains to narrative-based VR video games, and even less so within the field of media studies. In this chapter, I discuss the current literature on immersion as it pertains to video games

specifically and explore how video game creators attempt to achieve and maintain player immersion within the virtual game world. Empathy, affect, and embodiment in video games are also explored as a means to immerse players. The discussion then moves to models of immersion, specifically the sensory, challenge-based, and imaginative (SCI) model, and the Player Involvement Model, to help shed more light on and frame the nature of immersion in video games. Finally, this chapter discusses immersion as it pertains to VR video games specifically. Throughout the chapter, the literature on immersion is applied to video games, specifically *Half-Life* (1998) and *Half-Life 2* (2004). Chapter Seven then applies the literature to VR video games, specifically *Half-Life: Alyx* (2020).

3.2 Outlining immersive ludological elements of video games

Immersion is pivotal to a game's success as entertainment media. As Brown and Cairns (2004:1) argue, "[t]he experience of immersion is often critical to game enjoyment and is made or destroyed by game characteristics". As previously mentioned, following their grounded investigation of video game immersion, Brown and Cairns (2004:1) identified three levels of immersion: *engagement*, *engrossment*, and *total immersion*. Each level of immersion maintains various barriers to cross over to move to the next stage and to ultimately experience *total immersion*. Before a player can feel engaged – the first level of immersion – they will need to have access to the game, specifically to invest into a game of preference and invest time, effort, and attention into the game (Brown & Cairns 2004:1). As an example, one might not particularly enjoy playing any sports games and, consequently, will never feel a sense of engagement with the game. Such players might always be aware that they are playing a sports game and constantly acknowledge the controller in their hand, concentrating on which button to press. Brown and Cairns (2004:3) argue that "[a]n engaged gamer is interested in the game and wants to keep playing. What this experience lacks is the emotional level of attachment that is seen in later levels of immersion."

Brown and Cairns' (2004:2) next level of immersion is *engrossment*, in which there is a higher level of emotional investment in the game and an appreciation of the effort and detail put into the game world by the designers. Gamers may attempt to 'shut out'

the outside world, by turning off lights or turning up the volume, to experience this level of immersion. In this stage, gamers suspend their disbelief of the game world, leading them closer to the final level of immersion.

Total immersion is synonymous with presence,¹ in which participants describe being cut off from reality, however fleetingly (Brown and Cairns 2004:2). The conditions to entering this level, according to Brown and Cairns (2004:2), are empathy (for game characters and situations), and atmosphere (which refers to the game locations, visuals, sound, plot). All of these are interconnected and contribute to the overall game experience. “The reason this is important,” Brown and Cairns (2004:2) argue, “is because of the use of attention. If gamers need to attend to sound, as well as sight, more effort is needed to be placed into the game. The more attention and effort invested, the more immersed a gamer can feel.” Due to their interactive nature, video games can immerse players more deeply than other media as they require players to attend and respond to the action on screen – moving and performing while attending to visual and audio events. This attentive effort correspondingly allows for less effort in or thought about the physical world, thereby leading to a sense of presence within the game.

The feeling of presence that Brown and Cairns (2004:2) describe is, however, only a fleeting experience, suggesting that players are soon made aware of their surroundings again and that they are playing a video game. This is what world-builders and game designers must actively explore, according to Wolf (2017:204), in order to create various props and mechanics in a game world that maintain immersion, enticing players to return to the artificial world. In the development of *Half-Life 2* (2004), Valve designers constructed the physics system of the game (an innovation at the time), using their in-house Source engine as a system to keep their game world authentic and true to player expectations, thus extending immersion (Valve 2004:271).² It is

¹ As previously established, there are significant discussions that differentiate between immersion and presence, and for the purposes of this study, these concepts are understood as described by Mel Slater. To reiterate, Slater (1997:4) argues that “Immersion can be an objective and quantifiable description of what any particular system does provide. Presence is a state of consciousness, the (psychological) sense of being in an environment.”

² The physics system of a video game refers to how a game simulates the laws of physics. This effects the entirety of the game, from how objects within the game world interact with each other, player movement such as walking, to gravity within the virtual world, which would dictate how high players could jump, or how objects would react when they fall. *Half-Life 2* (2004) was praised for its

explained that:

The Source engine's physics system, headed by *Half-Life 2* lead Jay Stelly, is integrated into every aspect of the game. Drop a heavy object onto someone's head and it hurts; scrape a metal piece against concrete and it makes appropriate sounds and sparks. Bodies fall as they should. Players tend to forget that it's a simulation as the physics seamlessly blend into the game and obey virtually every expectation, almost fading into the background in its completeness. This effect of overall immersion is something that can only be properly appreciated in its absence (Valve 2004:271).

Swink (2009:50) concurs that the sense of immersion can be 'broken' or lost if the game reacts unexpectedly "[b]ecause the way we cope with and understand events in a game world is so similar to the way we interact with the real world, we expect the same consistency. The tiniest thing can break this perceptual immersion." In other words, immersion can be broken if the physics system fails to accurately represent physical (or expected) reality. For example, if an enemy's corpse clips through a wall or door, the player may be reminded of the limitations of the game's physics engine. A game glitching or bugging (responding unintentionally) also makes players cognisant that they are within a (limited) virtual environment. Lag, caused by a drop in frames per second (FPS) due to hardware constraints or a poor internet connection, which leads to a delay in responsiveness can also disrupt immersion.

Enticing a sense of presence in a game world raises the notion of 'liveness', or what Girina (2015:152) refers to as the ongoing dilemma of creating believable digital characters that feel and behave with a sense of life, a notion adopted from the film industry. Heeter (1992:263) describes the 'liveness' of the world as pivotal to what she terms *social presence*, which she explains as the "extent to which other beings (living or synthetic) also exist in the world and appear to react to you". In multi-player game experiences, the game world would consist of multiple players to share the experience with and, as Heeter (1992:266) argues, "if other people are in the virtual world, that is more evidence that the world exists". This implies that when players share a virtual space, the world becomes more believable and players may not stop to think about its existence, but instead focus more on the game and shared experience itself.

physics system, which allowed players to interact with the environment more deeply, and use the virtual environment when engaged in fights or to solve puzzles.

“[T]hrough action, communication, and being in relation to others,” argues Nitsche (2008:208), “users come to find themselves ‘there’”. Amongst a multiplicity of other causes, presence induced by the co-habiting and sharing of game worlds has arguably led to the popularisation of the (mass multiplayer online) role-playing game (MMORPG) genre, with games like *World of Warcraft* (2004 - present) and *Final Fantasy XIV* (2010).

In a single-player game context, *social presence* could occur when NPCs directly address the player (Nitsche 2008:208). “The player enters a role,” Nitsche (2008:208) explains, “in relation to other beings in the game space and is immersed further through the development of this role and his or her embracing of these developments”. NPCs may react and relate with the player as they interact with the game world. This ‘reaction’ by characters to the player’s presence in the game world was pioneered in the development of *Half-Life* in 1998 when scientists can be heard having a conversation amongst each other as the player walks by and tells Gordon (the player) to hurry down to the test chamber. Likewise, NPCs in *The Elder Scrolls V: Skyrim’s* (2011) may remark on the player/character’s state or praise his or her achievements, depending on the player’s progress in the game. If the player’s character has become infected by lycanthropy (and can transform into a werewolf), NPCs may remark how the player/character smells like a wet dog or looks sickly; if the player is a vampire, or if the player has defeated Alduin, the world eating dragon, they may praise him/her for saving the world. These small observations and involvements from NPCs throughout the game contribute to the liveliness of the game world; as the player changes and progresses, so does the game world and its interactions. Thus, the player may become more deeply rooted and invested in the circumstances of the game world.

Girina (2015:152) argues that if characters are well-created and written, players can establish an emotional bond and empathise with their character through emotion which, according to Nitsche (2008:208), can strengthen a form of social presence. IGN’s Luke Reilly (2018:[sp]) describes the lifelike demeanour of the Dutch van der Linde gang of outlaws, played from the perspective of Arthur Morgan in *Red Dead Redemption 2* (2018). He writes: “Arthur’s partners in crime all get swags of screen time; certainly enough to feel like convincing, three-dimensional characters that Arthur has a real relationship with. [...] they all feel like credible human beings and not

caricatures”.

3.3 Video games and empathy

Deriving from aesthetic theory in the late 1800s from the German word *Einfühlung* – ‘feeling into’ – empathy was used “to describe the ability of an observer to ‘feel-into’ a work of art or architecture...” (Bollmer 2017:72). “*Einfühlung* referred explicitly to aesthetic judgement”, Bollmer (2017:72) explains, “as a kind of affective intensity, in which the body was more important than dispassionate, conscious judgement.” As such, academic interest in audience emotions, empathy, and affect in media studies has risen in recent years (Massumi 2002:27; Bollmer 2017:74; Lauwrens 2020:5). Media studies scholar Marie-Luise Angerer (2011:219) refers to this “shift” in theoretical approaches in art and media from analyses of representation “toward an affective reading or interpretation of affects and emotions in reception” – an area which art historian Susan Best (2011:1) calls a “methodological blindspot in art history”. Moreover, there is a growing interest in how art and (new) media, such as video games and VR, evoke affective sensations and, as will be discussed, how notions of affect, empathy, and embodiment can further induce immersion and presence in mediated experiences, particularly in (VR) video games.

VR has often been described and marketed as being a tool to deliver empathy. In reference to *Clouds Over Sidra* (Arora & Milk, 2015), a VR documentary that follows a twelve-year old Syrian refugee girl, Sidra, in Zaatari refugee camp in Jordan, immersive storyteller, and co-founder of *Within*, a VR experience company, Chris Milk (2015:[sp]), describes VR as “the ultimate empathy machine”. Milk (2015:[sp]) argues that VR’s ability to place you *with* Sidra in a refugee tent, allows you to “empathise with her in a deeper way”, allowing for a deeper human connection than other media forms. Featured at the World Economic Forum in Davos in 2015, the VR film, which was made in collaboration with the United Nations, was an effort to create empathy for Sidra, create awareness, and raise funds for the crisis. The UN raised nearly \$4 billion towards the cause, according to *Wired* editor Peter Rubin (2018:102), suggesting the capability of this (new) empathetic storytelling medium. However, the hype surrounding such claims of VR’s ability to engineer empathy has been met with increasing criticism, according to media scholar Kate Nash (2021:103). Bollmer

(2017:63) argues that “empathy machines”, such as VR, cannot universally re-create true feelings of empathy. He writes:

Technologies designed to foster empathy presume to acknowledge the experience of another, but inherently cannot. The user of these technologies, instead of acknowledging another’s experience, hastily *absorbs* the other’s experience into their own experience. This leads to a position where *your* experience cannot be acknowledged as the basis for any political or ethical claim until it can be expressed in a form that *I* can *directly* experience, without clear mediation. (Bollmer 2017:64, emphasis in original)

Concurring, Murray (2020:24) argues that simply having audiences watch 360-degree videos in VR does not automatically solicit feelings of empathy. Furthermore, the excitement of “physical immediacy” simulated in VR inevitably fades as the novelty subsides (Murray 2020:12-13). Therefore, Bollmer (2017:66) argues that the feeling generated in *Clouds Over Sidra* is more of an affective state of “identification” or “association” than empathy. Bollmer’s (2017:74) contention deals primarily with the semantics of empathy, which he argues is “a concept initially derived to describe how one relates to and absorbs objects into one’s own experience, and how artworks produce affective relations inhabited within one’s own body...” but has been recently used to express “how Others become objects to be used and absorbed.” This dichotomy of opinion towards VR is persistent throughout literature on the medium, as highlighted in Chapter One.

Propelled by their interactive quality, video games attempt to create a sense of user empathy. Media scholar Karin Wenz (2014:311) suggests that narrative-driven games intend for audiences to be immersed in stories and connect to characters. Video game researcher Ragnhild Tronstad (2008:251-253) refers to this as “narrative empathy”, in which players engage with the events and characters to further immerse players within a given narrative. Furthermore, video games allow for “embodied empathy”, which according to Tronstad (2008:253, 256), allows the player to feel “a kind of physical or bodily connection to the character ...”. Thus, designing notable, resonant characters is pivotal to a game’s success. Furthermore, the ‘life’ of the character (and thus, the game) can be further extended through “ancillary spin-offs in addition to the game

itself...,” according to cinema and digital games scholar Jessica Aldred (2014:360).³ Creating today’s video game characters is often comparable to how Hollywood creates film characters. Large triple-A developers employ actors, and even Hollywood stars to voice act and do motion capture for characters in their video games. Examples include Norman Reedus in *Death Stranding* (2018), Cameron Monaghan in *Star Wars Jedi: Fallen Order* (2019), and Rhys Darby in *Half-Life: Alyx* (2020). These actors take on supporting NPC roles, such as Darby’s Russel in *Half-Life: Alyx* (2020), as well as the playable protagonist, such as Monaghan’s Cal Kestis in *Star Wars Jedi: Fallen Order* (2019). While Hollywood actors may be brought in for their experience and marketing purposes, one can also identify with lesser-known (voice) actors such as Roger Clark, who portrayed Arthur Morgan in *Red Dead Redemption 2* (2018).

Both playable and NPC video game characters can feel life-like and authentic. A player may establish a strong bond with video game characters and relate to them, arguably more so than film characters, as the player embodies or journeys alongside them, often for several hours. For instance, I was tearful and vengeful in response to the sudden death of Phoibe (the young orphaned protégé to the player) in *Assassin’s Creed Odyssey* (2018). My character’s (Kassandra) heart-breaking reaction to the incident made it real, authentic, and affecting.⁴ Suddenly the hardened Spartan warriorress, capable of defeating small armies, was helpless, broken down in cries of grief.

Half-Life 2: Episode 2 (2007) (infamously) ended on a cliffhanger, leaving the deuteragonist Alyx, holding the remains of her father, who had just been killed in front of her. For over a decade, her cries of anguish left players, including myself, gutted. Valve (2004:154) explains that while casting voice actors for Alyx during the development of *Half-Life 2* (2004), they needed someone “with a beautiful voice, who

³ Ancillary spin-offs include merchandising of video game characters, as well as spin-offs into other forms of media, such as comics or films.

⁴ The notion of immersion while embodying a character of the opposite gender is important to note here. Biocca (1997:20), Gee (2008:258) and Swink (2009:28) (discussed in the Chapter Five) argue that embodiment involves encompassing a character and taking on their characteristics and capabilities. Furthermore, the Proteus effect, coined by VE and VR researchers Nick Yee and Jeremy Bailenson (2007:271), suggests that users may adapt their behaviour, according to avatar characteristics. For example, according to media psychology scholar Erin Ash (2016:423), “the [p]roteus effect would likely predict that a player using a female avatar would behave less aggressively due to popular views about femininity.”

could be charming, very feminine, and warmly intimate, but could then go into intense circumstances and be a strong, confident, and believable action character”.

The voice actress for Alyx Vance in *Half-Life 2* (2004), Merle Dandridge, won a BAFTA Games Award for best performer in a video game for her role as Kate Collins in *Everybody's Gone to the Rapture* (2015). In her acceptance speech, Dandridge refers to her character (Kate) as “everything women should be represented as” and goes on to praise the video game industry, for their portrayal of strong leading women, since her first role as Alyx Vance in 2004 (BAFTA 2016).⁵ As many video games take several hours to complete, designers and writers have lengths of time to flesh characters out, giving them depth and personality that the player can relate to, and engage and interact with.

3.4 Video games, game feel, and game affect

The empathy and engagement between players and video games and game characters lead the discussion towards game *feeling* and *affect* theory, the latter of which has gained significant academic interest, specifically in “media, literary, and art theory” fairly recently, according to philosopher Brian Massumi (2002:27). Affect derives from the Latin word *affectus*, and *The Compact Edition of the Oxford English*

⁵ It is important to note here that, since the inception of video games, the representation and treatment of women in video games and the video game industry more broadly, has been a contentious issue. Media scholars Mildred Perreault, Gregory Perreault, Joy Jenkins and Ariel Morrison (2018:843) argue that within video games, “[t]he lack of depth in female characters has long been the norm; however, an increasing number of female protagonists are headlining games.” Female characters are often portrayed in stereotypical ways, glamorising sex or beauty, reinforcing gender assumptions such as hostile and benevolent sexism; the notion of being sexually controlling towards men or by contrast, being helpless and in need of protection or support by men (Perreault *et al* 2018:845). While there is evidence that video games are progressing towards creating female protagonists that are “presented as capable, confident, and multifaceted” (Perreault *et al* 2018:857), the video game industry has been a space that caters for its (white) male target audience, according to video game professor Christopher Paul (2018:19), and has led to misogynistic representations of women in the industry. According to Paul (2018:14-15,63), the anonymity of online communication allows for an environment of harassment towards women, that is also found in gaming, creating a toxic gaming culture. Video game scholars Jesse Fox and Wai Yen Tang (2017:1291) argue that women, who are still perceived as a minority in gaming, are more likely to experience extreme forms of harassment that include “stalking, sexual harassment, and sustained harassment”. The scale of this issue is demonstrated by the recent Activision Blizzard harassment lawsuit. In July 2021, Activision Blizzard (formerly Blizzard Entertainment), known for their popular game series such as *Warcraft*, *World of Warcraft*, *Overwatch*, *Diablo*, *Hearthstone* and *Starcraft*, was sued by the State of California’s Department of Fair Employment and Housing for harassment and discrimination against women in the workplace, and was referred to as having a “frat boy culture”, according to Pcgamer’s Wes Fenlon (2021:[sp]).

Dictionary (1984:38) gives one of its meanings as “[t]he way in which one is affected or disposed; mental state, mood, feeling desire, intention.” Bollmer (2017:74), however, calls for a more consistent definition and understanding of affect, as the recent interest in the areas has “led to a concept that has many meanings, many implications, and many misinterpretations”. An example of this misconception, according to Massumi (1987:xvi; 2002:27), is how affect is often (mis)used synonymously for notions of emotion and feeling. Communication professor Eric Shouse (2005:[sp], emphasis in original) differentiates between these concepts; “Feelings are *personal* and *biographical*, emotions are *social*, and affects are *prepersonal*”. According to Shouse (2005:[sp]), feelings are personal sensations that are determined through previous, subjective experiences. Emotions are projected or broadcasted feelings, which may be authentic or “feigned”, and which we use as “an expression of our internal state and other times it is contrived in order to fulfil social expectations” (Shouse 2005:[sp]). Affect, on the other hand, according to Shouse (2005:[sp]), is a “non-conscious experience of intensity; it is a moment of unformed and unstructured potential.”

Game developer and author Steve Swink (2009:xiii) refers to “game feel” as the intangible sensation of a player’s feeling or experience while playing various games. Swink (2009:xiii) writes:

... game feel is the tactile, kinesthetic sense of manipulating a virtual object. It’s the sensation of control in a game. In digital game design, feel is the elephant in the room. Players know it. Designers know of it. [...] if a game designer’s done his or her job correctly, the player will never notice the feel of a game. It will just seem right. In this sense, game feel is an “invisible art,” like cinematography.

According to Swink (2009:1), game designers attribute *game feel* to a variety of game aspects, namely “intuitive controls” – enabling players to perform as and when they wish; “physical interactions” – the impact, timing, or polish of in-game interactions; “appeal” – aesthetic pleasure; and immersion – in which “[a]ll their efforts go into creating a feel that seems more ‘realistic’ to players, which somehow increases this sense of immersion”. Swink (2009:6) arrives at a more inclusive, workable definition of game feel, as “[r]eal-time control of virtual objects in a simulated space, with interactions emphasized by polish.” An example of this is described by video game

scholar Brendan Keogh (2018:19-20), in his phenomenological account of what it *feels* like to *move* around as Nico Bellic, the playable character of *Grand Theft Auto IV* (2008). Keogh (2018:19-20) describes the game as *feeling* “heavy” in a “tangible sense”. This contrasts the game’s predecessors, which at surface level, have a similar crime-based premise but feel almost like ‘lightweight’ cartoons (Keogh 2018:19-20). Controlling Nico and the vehicles in *Grand Theft Auto IV* (2008), on the other hand, feels weightier, according to Keogh (2018:19-20), which affects the game’s “tone, the atmosphere [and] the meaning...”. In other words, ‘game feel’ leans more towards the player’s *feeling(s)* concerning the fluidity and tangibility of control over the movements and actions in the video game, while affect is more imperceptible - an unconscious reaction or response to the gameplay.

The author of *Playing with Feelings: Video Games and Affect*, Aubrey Anable (2018:viii), argues that video games have always had a great capacity to affect our emotions and do so in ways that have “important differences from the ways films or novels affect us”. However, Anable (2018:44) argues that the mechanics and design of the game (important as they are), as suggested by Swink, do not entirely make up our (pleasurable) experience of playing video games and that the notion of *game affect* more closely addresses the phenomenon. According to Paterson (2007:21), affective responses can increase through haptic experiences, and thus refers to two forms of touch: exteroceptive, which refers to the outward senses of sight, touch, taste, smell, and hearing, and interoceptive, which refers to the “senses of proprioception, kinaesthesia, and the vestibular sense ...”, and which more closely reflect notions of affect. Patterson (2007:154) argues that interoceptive forms of touch are not easily distinguishable from experiences of affect.

Researcher of haptics and embodiment in image-making, Eugénie Shinkle (2005:2), argues that while being an interactive “embodied event”, *affect* is pivotal to the perception and meaningful interaction with video games and that the experience is not only derived from a game design standpoint. Shinkle (2005:2) writes:

The rush you get from a good game is a subrational, bodily thing, involving phenomenological or affective dimensions which cannot be programmed into a game. [...] It is especially significant in the experience of digital gameplay, which relies upon the user’s physical

input; indeed, digital games are almost totally dependent upon affective factors in providing a positive user experience.

Shinkle (2005:3) goes on to define affect as follows:

Affect is synaesthetic, embodied perception. It is a full-body, multisensory experience, temporally and corporeally delocalized, incorporating emotions but not reducible to them. Affect is a way of approaching the ‘feel’ or intensity of a game, and refers to the unquantifiable features of gameplay – those phenomenological aspects of interactivity that are difficult to describe or to model theoretically, but which nonetheless make a game come alive.

Synaesthesia is clinically understood as “the overlap and blending of the senses”⁶ – a rare neurological sensation in which one may be able to “hear colors” or “[see] sounds”, according to ecologist and philosopher David Abram (1996:45). However, Abram (1996:45) also argues that through our “primordial, preconceptual experience”, synaesthesia is a perception we “inherently” maintain and is how we perceive the world. Concurringly, Merleau-Ponty (2012:238) explains that the coupling of phenomena is intrinsic to our bodily experience of *being-in-the-world*. Merleau-Ponty (2012:241-243) compares the synesthetic experience to our binocular vision and our body’s innate ability to perceive two images as one. He writes:

“The vision of sounds or the hearing of colors comes about in the same way as the unity of the gaze through the two eyes, insofar as my body is not a sum of juxtaposed organs, but a synergetic system of which all of the functions are taken up and tied together in the general movement of being in the world, and insofar as it is the congealed figure of existence.” (Merleau-Ponty 2012:243).

Synaesthesia is our body’s way of perceiving and expressing the world, and as Sobchack (2004:63 emphasis in original) argues, we “experience it *without a thought*.” Furthermore, Sobchack (2004:68) argues that while synaesthesia refers to the “*involuntary*” pairing of senses, it is also used to describe “the *volitional* use of

⁶ Synaesthesia in the description of video gameplay ‘affective’ experiences is apt. When asked what my favourite genre of music is, I often respond with “(ambient) video game or film music”, as they visually bring me to the scenes and imagery when the songs/tracks are played. *Half-Life* (1998-2020) music is explicitly synesthetic to me personally (and many others, according to forums and comments from the YouTube playlists), as it does not bring only the nostalgic sense of my initial playthrough, but carries with it a sad, ‘grey’, ominous feeling of struggle and lost hope, that is ‘felt’ in the game world.

metaphors in which terms relating to one kind of sense impression are used to describe a sense impression of other kinds.” Sobchack (2004:68-69) further distinguishes clinical forms of synaesthesia from everyday multisensory experience by referring to *coenaesthesia*, which refers to the consensus of the “whole sensorial being [...] in which equally available senses become variously heightened and diminished, the power of history and culture regulating their boundaries as it arranges them into a normative hierarchy.”

In video games, the synaesthetic coupling of senses can come in the form of audio, visual, and interaction through the player’s input, as professors of game design Martin Pichlmair and Fares Kayali (2007:424) explain: “The predominant technique for embedding sound in video games is to have a layer of background music and to synchronise the onscreen action with fitting samples.” Comparable to film, music in video games can help set the mood or ‘feel’ of the onscreen events. At the same time, music in video games is more interactive, as it changes to the user’s actions. Music is sometimes used to pre-empt the player as to what may happen next. For example, the player knows an enemy is nearby in a game like *The Elder Scrolls V: Skyrim* (2011), when the music starts to change. Music is also used as a powerful tool to further immerse players into the ‘feeling’ of the moment. A prominent example from *Half-Life 2: Episode 2* (2007) is the exhilaration the player can feel while defending a gravely wounded Alyx from swarms of Antlions – large insect-like alien creatures – in an intense underground shootout. The sequence begins with smaller attacks, as the player is warned – by alarms and flashing lights – of the swarm size and direction of each incoming attack. The final alarm indicates the largest attack from every direction – which may initially unnerve the player as the music builds tension. Rock music kicks in as the final fight starts, which, while being the most difficult battle so far, immerses the player into the chaos and into a ‘bring it on’ mentality. By design, experiences like this bring the player *into* the moment. The player’s senses are completely stimulated, and engaged by the action (and sounds) they are experiencing.

Game affect is a powerful experience that game designers hope players will experience. However, game affect is convoluted, as video games are multifaceted, stimulating players via numerous senses. Moreover, game affect is further complicated by incorporating narrative, plot and, game mechanics. Empirically

measuring the feelings of a player during gameplay is challenging, as Shinkle (2005:2) notes; a player may be more afraid to lose progression in a horror game than be fearful of his/her environment or circumstances in the game (as intended by designers). Anable (2018:131) argues that affect is influenced by the entirety of the gameplay experience and cannot be reduced only to the act of play or programming: “The particular worlds, characters, and stories of video games cannot be meaningfully separated from what games ask us to do as players or from the less visible actions of their programming.”

Considering video games through the lens of affective experiences, as Shinkle (2005:6:) argues, possibly changes our understanding of immersion towards a more cohesive ‘sensation’. Shinkle (2005:6:) writes:

Many definitions of virtual reality and immersion continue to assume a radical distinction between mind and body, between simulated and external worlds. Understanding gameplay in terms of affective response suggests, however, that presence in virtual environments is more than simply a question of mind over matter, and that immersion is perhaps better understood in terms of openness than of full perceptual isolation.

In this sense, immersion should not be thought of as only a property of a system that leads to a sense of presence (the feeling of ‘being there’) but also more inclusively of the user’s affective *response* to the experience. This echoes Sanchez-Vives and Slater’s (2005:333,335) revised definition of presence as a human *response* to a system and reiterates Lee’s (2004:37) definition of presence as “a psychological state in which virtual (para-authentic or artificial) objects are experienced as actual objects in either *sensory* or *nonsensory* ways.” Game developers may try incorporating immersive strategies to induce presence in their video games. However, players may feel immersed due to a game’s unforeseen or ‘intangible’ elements. Thus, game *feel* and affect play a significant role in understanding game immersion and presence.

Moreover, it is worth briefly discussing the differences between player immersion in online (or multiplayer) games and offline (single-player) games. In what Heeter (1992:263,266) calls “*social presence*”, and Calleja (2011:93) refers to as “shared involvement” (I return to Calleja in the upcoming subsections), players can experience a shared sense of presence through the *presence* of other constituents in the game

world. These other constituents can be other players or NPCs (Heeter 1992:263,266; Calleja 2011:93). There is an argument to be made that online games can better immerse players into the game world as players interact with *real* people. On the other hand, NPCs using AI also respond and interact to players but are far more limited in terms of engagement. However, I would argue that other players can also break immersion in game worlds. Players who do not act, behave, or *roleplay* ‘appropriately’ in the game’s world and setting can disrupt feelings of immersion. Due to online anonymity, as raised by Paul (2018:14-15,63), trolling and toxic player behaviour can result in poor gameplay experiences.

Furthermore, multiplayer game worlds are also built to cater to multiple players’ experience, up to thousands of players simultaneously in MMOs. While it is exciting to be amongst thousands of players sharing the game world, it can also feel repetitive or generic and lack consequences. In *World of Warcraft* (2004-present) for example, I may get a quest to clear a dungeon full of bandits and eliminate their leader (the final boss). However, since other players must be able to do the quest as well, all the enemies, including the bosses, will respawn, so I have little effect on the game world. In a single-player game like *The Elder Scrolls V: Skyrim* (2011), eliminating certain NPCs means they are removed from the game world – the world is built *for me*, the *single-player*, and I have a consequential impact on the story and world.⁷

This section outlined immersion in video games, highlighting its significance in the design and success of video games and the multifaceted strategies incorporated in video games to immerse players. These strategies include maintaining player engagement through video game mechanics, characterisation, feeling, and affect. The multifaceted concept of immersion within the context of video games is more easily grasped if framed or modelled. As such, the following sections outline strategies of immersion within a video game context through the analysis of two prevalent models

⁷ I do, however, personally prefer games that allow for multiplayer gameplay, as I would want to share the experience with friends. For example, when playing single-player games, such as the recent RPG *Hogwarts Legacy* (2023), like many others, I cannot help but wish I could share my wizarding adventures with friends. Co-op multiplayer games, allow for a limited number of players to share a game world together, makes for an interesting compromise, that allows for smaller friend groups to share a more ‘tailored’ experience that MMOs may not offer. Measuring the differences of immersive experiences between single-player versus multiplayer games, however, is beyond the scope of this study.

of immersion, particularly the sensory, challenge-based, and imaginative immersion (SCI) model, and the Player Involvement Model, as they relate to video games. Viewing immersion in this way will help better understand how immersion works in video games and further help in constructing a model from which to analyse immersion qualitatively.

3.5 The sensory, challenge-based, and imaginative immersion (SCI) model

In proposing a taxonomy of immersion, Nilsson *et al* (2016:110) review prominent definitions and studies of immersion, from which they distinguish four general views of immersion as *a property of the system, a perceptual response, a response to narratives, and a response to challenges*. Nilsson *et al*'s (2016:110) first view – immersion as a property of a system – reiterates what Slater (1997:2-3) refers to as *system immersion* and amounts to a view of immersion, as an “objectively measurable property of the *system*” and not a user’s response to the system.⁸ On the other hand, Witmer and Singer (1998), McMahan (2003), Arsenault (2005), and Ermi and Mäyrä (2005) follow the sentiment that immersion is a *user’s response* to something. Nilsson *et al*'s (2016:110) second view – immersion as a perceptual response – refers to the user’s sense of feeling enveloped or surrounded. Thirdly, immersion as a response to narratives (Nilsson *et al* 2016:110), refers to the notion of being immersed in a narrative and plot⁹. Lastly, immersion as a response to challenges is being fixated on the task at hand, essential to the ludic elements of play, allowing for the occurrence of flow (a concept to which I return later).

⁸ For this study, immersion has been understood as Slater (1997:2-3) maintains, an “objectively measurable property of the *system*”. Slater (1997:1) largely refers to audio-visual displays, with HMDs being at the forefront of immersive technology, and describes immersion as “the characteristics of a technology, and has dimensions such as the extent to which a display system can deliver an inclusive, extensive, surrounding and vivid illusion of virtual environment to a participant.” This understanding of immersion can be found in the SCI-model’s *sensory immersion*, which is concerned with the extent to which the system averts the senses away from the physical world, towards the virtual one. Furthermore, in order for Slater’s *system immersion* to be experienced, a “plot” is necessary, “[t]his is the extent to which the VE in a particular context presents a story-line that is self-contained, has its own dynamic, and presents an alternate unfolding sequence of events, quite distinct from those currently going on in the ‘real world’” (Slater 1997:4). This is where video games are concerned, as immersion cannot be experienced by a game console, computer, or VR HMD, if it is not running a media application, in this case, a (VR) video game. Thus, in this sense, video games may be understood as a dimension of *system immersion*.

⁹ Narrative as an immersive strategy (particularly in video games) will be further discussed in Chapter Four.

A prevalent model for video game immersion is Ermi and Mäyrä's (2005:7) SCI (sensory, challenge-based, and imaginative immersion) model, which attempts to frame the "many-faceted phenomenon" within the gameplay experience. The SCI model incorporates most of the views of immersion expressed by Nilsson *et al* (2016), within the context of video games. As very few models are revealed in the literature that frame and better understand *immersion* within the context of the video gameplay experience, I discuss the SCI model and Player Involvement Model in further detail, beginning with the former.

In their attempt to frame the fundamental components of gameplay experiences, Ermi and Mäyrä (2005:3) argue that gameplay is better understood through the lens of immersion. Through a series of interviews, child gamers were asked to account for their pleasurable experiences in video games, from which emerged three main categories: audiovisuality (which players found elements like graphics, sound, music to be important), challenges (combat, advancement, solving, creating), and fantasy (world, characters exploration) (Ermi & Mäyrä 2005:6). From these categories, Ermi and Mäyrä (2005:7) arrived at their gameplay experience model, which centres around sensory, challenge-based, and imaginative immersion. Figure 8 depicts how the SCI model attempts to encapsulate player experiences and gameplay elements, which can be analysed by the dimension(s) of immersion. When analysing a game using the SCI model, one must also consider both the game and the player. The game is broken into structures, which include the game's materiality and ludic elements. When considering the player, one looks at how meaning is derived "against the backdrop of various personal and social contexts in her life" (Ermi & Mäyrä 2005:9). Therefore, a player's interpretation and experience of the game can be analysed by considering the dimensions of immersion, which trace back to structures of the video game. However, the player's meaning or interpretation of the gameplay experience must also be taken within the context of the various social and cultural contexts (Ermi & Mäyrä 2005:9).

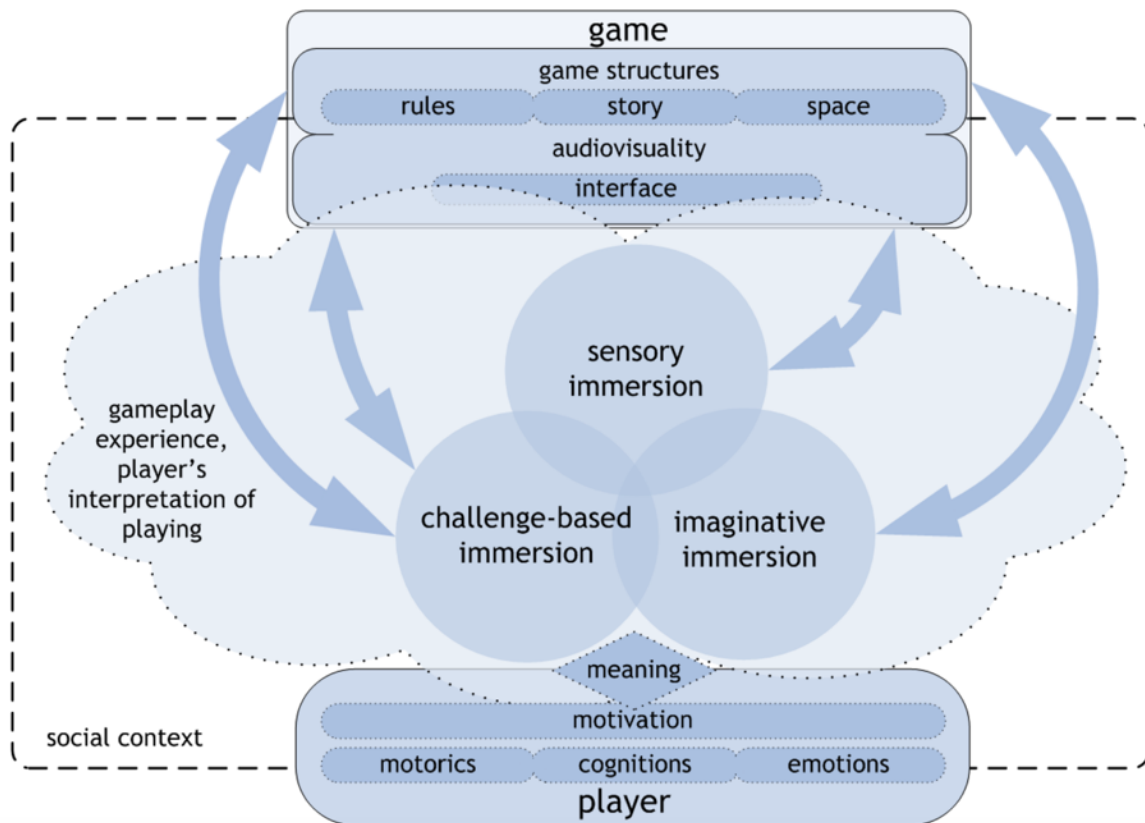


Figure 8: Laura Ermi and Frans Mäyrä, the three dimensions of immersion in the SCI-model, 2005. (Laura Ermi & Frans Mäyrä 2005:8). Screenshot by author.

The following sub-sections further discuss the SCI's three dimensions of immersion to analyse the various ways video games immerse players. This discussion is necessary, as the SCI incorporates (and models) many of the discussed views of immersion within a video game context.

3.5.1 Sensory immersion

The SCI model's first dimension, *sensory immersion*, is the most recognisable and according to Therrien (2014:451), the closest to the original Latin meaning of the word for submersion, *immersio*. This type of immersion strategy 'targets' the senses of the user. Sensory immersion refers to the visual (and auditory) strategies used by media to 'trick' one into the sensation of presence. McMahan (2003:77-78) refers to this as perceptual immersion, which is "accomplished by blocking as many of the senses as possible to the outside world and making it possible for the user to perceive only the artificial world, by the use of goggles, headphones, gloves, and so on". As discussed in the previous chapter, these immersive strategies date back to the early illusion

practices of frescoes and panoramas as far back as the classical world (Grau 2003:5), where large artworks surrounded the viewer, covering their field of vision. The recurring motif in these immersive artworks was an ever-expanding sense of inclusion of the viewer, while visually blocking out distractions to the physical world. This immersive strategy aims to focus the user's senses solely on the medium. This illustrates the human desire to "submerge the senses completely since antiquity at the very least" (Therrien 2014:452).

3.5.2 Challenge-based immersion

Ermi and Mäyrä's (2005:7) second dimension, *challenge-based immersion*, is fundamental to games due to their interactive nature, as games are designed to keep the player engaged. This dimension refers to the ability of the player to focus exclusively on the task at hand, ostensibly shutting out worldly influences or distractions to focus attention or cognitive aptitude on the successful completion of the task. As Nitsche (2008:204) suggests, not all video games immerse players into their virtual worlds in the same way. Some immerse players in the act of playing the game itself. A game like *Tetris* (1984), for instance, may not immerse players at a sensory or imaginary level but rather at a challenge level. McMahan (2003:69) refers to this type of play as engagement, in which "many users appreciate games at a nondiegetic level—at the level of gaining points, devising a winning (or at least a spectacular) strategy, and showing off their prowess to other players during the game and afterward, during replay." Similar to Brown and Cairns' (2004:1) first level of immersion (which they refer to as engagement), instead of investing in the story, lore, canonicity, or characters of a video game, players may focus, almost obsessively, on gameplay skill, requiring an investment of time, effort, and attention.

Brown and Cairns (2004:4) Ermi and Mäyrä (2005:2), Nitsche (2008:204), and Therrien (2014:452) all reference psychologist Mihaly Csikszentmihalyi's empirical study on recreational activities, and, in particular, his *flow* theory which describes the state that is reached when one successfully balances skill level and challenge level. Csikszentmihalyi (2008:71) describes this *optimal experience* – or flow – as:

a sense that one's skills are adequate to cope with the challenges at

hand, in a goal-directed, rule-bound action system that provides clear clues as to how well one is performing. Concentration is so intense that there is no attention left over to think about anything irrelevant, or to worry about problems. Self-consciousness disappears, and the sense of time becomes distorted. An activity that produces such experiences is so gratifying that people are willing to do it for its own sake, with little concern for what they will get out of it, even when it is difficult, or dangerous.

According to Brown and Cairns (2004:4), flow and immersion share similarities in that “attention is needed, sense of time is altered, and sense of self is lost. Also, the use of skill and knowledge is the same in immersion as in flow.” However, Brown & Cairns (2004:4) argue that, like flow, *total immersion* (being synonymous with presence) is a fleeting experience. Conversely, Nitsche (2008:204-205) differentiates between presence and flow, suggesting that flow relates more to player action but remains an important component of a player’s presence in a game. He writes:

A player who reaches this [flow] level is clearly immersed in the game but not necessarily “present” in the virtual space. Flow is action dependent. The player has to concentrate on a specific activity. Presence has been traced to levels of interactivity, but is less task-oriented and more often discussed in terms of presentation (Nitsche 2008:204-205).

A player engaged in a ‘flow-state’, intensely concerned with the task at hand, is not necessarily aware of their presence in a virtual world and may not be appreciating the scenes or world around them. Presence, thus, differs from flow. The International Society for Presence Research ([sa]) notes that presence occurs if a person feels as if they are in the depicted environment, and “part or all of the individual’s perception fails to accurately acknowledge the role of the technology in the experience.” Flow in video games may bring on a similar feeling as presence – in that an individual may forget about the media’s role while interacting and focusing on a specific task. However, they may not feel that they are *in* the environment.

An example of this is mini-games within video games, which refer to games or activities players can engage with, within a game – such as lockpicking in *The Elder Scrolls V: Skyrim* (2011), which entails a player walking up to a door, and pressing the interact key. At this point, the game pauses while a window pops up, presenting a

close-up of the lock and lockpicking tools (Figure 9). The player must find the ‘sweet spot’, by moving the lockpick various degrees and slowly turning the lock without breaking the lockpicks (which are found and looted across the game world). The task has various difficulty levels as the player progresses and their lockpicking skill levels up. Lockpicking can arguably bring on a flow state, as the player tries to progress without losing too many lockpicks and working towards their reward (getting through the door or loot chest). However, the lockpicking minigame potentially also disconnects the player from the game world. The mini-game appears like a pop-up window, as the player is unable to see their character engaging while the game world around them pauses (so as not to interrupt the activity).



Figure 9: Lockpicking a locked chest, *The Elder Scrolls V: Skyrim*, 2011.
Screenshot by author.
(Lightened by author).

Alternatively, playing golf, tennis, or darts in *Grand Theft Auto V* (2013) makes more use of the game world. The player's character is seen striking the golf ball and reacting to good or bad shots, while the game world around continues as normal – there is no disconnect. In other words, it could be argued that presence within a virtual game world is better or more consistently achieved (and maintained) if a player can engage in ‘flow-state’ activities seamlessly within the game world.

The *Half-Life* series (1998-2020) ostensibly attempt to achieve both sensations, i.e., flow and presence. Throughout the games, the player has ‘resting points’ in the form of puzzles to solve. Since the physics system (as discussed earlier) was a significant innovation at the time, many puzzles in *Half-Life 2* (2004) involved some physics-based puzzle for the player to perform before proceeding. These puzzles varied from stacking brick to counterbalance a platform for the player to proceed to solving electricity issues, for which the player needed to provide power, for example. These ‘flow-states’ are achieved while utilising the game world’s physics. They make the world feel more authentic and substantial, thus elevating presence. Valve is recognised for the well-crafted pacing in their games (due to extensive playtesting during development), generally in the form of puzzles the player needs to solve to progress.¹⁰ *Half-Life 2* (2004) developer Josh Weier (in Valve 2004:275) explains the importance of puzzles in games as means for playthrough pacing and world appreciation. He writes:

“Puzzles are really useful devices for getting players to calm down after an exciting part of the game and focus on the details of the world around them. We build all this detail into the world and in many cases the player whizzes through it at breakneck pace. Puzzles and ‘down time’ are like a sorbet in a multi-course meal, in that they allow the player to better appreciate whatever action comes next. Without those pacing contrasts, everything becomes a numbing blur of relentless action, which winds up being fatiguing and not very fun after a while.” (Valve 2004:275).

These brief, but effective puzzles are multipurposed: they provide a brief rest for the player and assist in the pacing of the game, and they attempt to induce a flow-like state by engaging the player in increasingly challenging puzzles while utilising the virtual space, allowing the player to appreciate and feel present as he or she engage with the environment to solve the puzzle.

Csikszentmihalyi (2008:72) explains that activities such as playing games, making music, dancing, and other activities that induce flow experiences are “designed” to do so. He writes:

They have rules that require the learning of skills, they set up goals, they provide feedback, they make control possible. They facilitate

¹⁰ As part of the game development process, *playtesting* involves playing a new game to improve upon various aspects, including ‘bug’ fixing and the user experience.

concentration and involvement by making the activity as distinct as possible from the so-called “paramount reality” of everyday existence (Csikszentmihalyi 2008:72).

Thus, playing a video game can lead to a flow experience, as a video game may require full attention and cognitive aptitude. A flow state may be amplified in certain scenarios within a game through tasks, challenges, puzzles, or fights. Therrien (2014:452-453) refers to this as a “flow channel”, in which ideal progression occurs when challenge incrementally increases with experience. This incremental increase of challenge is apparent even in the early video game, such as *Tetris* (1984), which demands quick thinking and reaction as the levels get higher and faster.

Game developers have designed multiple systems to achieve this challenge-based immersion and must keep innovating to keep games fresh, engaging and unique. While the *Half-Life* series (1998-2020) is well known for its challenges in the form of puzzles that the player must solve to proceed, *Half-Life: Alyx* (2020) innovates in this area, as its puzzles are based in VR with the use of the hand-trackers and physical movement. HCI professor and psychologist Mark Blythe and Marc Hassenzahl (2003:92) suggest these flow experiences may occur in non-recreative or more serious contexts and refer to “micro-flow[s]”, as “shallow, short-term pleasures”, which Ermi and Mäyrä (2005:5) suggest more closely reflects challenge-based gameplay experiences. As there is a multiplicity of games that vary across genre, style, and whether they are single-player or multiplayer, the variety of challenges and progression strategies designers incorporate is vast.

3.5.3 Imaginative immersion

The third dimension in Ermi and Mäyrä’s (2005:8) SCI model is *imaginative immersion*, which is more familiar and relevant to less-interactive media such as cinema or literary works. According to Therrien (2014:454), the objective of mediated immersion is to “visit another world”, and this dimension moves away from “illusionistic qualities” used in a medium to transport a user to a world but instead refers to the transportation methods used by the user’s imagination. Video game scholar Dominic Arsenault (2005:1) suggests this type of immersion be referred to as “*fictional immersion*” rather than *imaginative*, as he argues that one can be immersed in a story without the use of

imagination, as narrative consumption is not entirely passive; “readers and spectators are constantly mapping mental schemas [or] forming hypotheses on the outcome of the plot ...”. Arsenault (2005:1) further argues that imaginative immersion “implicitly relies on the concept of fictionality”, a concept which will be further discussed in Chapter Four. Professor of game design Ernest Adams (2009:26) refers to this type of immersion as *narrative immersion*, which he defines as “the feeling of being inside a story, completely involved and accepting the world and events of the story as real. It is the same immersion as produced by a good book or movie, but in video games, the player is also an actor within the story.” Nilsson *et al* (2016:114) state that there are several names for this type of immersion, all of which refer to the same sensation. In this sense, immersion is often used synonymously with phrases like “getting lost” or “drawn into” – expressions often used when marketing popular media (Jackman 2015:856).

While the SCI model encompasses many of the views of immersion that have previously been discussed, Ermi and Mäyrä (2005:8) do not distinctly acknowledge the concept of presence as being critical to the gameplay experience. While they acknowledge the similarities of presence and immersion, Ermi and Mäyrä (2005:8) argue that presence “relies heavily on the metaphor of transportation...”, and so they “...prefer using the term ‘immersion’, because it more clearly connotes the mental processes involved in gameplay.” This preference suggests a synonymous understanding of the two concepts, to which I have argued that while there is overlap, they refer to distinctly different phenomena. Within narrative-based gameplay experiences, one could argue that the game is designed for the player to feel a sense of presence in the world, to feel part of it. Furthermore, since the concept of presence is pivotal to a VR experience (Biocca 1997:13), it is also critical to the VR gameplay experience and thus cannot be overlooked. Before moving the discussion onto immersion in VR, the following section analyses the Player Involvement Model to understand video game immersion.

3.6 The Player Involvement Model

In his book titled *In-Game: from immersion to incorporation*, video game researcher and designer Gordon Calleja (2011:3,35) recognises the difficulties regarding

understanding the phenomena of immersion and presence, particularly with regard to their constitution and how there is a “scarcity of comprehensive conceptual frameworks that can be employed to understand the multiple facets of player involvement and, consequently, immersion in digital games and virtual worlds.” As such, Calleja (2011:31) acknowledges the SCI’s model’s contribution to the area of immersion, and its role in a player’s experience of a game; he writes: “Ermi and Mäyrä’s ‘gameplay experience model’ makes an important contribution to the field by acknowledging that involvement is a multidimensional phenomenon. It also, importantly, emphasizes the difference between involvement in games and involvement in other media.” Players may feel immersed through a combination or overlap of the various dimensions discussed in the SCI model. However, Calleja’s (2011:31) concern with Ermi and Mäyrä’s model is that they formulated the main three categories (audiovisuality, challenges, fantasy), which were then used to construct the three dimensions of immersion (sensory, challenge-based and imaginative), from the accounts of children’s experiences playing video games. The issue is that without theoretical knowledge, “the general populace” may arrive at more generic conclusions about immersion, particularly as the term that is also used colloquially, including in the marketing of video games (Calleja 2011:25,31-32). However, one may argue that the SCI model’s three dimensions of immersion have also been reflected in literature on immersion in some form, as previously seen in Chapter Two and this chapter. What the model does, is demonstrate how the phenomenon of immersion can be experienced at multiple levels, often simultaneously, and that categorising its dimensions and understanding it in this way, begins to lessen its often-ambiguous delineations and solicitations of the experience of immersion.

Like the SCI model, the Player Involvement Model approaches the player experience of immersion and presence through various dimensions and not in isolation (Calleja 2011:37). More specifically, Calleja’s (2011:36-38) model has six dimensions of involvement, namely: kinesthetic, spatial, shared, narrative, affective, and ludic involvement, which are experienced unconsciously and work in relation to each other.

Furthermore, the model also considers the player’s experience outside the act of playing, as well as during gameplay, as Calleja (2011:4) explains:

Each of these [dimensions] is considered on two temporal phases of engagement, macro-and micro-involvement. Macro-involvement encompasses all forms of involvement with the game when one is not actually playing. These include the initial attraction to the game, reasons for returning to it, participation in the community it fosters, and other off-line plans and thinking that surround the actual instance of gameplay. The micro-involvement phase describes the qualities of moment-to-moment involvement within the respective dimensions.

Macro involvement may include when a player reminisces about the game before or after playing it. According to Calleja (2011:37), this could also include planning new strategies or tactics for future games or thinking over the narrative or affective significance of the game. Micro involvement refers to how each of the six dimensions are considered during actual gameplay, in relation to each other, to form the player's experience (Calleja 2011:37). Figure 10 depicts the six dimensions of Calleja's (2011:38) Player Involvement Model, which are considered on the two temporal phases of engagement, namely micro and macro involvement. The six dimensions should be understood as being "layered and transparent", and influence how the other layers are "perceived and interacted with" (Calleja 2011:38).

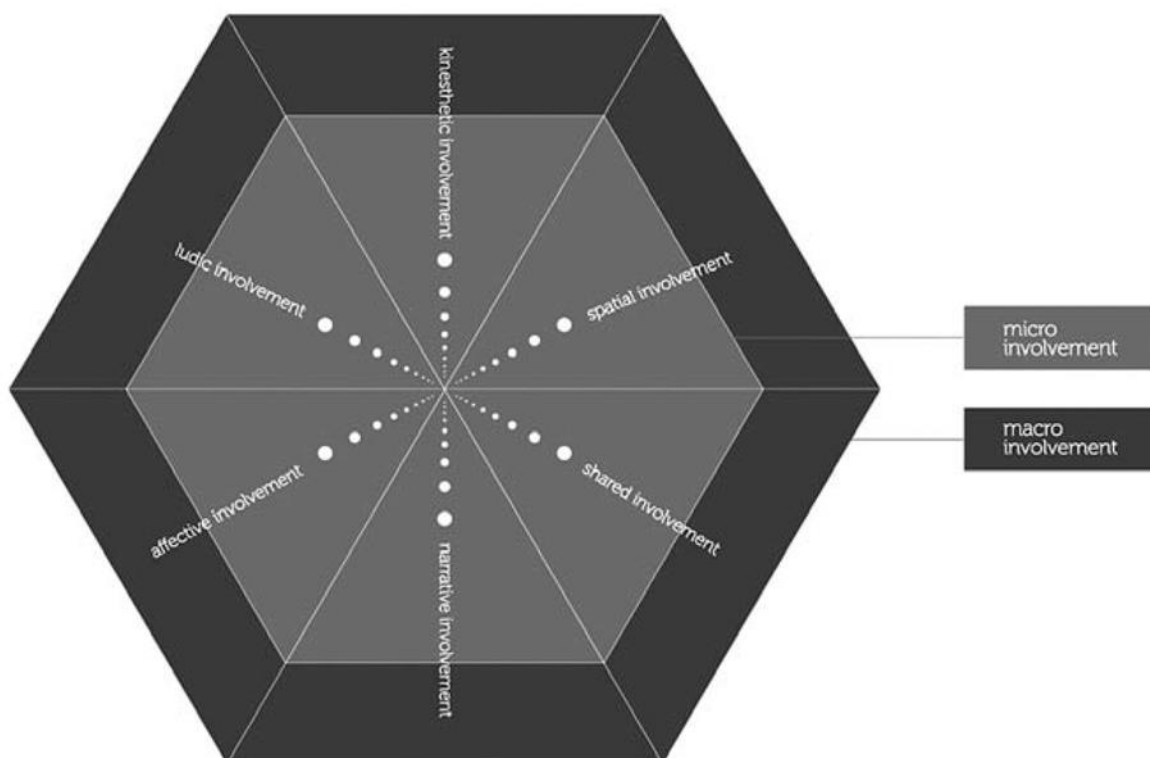


Figure 10: Calleja, the six dimensions of immersion in the Player Involvement Model, 2011. (Calleja 2011: 38). Screenshot by author.

The following sub-sections explore the 6 dimensions of the Player Involvement Model in more detail. Since this study will analyse immersion in video games, it is important to understand the various dimensions of the gameplay experience that lead to the phenomena.

3.6.1 Kinesthetic involvement

Kinesthetic involvement includes all the aspects involved in the movement and controls the player has in a given game, including learning game controls, through to the mastery and “fluency of internalized movement” (Calleja 2011:43). When considering the kinesthetic involvement of a player, at a *macro* level, Calleja (2011:55), explores its relation to a player’s agency within the game world. Video games’ distinctive attribute of interaction allows players to exert varying levels of agency, influencing events, stories, and actions, some of which may be “unknown and unintended” (Calleja 2011:57). Considering kinesthetic involvement at a *micro* level involves looking towards the player’s movement and control within a game (Calleja 2011:59). “The link between player and game”, Calleja (2011:62) explains, “is created through the kinesthetic relationship between player and avatar.” As such, Calleja (2011:63) explains the three modes of game control utilised in video games; *symbolic control*, in which buttons and joysticks are mapped to exert control in the virtual world; *symbiotic control*, in which the player can control an avatar with physical movement; and *mimetic control*, in which part of a player’s physical movement is recreated in a game world, normally through a form of controller, such as a racing steering wheel or Wii remote. Calleja (2011:65) highlights a shift towards a more *symbiotic* relationship between the player and playable character accordingly:

As games develop technologically, we are seeing a shift from symbolic to symbiotic control. Importantly, the further one moves toward the symbiotic end of the continuum, the more appealing the form of control tends to be for casual gamers and nongamers. This is evident both in the forms of games which are developed for platforms like the Wii and the demographic Nintendo’s marketing campaigns are clearly aimed at.

VR currently leads in symbiotic control, by tracking a player’s physical position and movements, using trackers, controllers, and AI to control game characters/avatars. As noted in the previous chapter, Skalski *et al* (2011:225) argue that “game controllers

higher in natural mapping will lead to more perceived controller naturalness, which should positively affect spatial presence and resultant game enjoyment”. VR allows users to interact in the virtual world with physical bodily motion – moving one’s hand to pick up virtual objects in VR comes more ‘naturally’ than pressing a dedicated shortcut on a keyboard. This concept will be further discussed in section 3.8.

3.6.2 Spatial involvement

Spatial involvement refers to the player’s “engagement with the spatial qualities of a virtual environment in terms of spatial control, navigation, and exploration” (Calleja 2011: 43). When analysing spatial involvement in the *macro* phase, Calleja (2011:77) considers “attractions of spatial exploration and the pleasures of discovering and getting lost in a game environment.” The *micro* phase considers spatial engagement within virtual environments. As this study analyses narrative-based video games with explorable and interactive virtual worlds, world-building, and the player’s engagement with the virtual environment are discussed in further detail in Chapter Four.

3.6.3 Shared involvement

Shared involvement considers the player’s awareness and interactions with other agents (players or NPCs) within a virtual world (Calleja 2011: 43). The *macro* phase of shared involvement considers the socialising aspects of game worlds (Calleja 2011:93). Comparable to what Heeter (1992:263,266) calls “*social presence*”, as referred to earlier in the study, Calleja (2011:94) argues that sharing a virtual world with others affects the player’s experience of a space, he writes:

Even when players are not collaborating directly with others or competing against human opponents, the presence of their avatar creates a broader engagement with the world community. The presence of other players as a potential or actual audience considerably modifies how we conceive of and interact with the game environment.

Seeing other plays running around in a game world like *World of Warcraft* (2004-present), for example, makes the world feel populated, and the player part of a vibrant society. This ‘shared’ sense of presence can also be experienced from NPCs, such as the character of *Alyx*, in *Half-Life 2* (2004). Throughout most of *Half-Life 2* (2004),

Gordon Freeman (the player) ventures alone. However, there are a few chapters in which Alyx Vance (an NPC) accompanies *Gordon*.¹¹ Throughout these sections, Gordon's usually lonely and silent adventures feel very different. Not only does *Alyx* assist in combat and puzzle solving, but she is also company for the player, as *Gordon Freeman* is famously mute.¹² Calleja (2011:100-111) further explores the dimension of shared involvement through three 'sub-dimensions', namely 'cohabitation' in which the other agents (players or NPCs) of the game world make the virtual environment feel like a shared, inhabited space, 'cooperation', which refers to the collaboration between players in multiplayer games towards shared goals, and 'competition', referring to the competitive aspects brought about by the agents in the virtual world - from the competitive elements in multiplayer games to competing with AI enemies in single-player games.

3.6.4 Narrative involvement

Within the Player Involvement Model, narrative involvement seeks to analyse all the narrative and story elements both rooted within the game, as well as narrative derived from the player's own experience (Calleja 2011:44). In the *macro* phase, Calleja (2011:113) explores the *importance* of narrative and the player's experience of the story more broadly, (re)iterating the infamous narratology versus ludology debate in early video game studies, that concluded by acknowledging both 'sides'; while video games are a capable medium for creating compelling stories, they cannot be reduced only to a story-telling medium. The *micro* phase of narrative involvement looks more closely at the player's narrative experience during gameplay, or what Calleja (2011:120,124) refers to as "scripted narrative", referring to the narrative and story elements embedded into the game, as designed by the game creators, and "alterbiography", which refers to the individualised experience a player might have, through interactions throughout the game world.¹³ Since this study analyses

¹¹ Alyx accompanies Gordon throughout the majority of *Half-Life 2: Episode One* (2006), to escape City-17, which makes for a very different experience than the normally quiet, solo experience of the other games.

¹² Gordon Freeman famously does not speak throughout the franchise. While there is no clear answer from Valve as to why, many believe it is for immersion purposes. The player's words are supposed to 'fill in' for Gordon, the 'vehicle' for the player.

¹³ Calleja's (2011:120,124) two distinctions of game narrative; 'scripted' versus 'alterbiography', is comparable to Salen and Zimmerman's (2004:26:7) and Chandler's (2007:102) two narrative experiences in video games – concepts I return to in the following chapter.

immersion in narrative-based (VR) video games, Chapter Four explores narratological elements more in-depth.

3.6.5 Affective involvement

Affective involvement looks at the “various forms of emotional engagement” within, and beyond a video game (Calleja 2011:44). In the *macro* phase, Calleja (2011:135) argues how the affective involvement dimension looks to understand the player’s emotional states, how video games are used as means of escapism, and the importance, and affect, on a player’s emotional responses to the game. The *micro* phase looks towards a player’s affective responses to the various scenarios within a gameplay experience.

Calleja (2011:139-140) argues that while video games are often designed to elicit emotional responses within their virtual worlds, game designers cannot account for all the affective responses players will have towards their game environments, and some responses that occur outside gameplay. For example, Calleja (2011:140) refers to a player’s account of their favourite *World of Warcraft* (2004-present) area, and how some players pass their playtime by simply enjoying the world and watching other players.

Calleja (2011:146) explains the importance of considering a player’s affective response in video games:

Digital games are not only game systems but, more importantly, are digitally mediated experiences that aim to satisfy the desires generated by movies, literature, or free-ranging fantasy. The affective-involvement dimension thus encompasses various forms of emotional engagement, ranging from the calming sensation of happening upon an aesthetically soothing scene, the adrenaline rush of an on-line competitive first-person shooter, or the uncanny effect of an eerie episode in an action-horror game.

The affective responses elicited by video games are perhaps one of the prevalent incentives for playing and returning to them, as, according to Shinkle (2005:2), video games rely on affective influence for positive game experiences. I find myself replaying

certain sections of a game, including *Half-Life 2* (2004), because of how it makes me *feel*. Game affect can also be more subtle – unintended or non-conscious responses to interactions within a game. The sensations of anxiety, excitement, and adrenalin after having won a player-versus-player encounter in the *Rust* (2013) – an unsympathetic open-world survival game, in which players can fight each other, and can loot the contents of their victims – who could potentially lose hours’ worth of progression in an instant – are examples of ‘feelings’ attributed in this affective dimension. To further reiterate Shinkle (2005:2,3), game designers are unable to programme desired affective responses into a game; these are the “phenomenological aspects of interactivity that are difficult to describe or to model theoretically, but which nonetheless make a game come alive.”

3.6.6 Ludic involvement

Calleja’s (2011:44) ludic involvement dimension looks towards the aspects of play within video games, specifically, a player’s engagement and decisions made throughout the game. The *macro* phase within this dimension concerns a player’s “motivation for game engagement provided by the pursuit of goals and the attainment of associated rewards” (Calleja 2011:149). The *micro* phase involves the gameplay decisions and the consequences of these decisions employed to achieve these goals. The nature of these goals depends on the type of genre of the game itself. As Calleja (2011:150) argues, these goals may be “self-assigned, set by the game, or set by other players.”

3.7 The SCI model versus the Player Involvement Model

The SCI and the Player Involvement Model both make important contributions to the understanding of a player’s immersive gameplay experience. Both models approach the phenomenon of immersion not as a “monolithic” sensation but instead as the result of multiple experiences through several overlapping dimensions (Calleja 2011:31,173). While the SCI model encompasses several dimensions expressed in the Player Involvement Model, the latter importantly distinguishes between various dimensions that the SCI model often melds together. For example, the SCI model’s imaginative immersion encompasses several aspects that address a player’s

imagination, rather than senses, including narrative and world-building. The Player Involvement Model individualises these themes into separate dimensions – namely, spatial and narrative involvement. This distinction allows researchers to further consider and analyse the game’s different (immersive) aspects individually. While the areas of narrative and world-building can share similarities and overlapping qualities, as the experience of the game’s story is influenced by the design of the game world, the approach towards these areas within the game design process is commonly distinct. In light of this, and since this study will look at a VR video game (and franchise) that uses narrative and world-building very intently, I return to these two areas in more depth in the following chapter.

Moreover, the dimensions not expressed in the SCI model, such as kinesthetic, shared, and affective involvement have been discussed earlier in the chapter, as these dimensions have an apparent impact on a player’s immersive gameplay experience, which the Player Involvement Model affirms. The Player Involvement Model also considers each dimension outside the act of playing, both before and after gameplay. As much planning, thought, and comprehension of a game are affected by the moments out of play, Calleja (2011:37) considers each dimension through the two temporal phases; *macro involvement* (outside of gameplay) and *micro involvement* (during gameplay). Considering each dimension outside actual gameplay experiences allows researchers to more broadly reflect on underlying conditions that may inform a player’s in-game decisions and overall experience.

A major deviation between the two models is the understanding and application of the phenomena of immersion and presence. While Ermi and Mäyrä (2005:4) recognise the overlapping and synonymous use of the two terms, they “prefer using the term ‘immersion’ because it more clearly connotes the mental processes involved in gameplay.” Using one term over the other in this way highlights the difficulty in untangling the two concepts, and almost repudiates the literature that differentiates between the two, as established in Chapter Two. Nevertheless, Ermi and Mäyrä’s use of *immersion* can be understood as being *a perceptual response*, *a response to narratives*, and *a response to challenges* (Nilsson *et al* 2016:111). On the other hand, however, Calleja (2011:169) puts forth the term *incorporation* as an alternative metaphor to immersion and presence and defines it as: “the absorption of a virtual

environment into consciousness, yielding a sense of habitation, which is supported by the systemically upheld embodiment of the player in a single location, as represented by the avatar.” *Incorporation* essentially encompasses descriptions and sensations found in immersion and presence, and thus, according to Calleja (2011:3), “avoids a number of problematic connotations that are present in the other two terms and, more importantly, provides a more robust concept for researchers to build on.” One major problem that *incorporation* addresses, according to Calleja (2011:167), is the understanding of the virtual and the real world as being two different experiences. Calleja (2011:168-169) argues that, contrary to much of the “exclusionary” approach in academic literature on experiences of presence and immersion, in which one ‘leaves’ their reality to experience another one, *incorporation* rather understands the feeling as an extension of our lived reality. Calleja (2011:168-169) explains:

The metaphor [incorporation] we should use to understand the sensation of inhabiting a virtual environment would best draw upon our knowledge of the experience of inhabiting the everyday world. [...] Virtual environments are an important part of our everyday life and are more productively seen as deeply interwoven with our sense of reality. A metaphor of virtual world habitation, therefore, should draw upon the experiential gestalts of everyday habitation; that is, a view of consciousness as an internally generated construct based on the organization of external stimuli according to existing experiential gestalts (Dennett, 1991; Damasio, 2000; Lakoff and Johnson, 2003).

This way of understanding the virtual as an *extension* of one’s *real*, lived experience is established in phenomenological philosophy, which is explored in further detail in Chapter Five. As such, Calleja (2011:169-170) describes the metaphor of *incorporation* as follows:

... an intensification of internalized involvement that blends a number of dimensions. It is a synthesis of movement (*kinesthetic involvement*) within a habitable domain (*spatial involvement*) along with other agents (*shared involvement*), personal and designed narratives (*narrative involvement*), aesthetic effects (*affective involvement*), and the various rules and goals of the game itself (*ludic involvement*).

As an alternative to the metaphors of immersion and presence, incorporation is a particularly useful concept, as it focuses on the player’s experience and involvement within video games specifically, while immersion and presence have been applied

more broadly to a spectrum of media. The lack of consensus in academia regarding the meaning and delineations of immersion and presence makes the terms more complicated to measure and analyse. As such, Calleja (2011:32-33) identifies four challenges related to immersion and presence and how his metaphor of *incorporation* addresses each challenge.

- 1) *Immersion as absorption versus immersion as transportation*: Calleja (2011:32) highlights the lack of consensus with regards to *what* a user's experience of immersion *is*; a level of engagement with a medium versus transportation to another reality. Incorporation, according to Calleja (2011:172), "describes the nature of a player's *involvement* with a game..." through multiple dimensions, at the two temporal phases of engagement (micro and macro), takes the latter view of immersion, as a sense of transportation. However, Calleja (2011:172) emphasises that "the player is not merely transported to a virtual world, but also incorporates that world into her own consciousness in a dual process." This view or understanding of *incorporation*, as considering *both* the player being transported *into* the game world and the player in front of the screen, is reflected in literature on video game embodiment (through the lens of phenomenology), which is further explored in Chapter Five.
- 2) *Immersion in non-ergodic media*: Calleja (2011:33) argues that the challenge of understanding immersion becomes significantly more complicated when one tries to apply the multidimensional concept to a variety of media with "varied qualities and affordances for engagement". As such, Calleja (2011:173) argues that "incorporation precludes its application to any non-ergodic media, such as movies or books", as the dimensions that make up for *incorporation* require a medium that acknowledges a player's presence and agency within the virtual world. Therefore, the model is more suitable for its applications in media with virtual environments, such as video games or virtual reality. Being more specific to interactive new media such as video games allows incorporation to more explicitly analyse the many of dimensions relevant to the immersive gameplay experience.
- 3) *Technological determinism*: Calleja (2011:33) argues that while it is important to consider the particulars of the medium, the experience of the medium itself cannot account for the entire gameplay experience. This contrasts Slater's (1997:2-3) view of immersion, as an "objectively measurable property of the

system". For example, the player's subjective experience and interactive role within the game world is crucial to the understanding of the gameplay experience (Calleja 2011:173). Similarly, as per Nilsson *et al*'s (2016:110) taxonomy of video game immersion, prominent definitions and studies of immersion account for the player's "response" to various dimensions of the game, in the understanding of an immersive experience. As highlighted in this study, the lack of consensus around the meaning of immersion across a span of disciplines over the past two decades necessitates scholars to define their understanding and use of the phrase in studies.

- 4) *Monolithic perspectives on immersion*: Calleja (2011:33) argues that immersion is "made up of a number of *experiential* phenomena rather than being a single experience we can discover and measure". While other perspectives on immersion, such as Witmer and Singer (1998), McMahan (2003), Arsenault (2005), and Ermi and Mäyrä (2005), do attribute the phenomena to the experience of various dimensions, Calleja's (2011:38) Player Involvement Model discerns the experience further, through its six dimensions, which are experienced both within and outside of gameplay. Considering a player's kinesthetic and affective involvement for example, allows for new lines of enquiry when analysing a player's immersive experience.

Consequently, Calleja's Player Involvement Model and metaphor of incorporation, as an alternative to immersion and presence, makes valuable contributions to understanding a player's engagement and furthers research in the field by establishing a model specified for analysing the multifaceted video game experience. As Calleja (2011:32) argues, studies that analyse immersion must acknowledge and address its correlation with the concept of presence and establish upfront how these terms are understood and approached. Thus, Calleja's term 'incorporation' essentially encompasses descriptions and sensations found in immersion and presence to avoid any implications.

While it is useful to have a term tailored for analyses of video games specifically, in this study, I have adequately addressed the related terms of immersion and presence, and throughout the respective chapters, have further established their corresponding relations to the video game experience. Moreover, since I contextualised and analysed

the evolution of immersive strategies in image-making – which Calleja (2011:33) refers to as “non-ergodic media” – applying his new term of ‘incorporation’ to immersive art may not have been appropriate, tailored as it is towards video games.

Furthermore, what Calleja does not discuss in his book is how the medium of virtual reality, and a user’s ‘incorporation’ within VR gaming experiences, can be considered within the model. This is likely because in 2011 when the book was published, virtual reality had yet to reach the mainstream consumer and gaming market, which only began around the launch of the original Oculus Rift in 2016 – as established in Chapter One. Moreover, while the Player Involvement Model expands on previous models such as the SCI model, to attempt to account for more of the dimensions a player experiences in video games, there is room yet for further expansion and development.

For example, Calleja’s ‘ludic involvement’ dimension is centred around analysing player choice and the fulfilment of goals. Following Ermi and Mäyrä’s (2005:7) ‘challenge-based immersion’, I would argue that this sort of (ludic) dimension should include, or in fact be centred around, the *game’s ludological elements*, such as the challenges, progression structures, and the systems that pivot around video game mechanics more specifically. Additionally, though Calleja (2011:169) alludes to a sense of embodiment in his definition of the term ‘incorporation’, there is no dimension that allows researchers/players to account for or analyse this phenomenon further, particularly with regard to how video games may present virtual embodiment as an immersive strategy.¹⁴

The player’s *sensory* experience is also not accounted for in the Player Involvement Model. At its most basic level, immersion has been understood to engage our senses, as discussed and illustrated throughout Chapter Two. While Ermi and Mäyrä’s (2005:7) ‘sensory immersion’ does account for the player’s sensory experience, it is ‘limited’ to the audio-visual aspects of a game and does not include how touch and haptics affect immersion. For example, in Chapter Two, I discussed how film has experimented with the sensation of touch in the form of haptic feedback, a feature that has since been widely adopted in the development of video game controllers.¹⁵

¹⁴ In Chapter Five I discuss the concept of digital embodiment with regards to video games at length.

¹⁵ Touch and haptics with regards to VR will be further expanded upon in the following section, and in

Thus, to analyse the nature of immersion as experienced in (VR) video games, it is necessary to develop a new (or alternative) model that revises and expands upon these two models. This new model will take inspiration from Ermi and Mäyrä's SCI model and Calleja's Player Involvement Model to establish new immersive dimensions not accounted for in these models and expand upon the accounted dimensions by employing insights discussed throughout the study. An 'updated' model is also needed to account for the advent of immersive media such as VR (and potentially AR), which should be reflected in its dimensions. The development of this model is the aim of Chapter Six. Before that, however, it is first necessary to discuss immersion as it pertains to VR more specifically.

3.8 Immersion in Virtual Reality

In what Grau (2003:172) refers to as an “alliance of art and technology”, virtual reality derives from revolutionary developments in the economy (primarily due to decreasing prices of increasingly powerful computers) and military technology. In the last two decades, HMDs were used to simulate and prototype cars, boats, and planes in VR (Lanier 2017:12). Grau (2003:172) notes that “even back in 1991, [VR simulations] were capable of such realism that the pilots' adrenalin levels were higher in the simulators than when flying real missions during the Gulf War.” Film and media scholar Barbara Klinger (2013:428) suggests that much like the early 3-D cinema of the 1950s, the current 3-D climate competes with innovations and technology that strive to bring “new spatial experience[s] to audiences”. AR and VR technologies are at the helm of converging real and virtual spaces and are being heavily invested in by large tech companies. For example, Mark Zuckerberg (quoted in Marques Brownlee 2020) suggests that AR and VR technologies are the next ‘big’ media platforms capable of “delivering this feeling of presence”. From its inception, “presence was a design goal of virtual reality”, Biocca (1997:13) writes, and “it can be argued that advanced forms of virtual reality only differ from previous media in quantity and quality of presence.”

Virtual reality is still relatively controversial within the entertainment industry – specifically the video gaming realm.¹⁶ Like early 3-D cinema, it has been met with

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¹⁶ Video game reporter for *The Washington Post*, Gene Park (2020) raises a common felt sentiment

cynicism, and often dismissed as a gimmick or a fleeting illusive trick without substance. Added to this is the cost, as VR is still considered expensive, and PC-VR requires a powerful machine to run it. However, increasingly VR gaming has become more conventional – as evidenced by the success of Valve’s *Half-Life: Alyx* (2020), which has been well-received across the gaming world and is considered the “#1 Best PC Game of 2020” (Metacritic 2020: [sp]). VR is also getting cheaper, with the popular Meta Quest 2 HMD launching at \$300. This indicates the capabilities of the VR medium and suggests where it could lead. In the previous section, I focused on the immersive strategies in video games, illustrated by particular examples of video games, mainly from the *Half-Life* series (1998-2020). In this section, I focus on the immersive strategies that the medium of VR employs.

3.8.1 Virtual Reality immersive strategies

The premise of VR is to place the user in a virtual space by blocking out external diversions of the physical world, and much like the panorama, attempts to fill the viewer’s entire field of vision with an artificial world. Pivotal to any VR experience, more so than visual fidelity (Lanier 2017:280), is the novelty of user interaction in the form of bodily movement tracking. Slater (2018:432) argues that VR is an experience where the user’s “perception is a function at least of head tracking”. VR HMDs use head-tracking sensors to track the user’s head, so the screen and virtual environment change according to the user’s head movement; thus, the user habitually feels part of the virtual space. Audio, and even music from the virtual world, is also augmented by the headset. The user’s movements, positioning, and reactions brought about by environmental interaction are simulated and (unconsciously) heard, bringing the world to life and perpetuating the immersive experience.

Research about video games often refers to the ‘camera eye’, which describes the first-person perspective (eyes) in games. The camera eye is often argued to perform more like a camera “that does not imitate the human eye” (Girina 2015:218-219). The ‘camera eye’, which does not blink or need to rest, employs camera rules borrowed

that the platform of VR is costly and many of the games are essentially demos: “[t]he headsets are expensive, the computers to run them even pricier. And until recently, most virtual reality games have been canned, short experiences and arcade-like shooting galleries”.

from cinematic trends, such as focus, depth of field, and motion blur for immersive, aesthetic purposes, as well as to direct player attention to certain aspects in the virtual world (Girina 2015:218-219). The movement of the ‘camera eye’ within video games resembles cinematography within cinema more closely than our own eyes. Girina (2015:218) argues that when we look at a *slanted* image in the real world for example, we may tilt our head towards our shoulders to compensate for the image’s orientation. These subtle movements may disorientate viewers or players within a 2-D format. In VR video games (specifically FPV), however, the ‘camera eyes’ are almost entirely directed and influenced by the user and more closely resemble how one sees through human eyes. Within VR, a user’s entire field of view (FOV) is encompassed by the HMD (the *Oculus* headsets have a FOV of around 90°, with more expensive headsets having higher fields of view). As such, when the user blinks, it could seem like blinking in the real world, as they have embodied the entire FOV.

Furthermore, the lifelike movement of the ‘camera eyes’ will intrinsically be incorporated in VR, as the user can turn, crouch, or lean their head and direct their vision as they would in the physical world. The embodied experience within VR endeavours users to engage within the virtual world as naturally as they would in the physical. Since embodiment plays a significant role in the experience of a video game, arguably more so within VR, literature on virtual embodiment is discussed in more detail in Chapter Five.

VR affords users the ‘freedom’ and agency to (inter)act or *respond* in more familiar or bodily ways. When considering VR, Slater *et al*’s (2010:2) revised conception of presence as a user’s *response* to a system, reacting and behaving in a virtual environment as if it were physical reality, becomes more explicable. This ‘response’ could be as simple as flinching, for instance, when the player (involuntarily) reacts to something flying at them (which has happened to me a few times in VR, more so than any computer game, VE, or mediated experience). Alternatively, it could be a more voluntary response, for instance when players engage more naturally and instinctively within an environment, such as ‘naturally’ interacting with the ‘physical’ objects in *Half-Life: Alyx* (2020), as depicted in Figure 11 – which shows how shelves can be cleared by sweeping one’s arm across them, even if one can only see one’s hand and not their entire arm. This instinctive response could also be more affectual, or emotional,

towards the narrative, events, and performances of other characters, such as exhibiting the *feeling* of fear or excitement.



Figure 11: Interacting with objects on a shelf with physical hand movements, in search of ammunition, *Half-Life: Alyx*, 2020. Screenshot by author. (Lightened by author).

Within the context of reaction and response, Shinkle (2008:907) explores the bodily sense of proprioception and its expression within video games, arguing that meaningful and “affective” gameplay involves not just the events on screen, but the “physical activity of gameplay itself.” Referred to as the ‘sixth sense’, or kinaesthesia, proprioception relates to our body’s conscious (and unconscious) physical awareness and sensory bodily response, using “sensory feedback mechanisms which determine the body’s location and movement in space” (Shinkle 2008:907). Within gameplay, Shinkle (2008:908) argues that video games offer a combined experience, “linking perceptions, cognitions and emotions with *actions*”. This is arguably perpetuated within VR experiences, as gestures and reactions can be engaged and incorporated into the game more physically.¹⁷

¹⁷ According to Shinkle (2008:910), “[g]estures are meaningful bodily actions that reflect – on both conscious and unconscious levels – our expressive intentions. Most of what we are unable to communicate directly through speech is communicated indirectly, through body language”. In non-VR games, player communication through gestures mostly comes from predetermined hotkeys that the player has to consciously press to emote bodily interaction, which is far less natural and does not allow for genuine expression.

Shinkle (2008:912) further argues how the expression and design of the controller (which bridges the user between the real and virtual worlds) should allow the player to “feel” or “be” their avatar/character. “[P]layer’s emotional investment in a game,” Shinkle (2008:912) writes, “their level of immersion, and enjoyment, may all be considerably enhanced if gameplay comprises dynamic and meaningful *physical* actions.” The keyboard allows for many buttons to be dedicated and programmed towards avatar movement, control, or predetermined motions, and the mouse for precision accuracy. Console controllers and simulation systems, on the other hand, have fewer buttons but have joysticks for more precise or subtle actions and methods of haptic feedback, in the form of vibrations and jolts, to simulate the sensation of touch during interactive play. When a player fires a weapon, for example, the controller may vibrate to simulate recoil, or when virtually racing using a steering wheel simulation, the wheel may respond to bumps or sharp turns utilising force feedback. However, these systems lack “expressive power”, thereby limiting player emotive response (Shinkle 2008:912). As Shinkle (2008:912) argues:

An ideal interface should offer several things to the player [...]. It should also support creativity and agency in gameplay, allowing the player to find her/his own way of doing things, rather than simply following a set of established protocols and narrative events [...] an interface is considerably enhanced when actions and gestures no longer require mediation through an electronic switch.

Shinkle’s (2008:912) arguments are directed towards traditional video game controllers, which she contends limit the player’s expressive capabilities. At the time she was writing, the Nintendo Wii’s remote control (which supported wireless motion control and rotation in three dimensions) was an innovation that sought to add a sense of physicality to game interfaces. It was, however, met with mixed feelings, according to Shinkle (2008:913), and similar to various tracking capabilities and options, such as the Vive trackers in current consumer-level VR, it was in its infancy with limited game or application support.

While (consumer) VR does still relies on electronic joysticks, buttons and triggers on its controllers, most of its motion and control comes from physical movement, allowing for more ‘expressive power’ as Shinkle calls for, and further enhancing the embodied experience. VR controllers incorporate haptics through force feedback as users

engage with the objects in the virtual world. Vibrations in the controller will engage innately as a haptic response, deceiving the brain into feeling a sense of touch, further incorporating another sense into the experience. Furthermore, facial tracking in VR is also gaining traction, such as the Vive Facial Tracker, which allows users to track their emotional expressions and response in real time, which could be recorded for analysis or incorporated into their virtual avatar (Vive:[sa]).¹⁸ At the time of writing, newer HMDs such as Meta's Quest-Pro are beginning to offer this feature, using built-in cameras that track facial features and expressions to mimic in the virtual world.

As such, VR offers a heightened sense of embodiment, allowing for an ever-increasing *extension* from the physical to the virtual world. However, the embodied experience is not without its limitations and challenges. VR HMDs are *still* considered cumbersome and 'foreign'.¹⁹ HMDs have been vastly disencumbered over the decades since Sutherland's first ceiling-mounted HMD. Many HMDs such, as Meta's Quest 2, can be used as a stand-alone device that powers itself via a battery and can run less-intensive applications for a few hours. If more computing power is needed, a link cable can be installed to connect to a computer.²⁰ However, using a cable literally tethers users to the area around the computer. Unbeknown to the user, the cable could get tangled or damaged as the user engages in VR. More so, physically feeling or noticing the cable while engaging in VR can be very distracting, breaking immersion and the sense of presence, as you note your physical presence in the real world.

Furthermore, walking in VR presents its own problems, as the user may not physically manoeuvre and travel the same distance they are travelling in the virtual world. As Nilsson *et al* (2018:2) suggest, "natural walking remains one of the biggest challenges

¹⁸ As a modular upgrade to current HMDs, HTC's VIVE markets the VR Facial Tracker as follows:

"Capture true-to-life facial expressions and mouth movement with precision. Read intentions and emotions in real-time. Lip movements accompany voice, thanks to almost-zero latency. Bring a new dimension to human interactions across educational, medical, and creative applications. Discover the potential of this VR game-changer" (Vive [sa]).

¹⁹ It may seem strange to find someone in public, at a coffee shop or on a plane for example, engaging in VR. However, if the HMDs were less cumbersome, and more socially accepted, as Carmack (The Joe Rogan Experience 2019:[sp]) suggests, and if the headsets looked more like sunglasses, it most likely would be more conventional.

²⁰ When using a standalone VR device, one is limited to the computing power equivalent to a mobile phone, which limits the types of applications and games one can play. To run more intensive applications and games, such as *Half-Life: Alyx* (2020) for example, the HMD must be connected to computer that meets the game's system requirements.

facing researchers and developers aspiring to provide users with access to digital wonderlands such as the ones envisioned by Sutherland.” Hence the use of a controller joystick to ‘walk’ in VR, much like a traditional gaming console. While users may physically walk in VR to traverse virtual space, they may soon run out of physical space or knock into the wall or furniture. As such, HMDs recommend allowing a ‘play space/area’ of a few meters to engage in VR, and providing an AI system that notifies users – in the form of a virtual wall/grid – that appears when the user is about to leave their play space. While this system is effective, it can be immersion-breaking, reminding users of the limitations and their presence in the real world. VR games like *Half-Life: Alyx* (2020) encourage players to move to explore the game world physically. The players may have to use the joystick to navigate through large areas but will often find themselves in tight-spaced rooms that encourage physically turning and bending to open drawers and interact with virtual clutter to loot for ammunition or health syringes. These smaller areas allow players to explore them thoroughly using physical movements, propagating the idea of ‘being in’ the space.

Sanchez-Vives and Slater (2005:334) explain that from the earliest stages of VR, users experiencing high levels of presence would choose to physically walk rather than use controls to do it. To “reduce this dissociation between proprioception and sensory data”, Sanchez-Vives and Slater (2005:334) explain that users could “walk in place”, which resulted in high levels of presence. Some virtual applications and VR games allow this type of walking as an option in the settings: by lightly swinging your hands with the controller in a walking manner, the avatar will begin to walk. However, this method still requires users to train themselves mentally, and within gaming situations, it may still feel unnatural or forced. Other methods involve 360-degree revolving treadmills that users are tethered to, to allow for more ‘natural’ walking, but they are costly and in their infancy, especially for the consumer market. However, as Nilsson *et al* (2018:16) review, there are various approaches to simulate and accommodate a natural walking experience in VR, and while “great strides have been made since Sutherland (1965) presented his ultimate display... [w]e have yet to see a commercially viable solution that is able to replicate the experience of real walking within a limited physical space while providing high-fidelity multisensory feedback.”

Despite these obstacles to immersion, VR still arguably elicits the highest level of

presence in mediated environments. Furthermore, these immersive challenges are being addressed with each generation of HMD, bringing users closer to virtual worlds and allowing for engagement, embodiment, and interaction in rapidly innovative ways. Palmer Luckey's original Oculus Rift was demonstrated to the world in its limited, rudimentary form in 2012. Within less than a decade, the technology has evolved to the extent that it is considered ready for the metaverse.

Interestingly, augmented reality (AR) is another such medium that is supposed to take us into the future. While AR maintains many of the technological challenges VR currently faces in terms of cost and adoption for everyday use, it immerses users differently. Instead of positioning the user into a completely virtual world as in VR, AR is a medium "in which real-time interactive digital information is overlaid on the physical world that is in both spatial and temporal registration with the physical world" (Sherman & Craig 2019:23). In other words, an AR user would see the 'real' physical world, with interactive virtual information, objects, items, or characters overlaid on the physical environment. Unlike VR, the virtual world seems to 'occupy' our physical reality. AR can be experienced with a smartphone, however, as Sherman & Craig (2019:24) note, HMDs are becoming suitable for incorporating the technology. Meta's Quest Pro, for example, is an HMD cable for VR and AR use. The widely popular video game *Pokémon GO* (2016) uses AR by using a smartphone. As the user holds up their phone, displaying the real world around them, *Pokémon* are overlaid on their screen and seem to occupy the physical environment around the user. Unlike VR video games, AR video games are not limited by physical space, and users can traverse the physical world in 'search' of virtual *Pokémon*. In this sense, users are not bound to their computers or consoles and therefore are not limited to where or when they can play.²¹ Interestingly, AR video games do not achieve immersion by blocking out the physical world but by augmenting the virtual world with the physical world.

Nonetheless, these technologies both seem to incorporate the technology onto the body. Each iteration gets smaller and lighter, bringing the technology closer to the

²¹ While *Pokémon GO* (2016) is a mobile game, requiring users to be 'bound' to a smartphone, the industry is striving towards AR glasses, that would essentially free users from holding and consciously operating a device. AR glasses would essentially grant users the ability to augment virtual information as part of their everyday lives.

user's senses, freeing up the hands for interaction. By looking through a VR or AR screen, it may become increasingly difficult for the user to differentiate between the physical and virtual plane.

3.9 Conclusion

Each iteration of immersive media attempts to further block out the physical world, taking viewers closer in the depicted world to the point of being able to interact with it. Video games employ and amalgamate many of the immersive strategies explored thus far, rendering them a challenging medium to study. In this chapter I explored the intricate means and strategies by which video games immerse players. These immersive strategies include ludological elements designed by the game creators, to more subtle 'expressive' experiences, such as game feel and affect – which may be unintended aspects of the game. Ermi and Mäyrä's (2005:7) SCI model and Calleja's (2011:36-38) Player Involvement Model attempt to frame the multidimensionality of immersion within the multifaceted medium of video games. While both these models provide valuable contributions to the understanding of the multi-layered experience of immersion during gameplay, they do not account for the *entire* immersive experience or emerging immersive media such as VR.

From the perspective of Slater's (1997:3) eminent description of immersion as a property of a system, VR is as immersive as it gets. In a sense, the immersive strategies previously discussed and contextualised are amalgamated and elevated by VR. Furthermore, VR video games can build upon and perpetuate the immersive strategies incorporated in traditional video games. Through the use of complex tracking and sensory feedback systems, VR allows users to embrace virtual worlds using embodiment and physical interaction, and as VR and VE psychology scholars Elena Kalina and Mina Johnson-Glenberg (2020:37) suggest, there is rising evidence to suggest that physical interactivity leads to increased engagement. The notion of presence as the sense of (or response to) 'being there', however, has been argued to be a fleeting one, and as Wolf (2017:204-205) argues, "[a]n audience may become immersed in an imaginary world, but, unless it is built with care, they may have little desire to stay there, learn more about it, or return later. Builders of imaginary worlds, then, must consider what happens beyond immersion ...". As such, since this chapter

focused mainly on the ludological immersive strategies of video games, the following chapter shifts towards narratology and non-ludic elements of video games, specifically, world-building and narrative as immersive strategies, respectively.

CHAPTER FOUR

WORLD-BUILDING AND NARRATIVE AS IMMERSIVE STRATEGIES

4.1 Introduction

The scene fades into view, and I am standing on a balcony overlooking the rooftops of a city. Looming in the distance is an enormous structure under construction. Tethered to the ground with large cables that dig into the city, the immense building towers into the clouds. Alien noises are heard in the distance, ‘Striders’ are seen mounting cables on rooftops, and helicopters carry material towards the building. Its blackened metallic, mechanical look is otherworldly, in contrast to the city’s red-tiled rooftops and Eastern European architecture. I am in City-17 again, only now it is five years before Gordon Freeman’s return and the events of *Half-Life 2* (2004). I am watching the construction of the Citadel, the Combine’s headquarters on Earth. The world around me feels alive; almost everything is interactable, and I cannot wait to start exploring.

The previous chapter established and discussed immersion in video games and VR. My argument now moves towards the role world-building and narrative play in immersive experiences, specifically within (VR) video games. This discussion is necessary to the argument as, throughout the study, it has been made clear that the extent and nature of the virtual world play a significant role in the experience of immersion and presence. Furthermore, narrative as an immersive strategy is employed by more traditional media and can be extended in video games. Few studies analyse world-building and narrative as immersive strategies in video games: even less when considering VR video games. I begin the chapter by contextualising world-building before analysing world-building as it pertains to (VR) video games specifically. The discussion then moves towards narrative as an immersive strategy and how narrative is used as an immersive prop in video games and VR, respectively.

4.2 World-building as an immersive strategy

In this section, the discussion is focused on world-building as an immersive strategy. I first discuss and contextualise the concept more generally, before analysing how immersion is achieved through world-building in video games more specifically.

4.2.1 World-building contextualised

Children escape into imaginary worlds from an early age, as witnessed when they create and build worlds with toys like LEGO (Wolf 2012:3). “For many,” Wolf (2012:4) writes, “the desire for imaginary worlds does not change over time, only the manner in which those worlds are constructed and experienced.” Worlds are enjoyed through diverse media, from artworks, books, films, and video games to virtual reality. These imaginative worlds are expanded upon beyond their initial mediation, in discussions amongst fans – through blogs and websites – and expressed through activities like cosplay.¹ Thus these fictional worlds are discussed, visited, and revisited, extended upon, even after the narrative is spent.

World-builders go to great lengths to create worlds that audiences appreciate, and invite exploration and investment in those worlds. This is depicted in the game world of *Half-Life 2* (2004), as explained by Valve developer Dave Riller (in Valve 2004:258):

We put a lot of rich, relatively low-cost detail into the world. In the river sections in particular, the banks are full of high-frequency detail, like foliage, crashed vehicles, trash, rocks and logs, and deeper pools that allow the player to explore and find hidden goodies and interesting details. You might find a dead body with a bunch of goodies in a grove of cattails, or a skull in the mud at the bottom of a pool, or a special surprise in a sunken pipe. Things like this show intentionality and investment in the world on the designer’s part.

Building an imaginary world may mean establishing the more minor details of the world. In the case of video games, this may involve filling the world with detail, much like stage building on a film set. However, the notion of world-building is much more complex than decorating and filling a fictional world with detail, particularly as it pertains to game studies, according to game studies professor and author of *Todd Howard: Worldbuilding in Tamriel and Beyond*, Wendi Sierra (2021:30). World-builders have the challenge of creating rich and vast imaginary worlds with enough familiarity and consistency as the ‘actual’ world, according to Wolf (2017:205). Media

¹ Cosplay is the act of dressing up and performing as a character from a fictional world (film, book, video game, or TV show). Cosplay has become an artform in its own right. Dedicated fans of a franchise may cosplay at film or gaming conventions, where there are often competitions for best cosplay.

and semiotics scholar Paolo Bertetti (2017:56,57) argues that it is critical to provide enough detail for the reader (or player) to establish the differences between the imaginary world and the actual world without it becoming obvious or mundane to the reader (or player). In this sense, establishing a rich or vast imaginary world should come across so intuitively to the reader (or player) that it does not detract from the initial focus of the experience.

Academic discourse concerning imaginary worlds has been generally neglected in media studies, with scholarly work leaning towards being “medium-oriented” or “narrative-oriented”, and not on the world itself, according to Wolf (2012:2,7). However, research into world-building has developed into an expansive research area over recent years, according to Wolf (2012:7) and film and television professor and editor of *World Building: Transmedia, Fans, Industries*, Marta Boni (2017:11-12). Increased research interest in the world of narratives seems to have coincided with the direction storytellers have headed with a focus on world-building, according to Jenkins (2006:114), who writes:

More and more, storytelling has become the art of world building, as artists create compelling environments that cannot be fully explored or exhausted within a single work or even a single medium. The world is bigger than the film, bigger even than the franchise—since fan speculations and elaborations also expand the worlds in a variety of directions.

The focus on the *world* of narratives still seems prevalent today, specifically in films and TV shows. Marvel’s Cinematic Universe (MCU) is a prime example of establishing an expansive universe that can be explored through many characters and stories that span over decades of film and TV show phases. Once the established *world* is founded – or adapted from comics, as with the MCU – stories exploring the various facets of the world can branch off in an interconnected expanded universe. Jenkins (2006:113) argues how these worlds are expanded upon through transmedia and illustrates how the world of *The Matrix* (which now features in video games and comic books) is “a playground where other artists could experiment and fans could explore.” Wolf (2012:2-3) argues that the complexity of imaginary worlds may be the cause of their (initial) scholarly neglect, as they are unlike “other media entities”. “[N]arrative media entities be they novels, films, television programs...” are traditionally determined by

the narrative (Wolf 2012:2). In other words, the narrative is the driving force behind much of the entire experience, which governs details from characters, events and the world, all must play a part in developing the story. World-building on the other hand, expands the audience's understanding and appreciation of the *world*, from timelines, cultures, and histories, to the aesthetic details of the world. Wolf (2012:2) further iterates:

For works in which world-building occurs, there may be a wealth of details and events (or mere mentions of them) which do not advance the story but which provide background richness and verisimilitude to the imaginary world. Sometimes this material even appears outside of the story itself, in the form of appendices, maps, timelines, glossaries of invented languages, and so forth. Such additional information can change the audience's experience, understanding, and immersion in a story, giving a deeper significance to characters, events, and details.

As such, media entities that emphasis world-building differ from traditional (narrative-based) media, according to Wolf (2012:3), as they are “transnarrative and transmedial”, thus further expanded upon across various media, beyond a focus on the traditional narrative.

The fields of transmedia and fan studies are often raised when discussing world-building as, according to Boni (2017:17-18), fans often keep worlds ‘going’ through their own activities and contributions, such as map-making, fan art or even cosplay, as extensions to further the imaginary world. The release of *Star Wars (A New Hope)* (Lucas 1977) spawned a cultural phenomenon that spans over decades of fan-made short stories and films, video games, fan art, comics, wikis (fan-created, collaborative databases that are dedicated towards projects such as films or video games), which all led to the popularisation of the franchise. This dedication towards the *world* (or *universe*) of *Star Wars* has led to several spinoff series on the streaming service Disney+, that are based within its universe, such *The Mandalorian* (2019-present), *Andor* (2022-present), and the return of fan-favourite, *Obi-Wan Kenobi* (2022).

In this example, Jenkins' (2006:114) early comments on the shift from the focus on narrative towards a focus on an established world that can be expanded upon and extensively explored is clearly evident. As an “experienced screenwriter” explains to

Jenkins (2006:114):

When I first started, you would pitch a story because without a good story, you didn't really have a film. Later, once sequels started to take off, you pitched a character because a good character could support multiple stories. And now, you pitch a world because a world can support multiple characters and multiple stories across multiple media.

While the shift in focus from narrative to world, as foregrounded in this example, refers to the film industry,² it points to the distinction between creating narratives and creating worlds (Sierra 2021:33). As such, there is a clear position for the worlds to immerse viewers (or players) through expansive, believable, relatable spaces where various narratives play out. In order to further understand the reader's (or player's) concern with imaginary worlds, Wolf (2017:204-205) proposes four stages in the experiencing of imaginary worlds, with *immersion* being only the "first step".³ In keeping with the liquid metaphor I discussed earlier, Wolf (2017:204-205) further explores the concepts of *absorption*, *saturation*, and *overflow* as the next steps in the experience. *Absorption*, according to Wolf (2017:205), can happen in two ways; the first refers to how one is "pulled into" imaginary worlds when one "willingly" engages with a book, film, or game. The second way refers to how audiences themselves "absorb" the imaginary worlds by imagining and recollecting "places, characters, events", allowing for audiences "to mentally leave, or at least block out, [their] physical surroundings, to some degree," as they are absorbed into the fictional world (Wolf 2017:205). Blocking out the physical world to be further submerged in a fictional/virtual world is a quality of immersion, specifically sensory immersion, as I have previously argued. Within this context, however, Wolf (2017:205) suggests that one is able *psychologically* to achieve the same sensation, which leans more towards imaginative immersion (which Wolf refers to as conceptual immersion), as argued in the SCI model. This further highlights the overlapping understandings of immersion and what constitutes it.

In addition to strong characters and plot, the world itself should also evoke a sense of

² Revisiting established and fan beloved worlds is the approach of Hollywood's current (exploitative) sequel and reboot 'phase'. Examples include films such as *Ghostbusters: Afterlife* (Reitman 2021), *The Matrix Resurrections* (Wachowski 2021) and *The Batman* (Reeves 2022).

³ Wolf's (2017:205) understanding of immersion here is summarised into three types, namely: "physical immersion (like a theme-park ride); perceptual immersion (like a movie); and conceptual immersion (like a novel)."

curiosity. As Wolf (2017:206) argues, world-builders need to create worlds that viewers and players want to return to:

Unresolved narrative threads and incomplete infrastructures, together with the enigmas that arise in each, may entice the audience to return, and each return visit can result in a greater time, effort, and even financial investment in a world, giving further reasons for visits to continue. On each subsequent visit, the audience will have to call to mind world data that they have learned in order to pick up where they left off

...

As imaginative worlds become more extensive and complex, audiences' knowledge of the fictional world may 'fill up', a state which Wolf (2017:206) refers to as *Saturation*. "Saturation ..." argues Wolf (2017:206), "... is the pleasurable goal of conceptual immersion; the occupying of the audience's full attention, concentration, and imagination, often with more detail, nuances, and subtleties than can be held in mind all at once." In this sense, understanding (imaginative) immersion echoes previous arguments suggesting that immersion sustains a viewer's (or player's) full concentration or attention. Furthermore, Wolf (2017:2016-207) describes how saturation occurs when one has more knowledge of the narrative world than needed for immediate understanding and argues that while one does not have to read *The Silmarillion* (the foundational collection of Tolkien's work detailing prominent characters, history, and events within Tolkien's *The Hobbit* and *The Lord of the Rings* worlds), knowledge of the world-building occurrences enhances the reader's "pleasure and understanding" of the text. For video games, such bodies of knowledge may contain backstories, histories, maps, or other world-building elements that may be found on websites – which are published along or prior to game releases. A large portion of this information may also be found on 'wikis' such as *The Half-Life & Portal Encyclopedia* ([sa]), which details everything from the games' stories, lore, and characters to out-takes and the development process as well as trivial knowledge. These wikis contain information that may not come across in playthroughs of the game, and following Wolf (2017:207), prior knowledge of such material may deepen appreciation and immersive experiences during playthroughs.

Lastly, *overflow* occurs when a viewer or user cannot contain the vast amount of knowledge of the imaginary world, and "[a]n overflow beyond the point of saturation is

necessary if the world is to be kept alive in the audience's imagination" (Wolf 2017:208). Thus, the richness of the imaginary world may determine the re-readability (or re-playability) of the world, as Wolf (2017:208) argues:

If the world is too small, the audience may feel that they know all there is to know, and consider the world exhausted, feeling there is nothing more to be obtained from it. A world with an overflow beyond saturation, however, can never be held in the mind in its entirety; something will always be left out [Upon re-readings], [w]e may ask different questions and focus on different aspects that we had not previously considered, resulting in a different experience insofar as our speculation and imagination is concerned. These differences arise due to the way we complete narrative and world gestalten, which also depends on our own previous experience.

Within the context of video games, I would argue that it is preferable to refer to the richness of the game world rather than only its size when referring to the quality of the player's experience within that world. Many game worlds could be large in scale, with huge spaces the player may move within. However, large worlds may also feel empty, or unfulfilling, leaving the player underwhelmed by the vastness. The *Elder Scrolls II: Daggerfall* (1996) is an example of this, as the world uses procedural generation (worlds built using computer algorithms) instead of 'by hand'. The richness and liveliness better suits Wolf's description of an overflowing world, particularly as it pertains to video games.

Nonetheless, imaginative worlds should leave the reader or player wanting more, eager to return to the world for a re-reading or re-playing so that they may have more profound and newer perceptions of the narrative or the world surrounding it. These rich, overflowing worlds may be consumed or attended to through other media, where audiences can share views, discuss, theorise, or even contribute to the world itself. Further understanding of imaginary worlds can complement the narrative and leave audiences further appreciating – and better understanding – the main narrative. It can also lead to new narratives and spin-offs based in the same world, leading to experiences unintended by the initial world designers. While imaginary worlds can contribute to immersion and the feeling of presence, they further expand one's knowledge and understanding of the narrative.

The following section will focus on world-building as it pertains to video games specifically. The analysis of the immersive function of virtual environments and worlds in (VR) video games will enrich the understanding of immersion therein.

4.2.2 World-building in video games

Frameworks and approaches to the notion of worlds and interactive spaces often reference the predecessors of ludic narrative experiences. As Wolf (2014:126) suggests, video games are extensions of interactive imaginary worlds ranging from dollhouses and model railroads to table-top RPGs such as *Dungeons & Dragons* (1974) and may borrow props from visual media such as film. Psychologist and video games researcher Pete Etchells (2019:235) argues that video games do not require the suspension of disbelief but rather compel players to become “*active believer[s]* in the world [...] in order to have a fully meaningful experience.” Participation and interaction within the world sets game worlds apart from those of other media. This echoes Lanier’s (2017:214) argument – which I referred to earlier – on the importance of interaction in VR spaces, as he writes: “If you can’t reach out and touch the virtual world and do something to it, you are a second-class citizen within it”.

Within the realm of video games, worldbuilding is a difficult concept to define (Sierra 2021:30). “Game designers, scholars, and even players”, explains Sierra (2021:30), “often use ‘worldbuilding’ as an umbrella term that can mean everything from level design to visual aesthetic.” In many video games, the game world plays an integral part, often defining the genre or sub-genres (open-world, adventure, horror, survival, etc.) and, therefore, the type of narrative and experience. By understanding the game world – thus genre – in this way, players know what kind of game and conventions to expect; open-world games encourage travel and adventure in large explorable places, while FPS games may be more linear both in traversable space and narrative.

As the concept of world-building within video games is a vast and multifaceted area, this section will analyse video game world-building through the two different approaches used in the game worlds of the *Half-Life* series (1998-2020) and *The Elder Scrolls V: Skyrim* (2011). These two games have fundamentally different world design philosophies and look to immerse players into the game world differently. Both game

series are award-winning, critically acclaimed games with dedicated fans of the franchises, and both have been the subject of academic studies. The games are of two different game genres, with *The Elder Scrolls V: Skyrim* (2011) an open-world action role-playing game (RPG), while the *Half-Life* (1998-2020) series is a more traditional, linear, science fiction, first-person shooter game. To understand world-building in video games more broadly, it is useful to see how these two different franchises approach and apply world-building in their games to immerse players.

4.2.3 The implications of gameplay and time in world-building

As highlighted by Bertetti (2017:56,57) and Wolf (2017:205) above, imaginary worlds are inspired by the real, physical world. However, within the context of video games, gameplay trumps 'realism', as the video games are an entertainment medium, with play and fun being at the core of game design. Therefore, while video game world-builders may take inspiration from reality, player experience may influence world design. This is evident in *Half-Life 2* (2004), as Valve's Viktor Antonov (Valve 2004:219) explains:

One of the consistent level design challenges throughout the project was addressing conflicting gameplay and artistic concerns. Gameplay passes would commonly introduce elements that didn't fit well within the current artistic vision, which would then require an art pass. Art passes often inadvertently change something that had mattered to the gameplay

...

While *Half-Life 2* (2004) has been praised for its visual fidelity and faithfulness to reality at the time of its release in 2004, and since the game is 'un-cut' (there are no cutscenes or breaks in time, only briefly pauses as the game loads the next level), the game world is condensed in a sense, as is the notion of time.⁴ As briefly mentioned in

⁴ The notion of time in video games is a vast and interesting concept of study, and one that has been neglected by academia, according to ludologist, Jesper Juul (2004:131), who highlights the duality of "game time" and "play time", which I briefly discuss below. Video games research has been dominated by the negative effects gaming has on people, such as time spent playing video games and addiction (Etchells 2019:6,235). Furthermore, losing track of time is also associated with immersion in mediated experiences, arguably more so in video games as one looks at the properties of challenge-based immersion as raised in the previous chapter.

Moreover, video games themselves apply the concept of time within their game worlds, approaching it and applying it differently. Game world time (what Juul (2004:131) refers to as *event time*) in *World of Warcraft* (2004-present) follows the real time (what Juul (2004:131) refers to as *play time*) of the realm (server). If it was 6pm (CET) in Germany, where realms (servers) like *Frostwolf* are based,

Chapter Two (2.7), Gordon's journey through *Half-Life 2* (2004) takes place over three days. The time of day is implied by the amount of sunlight left as he travels to various areas in and around *City-17*. A few chapters into the game, Gordon must travel from the outskirts of Ravenholm, the zombie-infested mining town, along a coastline by car, towards Nova Prospekt, a prison used by the Combine. *This* journey along the coast spans over two chapters of the game, the second of which has Gordon ditch his car as the Combine search for it. This portion of the game starts sometime in the morning and lasts several hours for Gordon in the game world, but only a few hours of "real-life" playtime.⁵ As Gordon reaches Nova Prospekt, it is twilight, indicating the length of time and space it took him to get there. The game world is built in such a way that the geography and landmarks change to make the world feel larger than it is. Since there are no cutscenes throughout the journey (only brief pauses to load the upcoming level), the design of the game world is twofold in a sense; it must feel believable, and immerse the player, while also being fun for the player to playthrough, to not feel tediously long or mundane. The world feels large, and playing as Gordon Freeman, one feels one has travelled a great distance, while it was not so.

On the other hand, in contrast to linear games like *Half-Life* (1998-2004), *Skyrim* (2011) deals with the prospect of time very differently while also accounting for gameplay and world-building. As the northern region of Tamriel, the land of *The Elder Scrolls* series, *Skyrim's* (2011) vast open world encourages player exploration across various biomes, including frozen ice lands, snowy mountains, extensive tundra, and woodlands. However, for the sake of gameplay, players can fast-travel (instantly travel) to a previously explored area. Instantly traversing across the large world may

that's the time in game as well, which means the time of day in game reflects this, with a sunset at 6pm for example. This has led to grievances by some (arguably small number of) players on forums, who can only play at night after work, complaining that it's always night-time for them in the game. *The Elder Scrolls V: Skyrim* (2011) on the other hand makes use of its own calendar year, with an in-game day passing by in 1 hour and twelve minutes real-time. Being a single-player game, with no consequences to others, players can also fast-track time in *The Elder Scrolls V: Skyrim* (2011), by waiting or sleeping for a determined number of in-game hours. This will allow in-game time (event time) to pass, weather to change and effect certain in-game events, while the player only has to wait a few seconds (play time). For example, if it's night-time, or an overcast rainy day, and the player does not like it, he/she can simply have their character wait or sleep it out. Or a player might arrive at a shop late only to find it's closed, as the shopkeeper closes up for the night and goes to sleep. The player can choose to 'wait' or sleep in-game, taking a few seconds as opposed to waiting the several real-time minutes for dawn to arrive in-game, thereby manipulating in-game time for a more pleasurable real-time experience.

⁵ This portion of the game could, in fact, be completed in less than an hour by experienced players who are familiar with the game and its mechanics.

not be particularly immersive or true to reality. However, Sierra (2021:40) argues, “this travel system illustrates the tensions game designers face in crafting vibrant game worlds: reality against convenience, adherence to realism against entertainment value.” The game, however, compromises with the passing of time; upon arrival after fast-travel, the player will notice the time of day and weather may have changed, and NPCs will have carried on with their days. Players might fast-travel to towns to find the shops have closed up. This perpetuates the illusion of a lively game world that exists beyond the actions or whereabouts of the player.

4.2.4 Discovering the game world: linear versus open world games

Video games are based in a diegetic world. These fictional worlds are brought to life by designed ‘sets’ and the characters that live in them (Wolf 2014:125). The video game world is more than a backdrop for the game that complements the narrative and the progression towards completing the game. Wolf (2014:125) maintains that “worlds do not necessarily have to contain stories, and not all of them do,” suggesting that sandbox games like *The Sims (2000-present)* allow for relatively unobstructed expansion and creation of imaginary worlds but with no “predetermined narrative”. The narrative in sandbox games emanates from players’ self-made experiences rather than pre-set props from the game designers. Narrative in multiplayer sandbox survival games like *Rust (2013)*, for example, derives from social interactions and engagements from players within the world.

There are two narrative dimensions here, one implicit by game designers as their core intended narrative structure, and a player self-made narrative arc, less controlled by game designers, in which player experiences are unique. These narrative design structures depend on the *world* in which they are based. As Wolf (2017:204) argues, world-builders and game designers have to actively explore various props and mechanics in a game world to induce a sense of immersion, enticing players to return to the world. On the one hand, an example of this could be *The Elder Scrolls V: Skyrim’s (2011)* vast open world, designed to be explored and in which detours are encouraged. The game is only really ‘complete’ when the entirety of the world is

explored and all the quests completed.⁶ In larger, open-world games, much of the experience of the game comes from experiencing the game world, often through voluntary player exploration. This allows for more re-playability, as the world and, therefore, experience of it, is different each playthrough. On the other hand, more linear worlds, such as from the *Half-Life* (1998-2020) series, offer players a more structured, intended experience. This is foregrounded by Riller (in Valve 2004:277) in his description of the development of *Half-Life 2* (2004):

As with *Half-Life 1*, we crafted a pretty deliberate path through the world, but we also were careful to preserve the illusion of nonlinearity by sprinkling in rich, but optional content – optional in that players could either miss it, or choose to move past it. There’s a higher cost to building your world this way, but it really pays off in immersion and richness by giving players the ability to explore and reveal more of the world when they want to, peeling back new layers in the ‘experience onion.’

A benefit to developing such a linear game world is that developers have greater control over the player’s experience of the world and can plot out exactly what should happen, and when, according to the player’s interaction. Valve excels in this, as they craft the player’s journey through extensive play testing throughout development. However, the “high cost” Riller (in Valve 2004:277) alludes to is perhaps the (weaker) re-playability of the game. As a linear experience, much of the excitement or novelty experienced in the first playthrough of the game may not be reproduced in second or third playthroughs. While many linear games like *Half-Life* (1998-2020) may encourage exploration of the game world to an extent, with hidden areas or easter eggs planted throughout the world,⁷ they are limited and become familiar on re-plays, thus making the re-playability of such games closer to the re-watching of a film; one can learn and pick up new things along the way, but the overall journey and experience

⁶ A game’s completion time is a relative metric, that depends on the type of player of a particular game. The website *HowLongToBeat* ([sa]) tracks a player’s game completions and achievements through Steam (the world’s most popular video game digital distribution service, headed by Valve). In the website’s ‘completionists’ category (which refers to players who attempt to complete every aspect of the game, and gain all achievements), players average upwards of 250 hours of play time in *The Elder Scrolls V: Skyrim* (2011). For contrast, the average ‘completionist’ time needed for *Half-Life 2* (2004) is 19.5 hours, and *Half-Life: Alyx* (2020) is 18.5 hours.

⁷ Video game easter eggs often refer to hidden messages, secretes or references that have been ‘planted’ in the game world by developers for wondering players to find. They can range from subtle references to previous games, other franchises or characters, to hidden puzzles for players to work out. Easter eggs play no major part in the narrative or overall experience of the game but are always fun to come across. Finding and understanding the developer’s (secret) message or reference to something can feel rewarding for curious, explorative players.

is much the same.

Computer game designer Ken Rolston (2017:120) argues that role-playing games (RPGs), on the other hand, are different texts upon their “rereading” or replaying. Open-world RPG games like those from *The Elder Scrolls* series allow for vastly different experiences, even if played for the third or fourth time. Sierra (2021:45) argues that Todd Howard, director and producer at Bethesda Software on games series such as *The Elder Scrolls* and *Fallout*, cornerstones the game world as the main character of his games. Much of the experience and journey through these games is self-made, through player engagement (or lack thereof) with the game world. A player chooses where to go, how to approach it, and when to move on to the next thing. The player may choose to be more villainous, choosing to engage in crime such as theft or murder and join the *Thieves Guild* or *Dark Brotherhood*, or choose to expose and rid the world of these guilds, or choose to ignore them entirely. The world is influenced by the player’s actions. As the player completes quests or narrative arcs, rumours around the world spread through NPCs, which may result in praise or displeasure towards the player. In this case, the game world is built with multiple systems in place to accommodate the player’s freedom of choice.

4.2.5 Micronarratives as a world-building strategy

Jenkins (2006:121) argues that “[g]ame designers don’t simply tell stories, they design worlds and sculpt spaces.” Aarseth (2004:50-51) maintains that the purpose of playing through a video game is not to reach the narrative climax, but rather the journey through, and experience of, the game world, claiming that “the game world is its own reward”. Large open-world games like *The Elder Scrolls V: Skyrim* (2011), encourage exploration and reward players for doing so. Players may come across what Jenkins (2006:125) calls “micronarratives”; small events, points-of-interest, or narratives, that are scattered around the game world. These encounters and discoveries make the game world feel livelier and more random, thus arguably more life-like and immersive. Sierra (2021:51) further categorises micronarratives into three variants, namely; *static micronarratives*, which are events or small discoveries that the player has little control over or intervention with; *dynamic micronarratives*, which do allow for the player to interact with and potentially alter; and lastly, *emergent micronarratives*, arguably the

most immersive of the three, which arise from player interaction with the game to attain individual playthrough encounters and experiences.

i) *Static micronarrative*

Games like *The Elder Scrolls V: Skyrim* (2011) are peppered with these micronarratives that expand the richness of the game world in various ways and often lead to hidden treasures and more profound narrative experiences for the player. An example of a *static micronarrative* would be coming across the house of the ironically named Lucky Lorenz in *The Elder Scrolls V: Skyrim* (2011); a small house on a riverside that has been destroyed by a large collapsed tree, underneath of which is the corpse of Lucky Lorenz, with a few belongings including a map that leads to treasure. Players can deduce that Lucky Lorenz was simply ill-fated, and, upon further inspection, can learn a bit about who he was. A book titled *The Lusty Argonian* (part of a series of erotic books, one of many series in the world of *Skyrim*) can be found in his home.

The *Half-Life* (1998-2020) games also use this world-building trope, though to a lesser extent. An example could be witnessing the ironically clumsy shenanigans of the Black Mesa scientists after the cataclysmic events in the early portions of *Half-Life* (1998). Scientists of this top research facility are often observed trying to escape their dire situation in a frenzied panic, only to meet an untimely and often gruesome death. A less obvious example from *Half-Life 2* (2004) can be found in the Highway 17 coastal chapter. At a gas station, now used as one of the Combine outposts along the route, players can find a Lambda stash (the game's version of treasure, typically consisting of supplies like health packs and ammunition) if they scale a small fence at the back of the station. Next to the loot, players will see a decomposing corpse with a revolver next to it and blood on the wall. Nearby, the mattress and empty bottles of alcohol suggest that this may have been a citizen in hiding who decided to take his life. This is suggestive of the dark, hopeless world that humanity finds itself in since the Combine domination. *Half-Life: Alyx* (2020) maintains this world-building trope, with details scattered across the game world that depict the dystopian world that Alyx is venturing into.⁸

⁸ The analyses of immersion as it is experienced in *Half-Life: Alyx* (2020), discussed in Chapter Seven, will explore the various immersive strategies.

ii) *Dynamic micronarratives*

Dynamic micronarratives extend from *static micronarratives*, allowing for player interaction and alteration. For example, while the player may be riding their horse in the open Western world of *Red Dead Redemption 2* (2018), ‘random’ events, such as a coach robbery could occur nearby, and the player may choose to intervene in such events. These micronarrative encounters can conclude very differently depending on the player’s decision. The player may decide to ignore the robbery, defend it by attacking the robbers and saving the driver and passengers, or decide to take the coach’s loot for him- or herself. If a dragon attacks in *The Elder Scrolls V: Skyrim* (2011), the player may be able to fight and save all, if not some, of the fellow guards defending a city or choose to flee the fight. In the *Half-Life* (1998) example above, in some cases, the player may be able to intervene and save the scientists from death. However, being a linear progressive game, these encounters are not happened upon by chance and may come across as more scripted, with less impact.

iii) *Emergent micronarratives*

Lastly, *emergent micronarratives* extend from *dynamic micronarratives*, and occur when a game’s mechanics and player interaction allow for vastly individualised and arguably unforeseen experiences (Sierra 2021:51). In the coach robbery example above, should the player decide to get rid of the robbers, and take the coach loot for him- or herself, the player may have to deal with the coach driver and the passenger(s). Holding an NPC up at gunpoint in *Red Dead Redemption 2* (2018) may result in the NPC drawing their weapon to challenge you, or flee, in which case (if they are allowed to escape) authorities will be notified and start searching the area. This may lead to larger shootouts with the law or horseback races to flee the scene. The outcome becomes unpredictable, depending on the many systems and variables the game employs, thus making each experience distinctive. *Emergent micronarratives* occur from what the player makes of the game world and can play out in many ways. Thus, in designing immersive worlds, world-builders must consider players’ interaction and design mechanics that allow for more meaningful engagement. In a sense, the player creates his- or her own narrative experience throughout their gameplay experience and decides what kind of person he or she wants to be when playing a video game. These micronarratives

form part of the game's overall narrative experience and story.

Micronarratives are often experienced outside of the main quest or objectives, according to Sierra (2021:58), who further argues that “they nonetheless contribute to creating the game world's overarching stories and tensions. In doing so, they solidify players' perception of the world as a realistic place.” While many of the micronarratives found in the *Half-Life* (1998-2020) series are unavoidable to an extent, with some even calling the attention of players,⁹ many of the micronarratives found in games like *The Elder Scrolls V: Skyrim* (2011) are happened upon by chance. As the game world is large, many of these hidden events may be missed entirely, which makes coming across them all the more stimulating. “[M]icronarratives,” writes Sierra (2021:57), “which are unmapped and untracked in the game system, are a crucial part of shaping this individualistic play experience, even as they convey information to players about the game world, history, and society.” The individualistic experience Sierra alludes to here refers more specifically to games like *The Elder Scrolls V: Skyrim* (2011); as an open-world RPG, no single playthrough is ever the same, as players are encouraged to explore the game world and tread away from the main narratives. However, how players engage with and explore the world even in more linear games, such as the *Half-Life* series (1998-2020), may also generate different playthrough experiences, albeit to a lesser extent. Micronarratives such as the ones highlighted above make the game world feel more organic by encouraging exploration, filling the world with details that establish the nature of the virtual world, and, thus, further immerse players into the gameplay experience.

4.2.6 Investing in the game world

Thus, well-designed immersive game worlds could be measured by the extent to which the world makes a player feel present and part of the game world. Immersion is further

⁹ In order for the player not to miss a crash scene, that serves as both spectacle and micronarrative in the early parts of *Half-Life 2: Episode One* (2006), Gordon (the player) is fired at by an enemy NPC, drawing attention. The NPC immediately retreats when the player's attention is drawn, that they may observe the crash as intended. In contrast to open-world games like *The Elder Scrolls V: Skyrim* (2011), micronarratives in linear games are not happened upon by chance but are 'planted' along the linear path that the player crosses. As Valve developers explain in *Half-Life 2: Episode One* (2006), players must still 'feel' as if these events are not scripted, and thus 'feel' is if these micronarratives are happening by chance.

(informally) tested in game worlds by the players themselves. Players may want to ‘test’ the mechanics or capabilities of the game world, testing if the response would reflect their expectation of reality. This may often mean testing the game’s physics engine,¹⁰ or exploring minor details of the game world, to determine the extent to which the game designers went to fill the world with details. As such, many game designers reward players who explore hidden areas of the game world. As VR video games are still in their infancy, it is not uncommon to watch players test the game’s physics capabilities, such as the trivial ability to pick up and engage with everyday objects in the game world. Games such as *Boneworks* (2019) and *Half-Life:Alyx* (2020) are praised for their interactivity and physics. Most items that decorate the game worlds are physically interactable, which may seem inconsequential, but requires a great deal of effort in the game design process. Thus, many smaller games do not have the same level of physics or detail. At the start of *Half-Life: Alyx* (2020), players will come across whiteboard markers, for example, and will find that they are interactable, allowing players to write and draw on windows and whiteboards, along with an eraser, all fully functional and working as expected (figure 12). Minor details like this that simulate and meet player expectations from the real world into the virtual world further blur the lines between the two worlds, thus increasingly propagating the feeling of presence.

¹⁰ As previously mentioned, the physics system of a video game refers to how a game simulates the laws of physics.



Figure 12: The author drawing (*tic tac toe*) on the window with whiteboard markers, *Half-Life: Alyx*, 2020.
Screenshot by author.

Moreover, many sandbox and RPG games like *The Elder Scrolls V: Skyrim* (2011), allow players to personalise spaces within the game world by owning property, building and customising houses, and storing in-game items, be they trophies, weapons or collectables. Sierra (2021:36) argues that personalising the game world in this way “transform[s] it into a place of memory, story, and identification. [...] As players accumulate a store of play distinct experiences in a particular game world, they build a sense of personal history into their understanding of the game space.” In this sense, players invest and establish parts of themselves into the game world, creating unique, individualised spaces and experiences that are distinct to them.

4.3 Storytelling versus world-building

In his analysis of video game *mise-en-scène*, Girina (2015:48) suggests that the virtual stage conveyed by video games generates unique properties and problems. Translating the original French, Bordwell and Thompson (2008:112) define *mise-en-scène* as “putting into the scene,” and suggest it was originally the practice of stage directors. *Mise-en-scène* attempts to bring the imaginary world to the audience through set-design, props, costumes, and production. Filmic *mise-en-scène* takes camera framing and movement into account, as the viewer’s attention is guided by the director

(Bordwell & Thompson, 2008:112-113; Gibbs, 2002:27). Girina (2015:52-53) argues that in video games, player interaction in the virtual world further complicates the notion of *mise-en-scène*. The player's agency and control over the character, therefore the 'virtual camera' (as the 'camera' or point of view which follows the character, thus the players' actions), dictates what the player will see and absorb of the game world. Game designers of these worlds would have to ensure these virtual set pieces, environments, and areas stay true to the world, as the players direct themselves. This challenge is perpetuated in VR games, as the 'camera' or field of view moves and changes with the physical movement of the player's head.

Game designers have the additional challenge of player control and interaction over the 'frame' and absorption of the game world, hence the incorporation of familiar storytelling tropes, such as cinematic cutscenes, to guide the character's – thus the player's – attention to certain things or events. Cutscenes are non-player controlled cinematic animated video sequences that play, often forwarding the narrative plot and allowing the player to observe an uncontrollable edited sequence or event taking place in the game world. While cutscenes have a place in video game storytelling, they could be viewed as the easy solution to what could be a more immersive story telling experience, by giving the player more interactive freedom and control in the virtual world, as pioneered by *Half-Life* (1998). Thus, when designing game worlds and virtual spaces, game designers have to consider the game's narrative, and how it will integrate with the overall game experience.

While the virtual *worlds* of video games have often been explored through the scope of the *narrative* (see Zimmerman 2004:154), there are often strict contrasts between the two concepts of narrative and world-building (Wolf 2012:3; Sierra 2021:32). A focus on world-building often means leading the player away from any linear narrative path, or "main quest" towards the exploration of the game world, according to Sierra (2021:32), who argues:

[T]here is an additional tension between worldbuilding and narrative; creating a story is a narrowing process, involving a close focus on advancement and progression of the narrative, while worldbuilding is a sprawling, expansive process. Extraneous detail detracts from linear narratives, leading players to do precisely [...] whatever has sparked

their interest as far as it will take them, even if it is away from the “main” story. In contrast, worldbuilding revels in encyclopedic detail and description, providing myriad opportunities for players to find their own way in.

Video game worlds may encourage exploration and often deviations from the game’s objectives. Strictly following and sticking to game narratives may also mean players miss out on the game’s worldly details and micronarratives. These often lead to a deeper appreciation and understanding of the narrative and experience as a whole.

It is clear from the discussions above that world-building and narrative have overlapping elements, particularly with features like micronarratives. While gameplay may be a priority in the development process, one must also consider the game world when addressing the narrative, and *vice versa*. While it is important to distinguish and understand the game world’s role in a player’s immersive experience in video games, narrative gives meaning and plays a vital role in player interest, engagement, and understanding of the world.

4.4 Narrative as an immersive strategy

In this section, I turn the discussion towards narrative as an immersive strategy. I begin by discussing and contextualising the concept more generally, before analysing how immersion is achieved through narrative in video games more specifically.

4.4.1 Narrative contextualised

It has been made clear throughout discussions in this study of immersion that narrative can play a part in the sensation. Narrative is thus reflected as a dimension or category in models that analyse the nature of immersion, such as the SCI Model and Player Involvement Model, as discussed in Chapter Three. “A stirring narrative in any medium,” writes Murray (2017:123), “can be experienced as a virtual reality because our brains are programmed to tune into stories with an intensity that can obliterate the world around us”. As Murray suggests, one can immerse oneself *into* a story, almost to the extent that one may begin to feel present *there*. This sense of immersion extends beyond the understanding of immersion as only a sensory experience, elicited by interactive, *immersive media* such as VR, or the experience of being occupied by

a task that requires one's full mental aptitude. *Narrative, imaginative* (Ermi & Mäyrä 2005:8), or *fictional immersion* (Arsenault 2005:1) all refer to how one is immersed by the narrative presented by a particular type of media, rather than only its illusionistic or ludic characteristics.¹¹

Within the video game context, one is reminded of the contention between ludology versus narratology in early video game studies. Dedicated ludologists may argue that narrative plays little to no significant role in video games, while devoted narratologists may analyse video games from a narrative perspective. The debate between the two schools has since largely come to a standstill, and the medium has branched into a multifaceted field of scholarly work. Researchers seeking to understand the nature of the gameplay – and in this case, the immersive – experience acknowledge the role of both ludological and narratological elements that influence and affect the player. This is evident by the incorporation of both schools of thought in models or frameworks such as the SCI and Player Involvement Models. While in this section I explore the role of narrative, particularly in video games, I do not position narratology as a foundational framework for understanding the gameplay experience, but rather as this section title suggests, narrative is seen as *a strategy* that aids towards the sensation of immersion.

As argued in Chapter Two, the notion of immersing oneself into fictional worlds can be traced back to antiquity. To recap briefly, immersion through oral or written narrative, a concept referred to as *enargeia* in ancient Greek (Allan *et al* 2017:36), describes how, through words, listeners and readers would feel present in fictional worlds. Allan *et al* (2017:36) describe *enargeia* as follows:

The central idea of *enargeia* is that the story world appears so clearly to the listener that he experiences the illusion of being present at the events reported in the narrative. [...] Apart from visual effects, the rhetoricians and commentators also point to acoustic effects, which are for instance created by onomatopoetic words that mimetically suggest the sounds of the action described. By “seeing” and “hearing” the events, the listener becomes deeply involved in the narrative, as the distance to the narrative world seems to be reduced to zero: the events appear to take place in front of the listener, who believes that he could almost talk to

¹¹ From this standpoint, less interactive media such as books, can engross readers *into* fictional worlds through narrative alone.

the characters. Such effects will often result not only in cognitive but also in emotional involvement of the audience.

Like immersion, *enargeia* attempts to involve the listener/viewer/player through a sense of transportation, to evoke a sense of presence. The difference between the two concepts – immersion and *enargeia* - however, lies in whom or what is being transported, according to Allan *et al* (2017:36). With *enargeia*, it is the world that is transported to the listener, who stays in place, while with immersion, the listener is transported to the world (Allan *et al* 2017:36). *Enargeia* compels the listener to invoke their imagination, crafting their *own* fictional world, while with immersion, the viewer or player is immersed *into* a fictional world through a medium, such as a book, film or video game.

In her book *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media*, Marie-Laure Ryan (2001:120, 140) further breaks down narrative immersion into three categories, namely, *spatial*, *temporal*, and *emotional*.¹² *Spatial* immersion is used analogously here with the sense of presence, and refers to the extent to which the narrative can bring one *into* the scene. Ryan (2001:122) writes:

In the most complete forms of spatial immersion, the reader's private landscapes blend with the textual geography. In those moments of sheer delight, the reader develops an intimate relation to the setting as well as a sense of being present on the scene of the represented events.

This sense of immersion invites one to actively participate by imagining or recreating the fictional world and that, even through text, one can be transported to Tolkien's *Middle Earth* to visualise the Shire, for example, to such an extent that they may feel present there.

Temporal immersion refers to the feeling or anticipation of wanting to know the

¹² While Ryan is primarily concerned here with immersion with regard to literature and written narrative, her findings still prove useful when considering more interactive media such as (VR) video games. Initially, narrative was considered the realm of literature, or more broadly print media. Janet Murray's originally published 1997 seminal book *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*, sought to include the analyses of "computer science research, television and video games" as media that could "produce great art" (Murray 2017:xii).

conclusion of narrative beats in a story. In other words, it is “the reader’s desire for the knowledge that awaits her at the end of narrative time” (Ryan 2001:140). The suspense one feels when yearning to know the outcome for certain characters in a story differs from narrative *spatial* immersion. Rather than losing oneself in an expansive world where one may feel present, temporal immersion involves how one may feel involved or tied to the arcs of characters or situations, eager to see how their story ends.

Lastly, *emotional* immersion refers to immersive experiences caused by emotional responses one may have towards characters and events in a narrative. As Ryan (2001:148) explains, “... literary fictions can elicit the same spectrum of emotional reactions in the reader as real-life situations: empathy, sadness, relief, laughter, admiration, spite, fear, and even sexual arousal.”

As such, Nilsson *et al* (2016:114) argue that:

... narrative immersion and its subcategories (temporal, spatial, and emotional) are characterized by a degree of mental absorption or intense preoccupation with the story, the diegetic space, and the characters inhabiting this space. Thus, narrative immersion is largely the product of the mediated content.

While one may experience a combination of these subcategories, which may result in a rich experience of narrative immersion, a user’s sense of immersion may be further enhanced when sensory immersion and interaction are added to the experience. Murray (2017:159) argues that as immersive environments have become more complex, users’ desire for more agency (which she defines as “the satisfying power to take meaningful action and see the results of our decisions and choices”) becomes more significant. Video games have grown into an expansive area and can deliver gripping stories. Their interactive nature, which differentiates them from more traditional media, poses new challenges to storytellers and writers of the medium. As such, the following section will look at narrative in video games.

4.4.2 Narrative in video games

Like Lara Croft/*Tomb Raider* creator Toby Gard (2010:[sp]), game writer Richard Dansky (2021:17) positions immersion as the fundamental goal of video games and further suggests that game writing is a pillar in achieving immersion. He writes:

Immersion is arguably the ultimate goal of video games. It is the concept of making the player forget that they're sitting on a couch twiddling joysticks with their thumbs, and instead making them believe they're mowing down Nazis, leaping from platform to platform over boiling space sludge, or exploring a mansion full of masticating mutants. Good writing can be a vital support for this hope-for experience. [...] [Game writing] needs to focus on the fact that the game is, after all, a game, and bend all its efforts toward supporting, not overwhelming, the game experience.

As previously discussed, academic approaches from a narrative perspective in early video game studies were hotly debated. Narratology, the study of storytelling techniques, sought to study video games using approaches from established fields such as film or literary works, while ludologists sought to study games from a more mechanic or 'ludo-centric' perspective (Aarseth 2004:45; Jenkins 2004:118).

However, the debate was short-lived as video game scholar Dominic Arsenault (2014:476) explains, this controversy was "repudiated by both 'parties' as a non-event". Jenkins (2004:120) maintains the significance of both approaches, acknowledging that analysis of gameplay and mechanics should not overshadow the narrative in video games, and that "[t]he experience of playing games can never be simply reduced to the experience of a story". Nevertheless, video games are a capable medium for maintaining strong narratives, and as Arsenault (2014:482) suggests, research in the field finds itself converged between game and visual media, drawing methods from both while establishing its own.

It is important to establish that since video games are such a "broad family of media", that range from games like "Grand Theft Auto IV (Rockstar North, 2008) and Tetris (1985)," generalisations about them are easily made (Calleja 2011:3). As such, some games may contain very little to no narrative elements, and according to Dansky (2021:1), "[s]ome game genres are more narrative-friendly, by definition, than others." Since this study focuses on narrative-based (VR) video games, this section will reflect

this. Furthermore, analogous to video game world-building, there are two design philosophies when considering narrative within video games; games with narratives that are generally more linear in structure and experience and those with a more open, experimental narrative design. While the study of *worlds* is independent of the study of *narratives*, as shown in this chapter, the two schools have overlapping elements. This overlap is evident in the game development process, which will be reflected in the discussions below.

4.4.3 Defining game narrative: the two types of video game narrative

Game designers and authors Katie Salen and Eric Zimmerman (2004:26:7) refer to “embedded narrative” and “emergent narrative” in video games. Games with embedded narratives are more driven by the main narrative, according to Salen and Zimmerman (2004:26:7), and contain narrative elements that “exist [...] prior to a player’s interaction with the game.” Games that employ emergent narratives are more open in a sense, as the narrative derives from the player’s interaction with the game’s systems, which can often result in “unexpected” outcomes and individualised experiences (Salen & Zimmerman 2004:26:7). Similarly, in *Game Writing Handbook*, author Rafael Chandler (2007:102) refers to *logocentric design*, which is “linear and controlled and has been plotted out and documented by the designer ...”

On the other hand, *mythocentric design*, according to (Chandler 2007:108), is “wide-open and free-ranging and consists of arenas for player action that have been created by developers. The player, as the author of the core experience, can choose the goals and means of the game experience. Unlike *logocentric design*, the developers are facilitators, not creators, of the events that transpire ...”. This sense of ‘freedom’ to pursue a narrative without ‘constraints’, at the player’s leisure, makes open-world games appealing and allows for more re-playability. Players are more likely to *come across* micronarratives (as discussed in the previous section) in open-world games, which perpetuates the player’s *feelings* of being unconstrained. *The Elder Scrolls V: Skyrim* (2011) is an example of emergent narrative or mythocentric design, in which players are encouraged to create their own narrative by exploring the game world. The *Half-Life* series (1998-2020) could be understood as embedded narrative or logocentric design, as the game is particularly linear in its narrative and world, allowing

the developers to carefully craft the player's narrative experience, and journey through the game world.

What sets video game writing apart from other media is player interactivity and the presence of a “narrator” and “narratee” (Eskelinen 2004:37). To understand this, Girina (2015:21-22) stipulates the necessity to “stop considering the player as a reader ... [but rather] ... as an active participant in the narrative process. [...] Within this frame, the player does not passively interpret the text, but he/she becomes an actor that participates within the interactive text”, thus taking on the role of both narrator and narratee. It has been argued that when one engages in more traditional media, such as reading a novel, one is *actively participating* in it. New media and video gaming scholar Carly Kocurek (2018:4) argues that one *actively* “choos[es] to go along with the story ...”, when one suspends their “sense of self” and their own world around them, thus immersing themselves into the story world. Video games extend from this, however, in that the player actively participates and interacts within the narrative and story elements themselves, often influencing and determining the outcome. Game narrative designer and editor of *Game Writing: Narrative Skills for Video games*, Chris Bateman (2021:92) argues that “[i]n a book, film, play, or TV show, the story delivers itself automatically – from beginning, to middle, to end. In a game, however, the story is rarely delivered so automatically.”

Players are cast in a central role in the game and are expected to travel and complete objectives for the story to progress (Bateman 2021:92). Dansky (2021:9) concurs with this notion and argues that the player is at the centre of the experience (but not necessarily the plot). In other words, “Writers are producing something for the players to inhabit and call their own”. The player, while experiencing the actions of the narrative, can also set the pace. They could speed-run through the game, ignoring story and world-building elements, or deviate away from the ‘main quest’ or narrative for portions of the game, thus changing the experience and narrative as a whole. Therefore, Dansky (2021:8) and Bateman (2021:91) argue that developers and writers need to anticipate all actions the player might make as they navigate through the game world. In this sense, game writers take on the role of the “invisible guide to the player as they travel through the game world and the game story” (Bateman 2021:111). As such, video game writers have an array of considerations, from plotting the storyline

and micronarratives throughout the game world, to keeping players on track, and ensuring they know at all times what they should be doing, even if they choose to deviate away from it. For that reason, Bateman (2021:112) argues that “[t]he craft of creating game narratives is more complicated than any other writing role in the contemporary world, and those who want to excel in this work must learn many skills and disciplines.”

Consequently, while Dansky (2021:1) suggests that *game narrative*, “[l]ike many other things in this still-young industry ...” is a complex term to define, he nevertheless, arrives at a workable definition. Game narrative is “*the methods by which the story materials are communicated to the audience*” (Dansky 2021:1 emphasis in original). In understanding game narrative, one must be cautious not to “reduce it to story and story alone”, according to Dansky (2021:1). A game’s narrative includes the player’s entire experience of, and actions through the game’s world, including the story, as Dansky (2021:3) iterates:

Ultimately, narrative comes down to one simple question: What happens? That is the heart of game narrative – what happens in the game? What story does the player create through their actions as they advance through the challenges, decisions and rewards laid out for them by the development team? All of the other questions – what is the world like, who are the characters, why is the player doing this – are secondary to that essential query. Understand what happens, and you understand narrative.

In other words, the narrative of a game can be understood by looking at *what happens* to the player. Considering the micronarratives discussed earlier, for example, the player’s experience and decisions with various micronarratives affect what happens to the player. Thus, the narrative can be understood as the player’s *experience*, including how he/she handles the various mechanics and micronarratives of the game. This experience can change vastly, through each playthrough, particularly in open-world games, which encompass a greater variety of micronarratives, as discussed earlier. This understanding of narrative re-emphasises the overlap between game narrative and world.

The issue with looking at a player’s experience through *only* the lens of narrative this

way, by considering *what* happens to the player, is that it does not account for *how* it happens. As I highlight in Chapter Two, the materiality of a game also includes the materiality of the *platform*. Since “the medium is the message”, according to McLuhan (1964:9), how the medium affects the narrative should be acknowledged. The limitations or advantages of the medium being played on would drastically affect the player’s experience of *what* it happens to them. For example, the overall story of *The Elder Scrolls V: Skyrim’s* (2011) is experienced much the same, whether played on a computer, X-box, or even VR. However, the *ludological* elements – which affect *how* they are experienced – in *The Elder Scrolls V: Skyrim VR* (2017) are altered. Combat in *Skyrim VR* is very different from its ‘traditional flat-screen’ counterparts, in that the player uses physical movements to swing swords, cast spells, or fire their bow. Since this definition of narrative considers *what* the player experiences, one should also consider *how* they are experiencing it. The matter *in which* the player experiences, in this example, combat in *Skyrim* (whether by clicking away at a mouse or physically swinging their arms in VR), also greatly affects *what* happens to the player. Therefore, in addition to *what* happens to the player, one should also consider *how* it happens.

This echoes Nitché (2008:51), who argues that within 3-D games, the player writes their own experience in space by acting in it, and this experience is considered the plot, which is the “active interpretation of the fictional world”. This only heightens the sense of immersion players may experience in the game world. Within open-world games, micronarratives and random encounters help to make the world feel alive and lived in (as discussed earlier). The player may come across a cave or dungeon, may decide to enter and explore it – may encounter a hidden side quest to help an NPC, or may not. These decisions contribute to the overall narrative, influencing the game’s plot and the player’s experience. This notion still holds true within more linear games, albeit perhaps to a lesser extent, such as the *Half-Life* franchise (1998-2020); for example, as each playthrough of the game may be different, encounters and fights may not end the same. As a result, the player actively interprets and takes part in the plot as they play through the video game (Nitché (2008:51), which enhances immersion in the game world as the player creates individual experiences. This once again highlights the intersection of world-building and narrative.

4.4.4 The function of video game narrative: a strategy for immersion

The experience and understanding of a game's narrative is further complicated by the implementation of narrative strategies, such as: “cut scenes”, “character”, “dialogue”, “setting”, amongst others (Dansky 2021:3-5). Some of these narrative techniques have been adapted from media such as film and have grown to become tropes within the video game industry. Furthermore, narrative also gives reason or meaning to the events and actions of the player, according to Dansky (2021:6 emphasis added), who explains:

On the most basic level, narrative strings together the events of the game, providing a framework and what can alternately be called a *justification*, a *reason*, or an *excuse* for the gameplay encounters. At its best, narrative pulls the player forward through the experience, creating the desire to achieve the hero's goals and, more importantly, see what happens next.

Thus, narrative in video games could be seen as one of the supporting structures or props of the overall game experience, particularly its immersive possibilities. During the development of *Half-Life: Alyx* (2020) for example, the narrative plot was only finalised after the gameplay structures had already been completed. According to video game journalist Geoff Keighley (2020:[sp]), the level designs (most of the explorable world) had been finalised and the writers knew where the player had to go but needed a narrative *reason* for getting there. He explains that “[t]he writers were inheriting a game mostly set from a gameplay perspective. Somehow, they had to figure out how to alter the game's main plot, characters, and dialogue within the limits of what's already there ...” (Keighley 2020:[sp]). In a sense, the designers of *Half-Life: Alyx* (2020) already planned the player's general experience. While the game's mechanics, enemy encounters, and puzzles may have already been mapped out, a narrative reason for experiencing these encounters was needed. The narrative gives reason and perspective for the rest of the encounters and engagements throughout the game. From this standpoint, within video games, narrative plays second to gameplay and the experience of the game world. When experimenting with VR and the game they would eventually build, Valve settled on the *Half-Life* franchise, not because of the story, but rather the experience of the *world* of *Half-Life* and the new prospects VR would offer (The game awards 2019:[sp]).

While narrative plays a vital role as a strategy to immerse players, giving them a *reason* and *meaning* for gameplay activity, it cannot exist in video games without the ludological elements. By contrast, there are many video games that contain little to no 'intended' story by the developers, in which the ludological elements of play are reason enough to engage with the game, as by their very nature or materiality, video games are an interactive medium for play. Sandbox games would fall into this category, as the player's 'fun' is found in experimenting and engaging with the game's mechanics. The *narrative* in this kind of game, then, following Dansky (2021:6), can be understood as *what* (and how) the player is doing.

Thus, in designing video game narratives, the game world is greatly affected and considered. In what Jenkins (2004:112) calls *Spatial Stories and Environmental Storytelling*, he compares this consideration towards spatial storytelling in video games to that of classic literature, referring to the works of Homer and Tolkien as stories with the notion of quest and travel narrative, making use of space. He argues that games "fully realize the spatiality of these stories, giving a much more immersive and compelling representation of their narrative worlds". This sense of mapping out space and the quest or journey through the game world is highlighted above, with the development of the *Half-Life: Alyx* (2020) world, before plotting the narrative threads. Girina (2015:28) draws from this idea, suggesting, "[n]arration, presentation, gameplay, interaction all depend on and come from structuring space." Nitsche (2008:3,44) reiterates this spatial importance when it comes to narrative, drawing similarities between video game worlds and architectural spaces from which narratives are assembled. He proposes that narratives serve the game world, allowing players to "make sense of the in-game situation" (Nitsche 2008:44).

Dansky (2021:6) further argues that successful game narratives employ three techniques: "*immersion, reward, and identification.*" Dansky's (2021:6) first technique, *immersion*, is understood as being entirely "absorbed" by the task at hand, echoing Csikszentmihalyi's (2008:71) flow state. "[W]hen a player is immersed in a game," writes Dansky (2021:6), "the real world ceases to exist, and the game world becomes their reality. Narrative provides context for the game events, and a sufficiently believable context supports immersion." From the outset of *Half-Life 2* (2004), it is established through the citizens and the oppressive *civil protection* that the dystopian

world Gordon Freeman arrives in is one of dominion over humanity. The narrative gives context to Gordon's rebellious actions throughout the game, which are to battle the Combine. Dansky (2021:6) argues that the narrative explains who the enemy is and why it is important for the player (and thus the character, in this case, Gordon), to embark on the journey. "Since the audience for the game is actively participating in the narrative flow," Dansky (2021:17) writes, "the narrative has to be built around the concept of audience buy-in. Players need to be fully committed to the game fantasy ...".

If players are immersed in a game's narrative, they will more likely care for the characters, world, and events that take place in the game, and more likely to want to see it through. I find that I scarcely keep playing the game after I have completed the 'main narrative' questline (this is more relevant to open-world games that allow and encourage the player to keep playing, exploring the game world, and completing side quests even after the main story has concluded). In games like *Red Dead Redemption* (2018) and more recently, *Hogwarts Legacy* (2023), I try to delay my progression with the main questline so that I may first enjoy side quests and explore the game world. Once I've completed the main story, I find that I lose motivation to play the rest of the game. As fun and engaging as these game worlds and gameplay may be, they lose their meaning for me once the credits roll.

Secondly, "[n]arrative can also serve as a *reward* to the player" (Dansky 2021:6). In this sense, narrative is used as a tool to entice players to keep progressing through the game and to reach the narrative climax. "[N]arrative events can be revealed gradually," Dansky (2021:6) explains, and "delivered as rewards for achieving in-game goals". These expositional rewards may come in the form of cutscenes that further narrative plots as the player progresses. The *Assassin's Creed* (2007-2020) games make use of cutscenes before or after quests and in-game goals. On the other hand, the *Half-Life* series (1998-2020) weaves exposition more naturally into the game experience to not take control away from the player.¹³ Characters will converse

¹³ Valve does in-fact make use of cutscenes in the *Half-Life* series (1998-2020). *Half-Life 2* (2004) begins with a cutscene of *The G-man* waking Gordon up from the stasis he was left in since the original *Half-Life*. *Half-Life 2: Episode 2* (2007) ends with the infamous cliff hanger, resulting in the death of the rebellion leader *Eli Vance*. Gordon (the player) is restrained and forced to watch. While the player can look around, the scene plays out as a cutscene. Furthermore, while the game

amongst themselves and to the player in the game world, and not as a separate cutscene. Cutscenes can be a treat for players, a spectacle which they have earned, to learn more about the game narrative and world. In some games, cutscenes allow players to see their customised player avatar integrated into a pre-rendered cinematic cutscene. They can, however, also be disconnecting or immersion breaking, as they remove the player's agency from the experience, relying on tropes adopted from the film industry to forward the narrative or plots.

Lastly, *identification* “lays everything out for the player, telling them what’s what, who’s who, and what the state of the world around them is” (Dansky 2021:7). As previously stated, narrative helps to establish the game world and its occurrences explain the reason for your character/avatar’s actions. “By laying out clearly what the elements of the world are,” Dansky (2021:7) writes, “the narrative establishes the players’ place in it and the actions they are expected to take as a result.” As a fifth-year student in *Hogwarts Legacy* (2023), for example, I understand and *expect* to participate in classes and understand my (or my character’s) *place* in the world. In this sense, the game’s narrative serves as the final flourish in the immersive experience of a game.

Players are immersed at several levels throughout the gameplay experience; sensorily, through increasingly engaging screens, augmented audio, and haptic touch; through challenges and the flow experience the game presents via systems, puzzles, and engagements; and through the mechanics, physics, and design of the game world. Game narrative gives reason, context, and meaning to these immersive strategies. While video games can be creative media to experience rich, immersive narratives and game worlds, video *games*, as the latter part of the phrase suggests, are ludic in nature, and the narrative subsequently needs to serve the greater pleasurable experience of the game.

incorporates its narrative exposition more organically in the game, they could be seen as forms of scripted scenes, during which the player is free to move around in, however unable to change or alter the outcome.

4.5 Narrative in VR

In light of the above discussion on the role of narrative in video games, I now look towards how narrative is considered and employed in VR.

4.5.1 Challenges in directing attention in VR (films/stories)

While many of the above discussions surrounding narrative in video games can be extended to VR video games, like other emerging media before it, such as 3-D cinema, VR is still adapting as a story telling platform. The premise of VR is to create a sense of presence by placing a user in a virtual space, blocking out external distractions of the physical world, and filling the viewer's entire field of vision with an engaging artificial world. However, now that viewers have the agency to look in all directions within a hermetical virtual world, how to direct their attention towards narrative elements and story beats has been a significant challenge for filmmakers when considering VR, as VR distorts many of the conventions that the film industry has refined over decades. While the medium has been criticised as a gimmick, Bucher (2018:1-2) contends that storytelling within VR is still in its infancy and that the methods are being informed, eventually likely to compete with established media like film. Bucher's claims here, which relate to film-making in VR, should also be considered when analysing VR video game storytelling. There are two approaches to storytelling in VR, according to Bucher (2018:7), that pivot around viewer agency. He writes:

Currently, there are two dominant philosophical storytelling approaches and perspectives in VR. The first allows the viewer to watch a scene that is played out in the space around them. They are immersed in the scene but not necessarily an active participant. This is engaging for a few moments but can become frustrating to the viewer when they want to more intimately interact with the world around them. Storytelling in Virtual Reality is less about telling the viewer a story and more about letting the viewer discover the story. The second philosophical approach allows the viewer to actually become the camera, in a sense. Stories told in this format begin to blur the line with video games. (Bucher (2018:7).

The first approach essentially utilises VR as a 360-degree video experience, and does not seize the full scope of what VR has to offer. As previously established, *interactivity* within the virtual world is fundamental to an authentic VR experience, according to

Sherman and Craig (2019:11). Reducing VR to a 360-degree screen experience fails to realise the potential and purpose of the medium. Lanier (2017:18,79,81) iterates that VR was never intended simply to make movies or games flashier, but rather to be a medium through which one could express and jointly experience dreams or “a new type of consensus reality”. While applications for VR are not compelled to employ interactive features, VR is built around these structures, and, unlike most other media, offers interaction using bodily motion.

Films utilising the second approach move beyond a reliance on the (fleeting) excitement produced by 360-degree environments but rather involve the viewer in both experience and narrative, employing (more of) the interactive structures VR is built around. This suggests the narrative paradox, referred to briefly in Chapter Two. To recap, the narrative paradox refers to the conflict between accommodating for user *agency* within a VE, while establishing a “*pre-authored*” narrative (Louchart and Aylett 2003:244 emphasis added). In other words, the narrative paradox is the tension the developers face when setting an established story in a world that does not necessarily ‘force’ players to engage with it. This paradox is arguably exacerbated when considering VR, where, even in relatively lesser-interactive VR experiences, in which users can only interact by moving their heads (fundamental to any VR experience, following Slater (2018:432)), the relinquishing of a user’s ‘freedom’ can disrupt feelings of immersion and presence.

Similar to narratives in video games over the past two decades, VR storytellers have had to innovate from more established storytelling media, such as film, to develop conventions for the new interactive media. In his book *Storytelling for Virtual Reality: Methods and Principles for Crafting Immersive Narratives* (2018), Bucher interviews prominent storytellers in the VR industry, whom I reference here. What becomes evident when considering narrative in VR is that not all conventions and tropes used in film, even camera angles and cuts, transition smoothly to VR. “The more cuts we do,” explains video game designer Brian Allgeier (quoted in Bucher 2018:40), “the less immersive it becomes, because you’re always reminded that we’re shifting your viewpoint and you’re not really there.” Furthermore, Jessica Brillhart (quoted in Bucher 2018:11-12), former principal filmmaker for VR at Google, suggests that while the

traditional three-act structure is a good basis,¹⁴ it limits the scope of the experience by “allowing for a storyteller to exist. [...] In VR, what we’re doing is creating experiences for people to then go into and have their own experiences” This echoes Dansky’s (2021:3) previous description of video game narrative, as being not only the experience of the (intended) story, but including the player’s entire experience of, and actions through, the game. Murray (2017:159) describes this form of agency as “the satisfying power to take meaningful action and see the results of our decisions and choices”. Letting the player engage with the game at their own pace, exploring the world and experiencing the various micronarratives (discussed earlier) as they *choose*, allows the player to create their own story (even if only the *illusion* of their own story). Brillhart (quoted in Bucher 2018:12-13) suggests that VR storytelling revolves around this agency, setting up *potential* story(ies) and outcomes that the user may end up experiencing, as forcing an exact or intended experience as in a traditional film, may involve forcing them where or when to look, which defeats the VR experience.

As such, considering the (novel) agency afforded by VR, storytellers, and developers of the medium are still adopting tropes from more established media. In learning to direct attention in VR, one can draw from live theatre, according to Allgeier (quoted in Bucher 2018:39), as theatres are 360-degree environments in which audiences are directed to areas on stage. Comparable to the function of the spotlight in a theatre production, audiences tend to look at the brightest area or scene in a VR space (Allgeier, quoted in Bucher 2018:39). Similarly, Allgeier (quoted in Bucher 2018:39) stresses the power of “spatialized audio”, which draws audiences’ attention to the source of the sounds. In the following subsection, I analyse four VR films to look at how VR filmmakers have attempted to address the challenge of storytelling in VR, particularly the issue of directing attention in a medium built for interaction. Thereafter, I turn towards how emerging VR video games – such as *Half-Life: Alyx* (2020) – attempts to address the challenges.

¹⁴ Dating back to Aristotle, the three-act structure refers to the idea that a story comprises of three-acts: a beginning, middle and end.

4.5.2 Compromises made to direct attention in VR films

The following analysis of four prevalent VR films, with varying approaches to storytelling, notes compromises taken to direct viewers' attention. The four films are *Clouds Over Sidra* (Arora & Milk 2015), *Henry* (Lopez Dau 2015), *Dear Angelica* (Unsel 2017), and *Wolves In The Walls* (Billington 2018). These are short films, which suggests the experimental nature of an emerging medium. All require an HMD to be viewed and, apart from *Wolves in the Walls* (Billington 2018), are freely available online. The films span a three-year period, representing innovations in the medium between 2015 and 2018, during VR's third wave, when consumers could more easily access the medium.¹⁵

As briefly discussed in Chapter Three (3.3), VR has often been described and marketed as a tool to deliver empathy, through the sense of presence conveyed in its stories. *Clouds Over Sidra* (Arora & Milk 2015) has been described (and, as previously discussed, also criticised) in this regard.¹⁶ To recap, *Clouds Over Sidra* (Arora & Milk 2015) is a VR documentary that follows a twelve-year-old Syrian refugee girl, Sidra, in the Zaatari refugee camp in Jordan. The 8-minute film was shot with a 360-camera, which allows audiences to 'look' around the various areas of the camp as Sidra narrates what life there is like (Figure 13).

While *Clouds Over Sidra* (Arora & Milk 2015) might elicit forms of empathy, or what Bollmer (2017:66) argues is closer to "identification" or "association" from its viewers, it could be argued that as an 8-minute 360-degree video, it does not employ the full scope and purpose of VR. It does not (fully) employ interactivity, which – as Lanier (2017:280) argues – encourages users to participate in the depicted environment through a sense of embodiment rather than only to observe or 'visually absorb' it. The excitement of "physical immediacy" simulated in VR inevitably fades as the novelty subsides, and thus simply having audiences watch 360-degree videos in VR does not automatically solicit feelings of empathy (Murray 2020:12-13,24). Being live-action

¹⁵ The following sections were used in part for publication in *Aniki: Portuguese Journal of the Moving Image* (see Walter 2023).

¹⁶ Despite the suspicions about VR's ability to generate empathy in its viewers, *Clouds Over Sidra* (2015) – which was made in collaboration with the United Nations – helped raise nearly \$4-billion, according to *Wired* editor Peter Rubin (2018:102). This could be seen as evidence that the film 'touched' people, and proposes the immense capability of this (new) storytelling medium.

limits the film's ability to offer the interactive experience expected in VR, as the viewer can only 'be' and view the depicted world from the position of the 360-camera used during filming. Moreover, the film is edited similarly to a traditional documentary film, using fades between scenes. These transitions, while gentle, can potentially disrupt feelings of presence. While the viewers can look in all directions, each new scene starts by facing the viewer at the subject of the scene, as intended by the directors.



Figure 13: Sidra sits and eats with her family in a refugee tent, *Clouds Over Sidra*, 2015. Screenshot by author.

Like *Clouds Over Sidra* (Arora & Milk 2015), Oculus Story Studio's animated short film *Henry* (Lopez Dau 2015), directed by former Pixar animator Ramiro Lopez Dau, employs the 'power of empathy' in VR. Like Pixar films that appeal to audiences of all ages, the 8-minute film's plot is straightforward: Henry is a likeable hedgehog who wants a friend to hug despite his quills. *Wired's* Angela Watercutter (2015:[sp] emphasis added) interviewed the studio's creative director Saschka Unseld and character lead Bernhard Haux, who explained that "[t]he *freedom* of VR can be daunting, so Story Studio added a ladybug that enters the scene and draws viewers." The ladybug subtly directs viewers, alerting them to elements to look at: the bug crawls under the table, showing viewers that they can look there. Henry occasionally looks into the viewer's eyes, often when sad or excited, in an attempt to involve the viewer in the scene as his gaze follows them (Figure 14). While not new to films, breaking the fourth wall is often avoided on traditional 2-D screens but has become a trope in VR

to bolster a connection (Nash 2021:118).

Unlike *Clouds Over Sidra* (Arora & Milk 2015), there are no cuts in *Henry* (Lopez Dau 2015), and the film is partly rendered in real-time and plays out seamlessly.¹⁷ Following Allgeier (quoted in Bucher 2018:40), shifting the user's perspective (through cuts and transitions) in VR can disrupt feelings of presence. Although the viewer can look around and potentially explore Henry's home, a tree hollow, the story mainly plays out within the 180-degree space in front of the viewer. Since *Henry* (Lopez Dau 2015) is set in a single space over the course of a few minutes, it removes the need to change scenes or time, eliminating the 'editing' challenge faced in longer VR films.

Both films seemingly 'rely' on the (short-lived) novelty of a sense of presence that VR affords in eliciting a sense of empathy or association with the depicted subjects. *Henry* (Lopez Dau 2015) does, however, take more advantage of the medium's interactive description, subtly inviting viewers to look around the space. Both films could, however, be experienced on a traditional 2-D platform, resulting in a similar experience for audiences. As Murray (2020:24-25) notes, in all media - immersion is earned through constant development, and designers must adapt "new conventions and new genres" to take advantage of the (new) medium.

¹⁷ Henry's movements are rendered in real time, to be able to react according to the viewer's movement and position (Watercutter 2015). This is comparable to video games, which render elements in real time to account for the player's movement and interaction.



Figure 14: Birthday loneliness: Henry gazes at the viewer, *Henry*, 2015.
Screenshot by author.

Oculus Story Studio's follow-up and last film (before the unit was shut down by Facebook in 2017), *Dear Angelica* (Unsel 2017), takes a different approach and is a film that would not make much sense outside of VR. This 13-minute film depicts narrated scenes from a daughter's letter to her deceased mother. *Dear Angelica* (Unsel 2017) surrounds the viewer with Jessica's memories and her imaginative recreation of her mother's adventurous life as a film star. The scenes are portrayed as animated paintings, which catch the viewer's gaze as the paintings are created around him/her. Unlike *Henry* (Lopez Dau 2015), the film's narrative makes full use of the space around the viewer, directing viewers to look around, and even behind them. While the camera or perspective never cuts, the scenes change by fading the paintings away (Figure 15). Sound and darkened 'unused' background space spotlights the paintings, guiding the viewer's attention throughout the piece. These directing techniques echo Allgeier (quoted in Bucher 2018:39), who suggests that viewers in VR tend to look at the brightest area of a scene (comparable to a spotlight in live theatre), while "spatialized audio" draws audiences to a source of sound. Though the film is not necessarily an interactive experience, Watercutter (2017:[sp]) notes that some images react slightly to viewers who examine them closely. The film's scenes, contrasted against the black background, fade in and out around the viewer's mostly stationary position. This directs the viewer's attention, but in an unobvious way.



Figure 15: Jessica and her mother on the moon, *Dear Angelica*, 2017.
Screenshot by author.

Lastly, Emmy Award-winning *Wolves In The Walls* (Billington 2018) blurs the line between video game and interactive film, following Bucher (2018:7). Based on the book of the same title by Neil Gaiman and illustrated by Dave McKean, the story (of around 40 minutes) follows eight-year-old Lucy, who is convinced wolves live in her walls. Unlike the three earlier examples, the viewers interact directly with the story, and Lucy engages with them. Lucy brings each viewer – her imaginary friend – to life in her world, by drawing the viewer – giving them hands to interact with so they can help her on her quest. Lucy is responsive to viewers' interaction – at one point asking the viewer to mark an area on the wall with chalk. If a viewer draws too much, however, Lucy calls that viewer out, exclaiming that she will get into trouble. These reactions and responses from Lucy to a viewer's action in the story further elicit the sense of Heeter's (1992:263) 'social presence', which she describes as the "extent" to which other virtual beings engage with the viewer.

To maintain the user's attention, and direct them throughout the film, Lucy and the space she occupies is constantly illuminated, while much of the 'unused' area around is often blacked out, compelling the viewer to look in the right direction (Figure 16). While sets covered in darkness may work for this story – fitting the sinister setting of Lucy's home – this technique may not transition well to all VR films, as it does not

utilise the entire space afforded by VR.



Figure 16: Lucy listens for sounds in the wall, *Wolves In The Walls*, 2018. Screenshot by author.

Contemporary VR films are still experimental, with different approaches to structure and narrative. The above films have different approaches for directing user attention and varying (albeit limited) user agency and interaction. Each film seemingly settles for less-inspired solutions to direct the viewer's attention. For instance, *Clouds over Sidra* (Arora & Milk 2015) fades to black between scenes and begins each scene with the subject in front of the viewer. While the film gives a sense of being in a refugee camp, the viewer is bound by the position of the 360-camera. Conversely, the entirety of *Henry* (Lopez Dau 2015) is experienced in a single space, mostly contained with a 180-degree field of view. *Dear Angelica* (Unsel 2017) surrounds the viewer with fading paintings. Likewise, *Wolves in the Walls* (Billington 2018) darkens 'unused' areas of scenes, spotlighting where the viewer's attention is needed. While these techniques may work for their respective films, they could be viewed as unimaginative and less immersive, as they do not solve the difficulty of having the viewer fully present in the depicted worlds for extended periods.

By contrast, traditional video games have for decades delivered narratives while allowing for player exploration within their virtual worlds. Even as a relatively 'young'

medium, narrative within VR video games is expected to uphold and perhaps extend many of the immersive conventions traditional video games have already established. Consequently, the development of film and storytelling in VR has resulted in adopting the “language of video games”, according to Bucher (2018:18), as a means to handle this newfound viewer agency. While storytelling in VR films and games is in its infancy, video game makers are more experienced at dealing with player agency and interactivity within narratives.

4.5.3 Storytelling in emerging VR video games: addressing the challenges of directing attention

Many of the above-mentioned challenges to VR filmmakers remain pertinent to VR video game developers. Though video games traditionally solicit different levels of engagement in comparison to films, it is useful to discuss and compare how each medium fares in adapting to VR, more so as VR films begin to solicit more levels of engagement from the user – blurring the lines between VR video games and films – as seen with *Wolves in the Walls* (Billington 2018). In this subsection, I discuss how video games, specifically *Half-Life: Alyx* (2020), undertakes narrative in VR.

VR video games tend to incorporate some form of virtual body – the player’s extension into the virtual world – which plays an essential role in the sensation of presence (see Kilteni *et al.* 2012:374).¹⁸ Since many VR films offer disembodied experiences because they do not ground viewers in the depicted world, what may result is a disconnection from the events in the environment, resulting in lesser feelings of presence. Further ‘moving’ the viewer, through the use of cuts or transition of scenes, can also remind users of their disembodiment in, or detachment from, the virtual world.

Unlike the VR films explored above, in which the world and story are projected around the viewer’s (mostly) stationary position, game designers have the additional challenge of considering the player’s positioning in space and where they will be when their attention is needed. This further confounds the task of directing the player’s attention towards elements or beats that forward any intended story plot. Hence the

¹⁸ Since embodiment plays a fundamental role for the player’s sense of immersion and presence, it is discussed in more detail in the following Chapter Five.

incorporation of familiar storytelling tropes already used in traditional video games, such as cinematic cutscenes, which draw attention to sequences or events taking place in the game world. However, not all video game narrative tropes, such as camera angles and composition, transition well to VR films (Bucher 2018:7), and by taking control away from the user, cutscenes may be disorientating in VR.

Valve has therefore developed novel methods of directing player attention in *Half-Life: Alyx* (2020) towards certain events, story beats, or spectacles within the VR world. Throughout the developer commentary of the game – a playthrough mode that allows players to listen to the developers explain their challenges and the solutions that led to the final experience – it is highlighted that Valve dedicates much of its playtesting time to the player’s experience throughout the game. Developers would observe testers playing, noting their decisions, reactions, and experience, and adjust accordingly. This level of iteration echoes Murray’s (2020:22) call for a shift towards “iteration on the conventions of participation” rather than focusing only on the technology when considering sustaining immersion in interactive media. Through playtesting, Valve can exercise great control over various aspects, such as narrative pacing and attention management. This level of control, or direction, of the game’s overall experience, is comparable to that of a film, particularly as the world and narrative in the *Half-Life* (1998-2020) games are specifically linear and less prone to player deviation.

The game world is also fully explorable and interactive, allowing players to engage with items and props that interact as expected, which in VR, allows for a deep and credible immersive experience. Thus, with arguably more challenges to consider than within VR films, Valve can still deliver a compelling story and memorable VR experiences. In the early portions of *Half-Life: Alyx* (2020), for example, Alyx (the player) must stop a train carrying her imprisoned father by causing it to crash. The developer commentary for the game explains that this crash sequence serves as a spectacle reward for the player. The train wreck was one of the first destructive sequences of the game, and Valve developer Alireza Razmpoosh (quoted in *Half-Life: Alyx* 2020, emphasis added) explains how they “had to learn about player behaviour in VR and how to direct the player *naturally* to immerse them in the chaos.” In order to ensure the player is in position to witness the crash as intended, the player is tasked

with pulling the railway switch to alter the train's course into a wall. Razmpoosh (quoted in *Half-Life: Alyx* 2020) explains that “[s]ound design, level design, effects and animation had to be carefully coordinated to lead player’s attention through each stage of the wreck.” As the player approaches the railway switch, the train’s horn can be heard in the distance, alerting the player to its direction of approach. While holding the switch in place, the player’s gaze follows the train, which speeds across into a brick wall, causing an immense crash. Using sound, attention is then drawn away from the front, towards the carts of the train, which begin to derail and pile up (Video 1).¹⁹



Video 1: Alyx crashes the prisoner train to rescue her father, *Half-Life: Alyx*, 2020.
Video by author.

Just when the player may think it to be over, his/her attention is drawn, again using sound, to the collapse of a smokestack to end the spectacle and expose the path forward for the player (Razmpoosh quoted in *Half-Life: Alyx* 2020). The developers – as “invisible guides” (Bateman 2021:111) – subtly direct the player’s gaze through the crash sequence and create an experience in which the player’s own involvement throughout is considered the plot (following Nitsche 2008:51).

Given the freedom offered in video games, perpetuated by the affordance in VR, writers must attempt to create scenarios that give the viewer/user the illusion of ‘free will’, while subconsciously directing them through the narrative. By positioning the player strategically at a viewpoint to observe the spectacle as designed while causing the crash, he/she is more likely to feel immersed and present in this scene. This involvement by the player is rewarded with the spectacle of the train crash, to elicit the “satisfying” sense of agency, which, Murray (2017:159) argues, is more likely to occur in a more “realized the immersive environment”. Featuring stunning surroundings, the world of *Half-Life: Alyx* (2020) arguably ‘raises the bar’ for visual fidelity in VR video games. Moreover, it is a world crafted with a high level of attention to detail, which

¹⁹ Scan the QR code with a smart device, or alternatively, click on it to watch the video.

entices audiences to return (following Wolf 2017:205-206). When events and sequences such as the train crash occur, they happen within the context of the authentic-feeling virtual world surrounding the player – making it seem more lifelike and immersive. This demonstrates VR's formidable capacity to deliver compelling narrative sequences that maintain presence in the depicted world throughout the experience. Through constant playtesting throughout development, and an amalgamation of strategies drawn from various media to use in VR, Valve can direct player attention as desired, in a fully interactive world that encourages exploration.²⁰

By positioning the viewer in large hermetical spaces with an array of detail to look at, viewers are more likely to feel present and part of the world. While more challenging in such spaces, directing attention towards narrative beats and sequences should come across as natural, using sounds and animation and constant revision through test runs, so that the viewer does not feel compelled to look, but rather invited to. This sense of freedom (even if it is the illusion of freedom) can allow the viewer to feel more part of and immersed in the virtual world instead of only being shown it.

While the medium of video games differs from film, soliciting different forms of engagement from their audiences, there are strategies VR films can gain from VR video games (and *vice versa*), particularly as they utilise the same interactive-based hardware. The notion of interaction, however, may remain a grey area as VR films that accommodate for extensive interaction begin to blur the line between films and video games. While user interaction within VR clearly evokes higher levels of immersion, filmmakers may need to decide what kind of experience they are offering, as the definition of what constitutes a VR film experience is still evolving.

There is no clearly established convention for directing attention towards narrative beats within VR, as the medium is still in its infancy. New games and films are trialling

²⁰ However, accounting for (un)intended responses by users in VR proves to be a challenge, particularly throughout longer narrative experiences such as video games. Therefore, near the start of the game, the player (Alyx) is handed a radio headset, to be in constant radio contact with Russell, a resistance scientist. Through the headset, Russell communicates with Alyx and helps guide players through important moments of the game, including story beats. While Russell's constant communication with Alyx can be seen as a narrative compromise, Valve developer Jason Mitchell (quoted in *Half-Life: Alyx 2020*) suggests Russell is only used as narrative exposition when necessary, particularly if the player may easily miss important narrative details.

and testing various narrative tropes and inventing new ones to adapt to the new medium. As Milk (quoted in Bucher 2018:100) argues, both the technology and language of cinema were birthed simultaneously, while with VR, the technology came first, but the language is still being developed. VR video game 'language' is feasibly more established, in the sense that it is more 'used to' dealing with a player's agency. As such, when considering the *narrative* of the VR video game – which is understood as the player's experience of the game, including how he/she handles the various mechanics and micronarratives, following Nitché (2008:51) and Dansky (2021:3) – *subtly* directing attention towards a given story's narrative beats, in a manner that feels organic to the surrounding virtual world is crucial in sustaining the player's immersion and sense of presence.

4.6 Conclusion

In this chapter I looked at how world-building and narrative are used as immersive strategies, particularly in (VR) video games. World-building allows for the expansion of a fictional world through sequels, spin-offs, or transmedial means. Furthermore, fictional worlds are often created to have enough material to be revisited. When considering video games, world-building is a broad term that encompasses details from level design to aesthetic choices. Unlike narrative within video games, world-building centres around exploration and creating individual player experiences, while narrative is a "narrowing process" (Sierra 2021:32), leading players through intended or designed experiences.

Narrative on the other hand is an effective immersive strategy that has been used for centuries to engross one into fictional worlds, through stories and characters, rather than through illusion. While video games can elicit immersion through gripping stories, it is also used as a means to give reason and meaning to the mechanics of the game, and actions of the player. Narrative in video games is thus understood more broadly as the player's *entire* experience of the game. This includes everything that happens as the player journeys through the game. Within VR, storytelling and narrative pose new challenges to writers and game designers, as the issue of directing user attention within a hermetical virtual world that promotes agency becomes apparent. While storytelling tropes from more established media, such as film, and more recently,

traditional flatscreen video games, have been used in VR, not all conventions transition smoothly. In this context, through trialling and playtesting, new methods of storytelling in VR are being established.

Before the player can explore vast virtual worlds and experience the narrative of a game, the player begins their experience of a game as the playable character or avatar. Throughout the study, the concept of embodiment has been mentioned and referenced as a fundamental part of the player's gameplay experience. The player's embodiment as the playable character, therefore, affects their immersive experience. Moreover, since VR as a medium solicits more of the user's body *into* the virtual experience, it is beneficial to understand how embodiment in (VR) video games works.

CHAPTER FIVE

EMBODIMENT AND PHENOMENOLOGY IN (VR) VIDEO GAMES

5.1 Introduction

The steam store page for *The Witcher 3: Wild Hunt* (2015, emphasis added) markets the game as follows:

You are Geralt of Rivia, mercenary monster slayer. Before you stands a war-torn, monster-infested continent you can explore at will. Your current contract? Tracking down Ciri — the Child of Prophecy, a living weapon that can alter the shape of the world.

The previous chapters discuss immersion as a strategy, particularly in (VR) video games. The discussion now moves towards the sensation of embodiment as it pertains to video games and VR. Keogh (2018:34) argues that the desired immersion often sought in video games is frequently attributed to the game world, not a “quality emerging from play.” As established in models of immersion, such as the SCI and player involvement model discussed earlier, immersion is attributed to several aspects, many of which are ludological elements. Before the player can explore vast virtual worlds and unravel narratives, the player begins their experience of a game as the playable character or avatar. As the title of this study, “*Being Alyx Vance*” suggests, the player experiences the game world as Alyx. The notion of *being* the controllable character in the description of video games has become prevalent, as implied from the marketing of *The Witcher 3: Wild Hunt* (2015) in the extract above. The sense of embodiment is insinuated here, as the player *becomes Geralt* when they play the game. This allusion to embodiment can be found throughout the video gaming industry, as written on Valve’s official *Half-Life* website (Half-Life: Alyx [sa], emphasis added): “*You are Alyx Vance, and you’re about to spark a revolution*”.¹

Since ‘embodying’ a virtual character – from whose point of view the game is experienced – plays a pivotal role in the player’s own perception and immersive

¹ The concept of embodiment, particularly in VE and VR environments, raises important questions regarding representation, race, gender, culture, body type, religion, amongst others, that extend beyond the scope of this study. (For more focused discussions on this topic see Groom, Bailenson & Nass 2009; Ash 2016; Jarrell *et al* 2021).

experience of video games, it is important to discuss what is meant by *being* the virtual character, and the role of the player's physical body during the act of *being* in the game. I acknowledge that one is 'always' embodied in a phenomenological sense, and this is discussed further in section 5.4. Discourse on video games, however, also refers to 'embodiment' when discussing the player's 'sense of embodying' a video game character. Within this context, embodiment does not infer that the player does not already have a body and thus 'finds one' in the video game character, but rather that the player 'enfleshes' the video game character's virtual body, as a surrogate in the VE. I will refer to this embodiment in video games as 'digital embodiment' or a "Sense of Embodiment (SoE)" (Kiltenei *et al* 2012:374).

Furthermore, while closely linked to immersion or a sense of presence, the SoE I am navigating here should be understood as an *immersive strategy*. As I have previously established, presence is the sensation of 'being there', while immersion is the strategies and elements of a medium that can lead to a sense of presence. Digital embodiment, on the other hand, refers to inhabiting a virtual body as the proxy for the player's perception in a virtual world. Kiltenei *et al* (2012:374) argue that embodiment as the virtual body greatly affects a sense of presence in the virtual space. The means or strategies used to create a SoE in a virtual world can also be understood as *immersion*. However, a user can feel *present* in a virtual space *without* digitally embodying a character or avatar. When watching a VR film, for example, one can feel *present* in a scene of the film while not digitally embodying a character. Thus, digital embodiment refers more specifically to the feeling of "being inside, having, and controlling a body" in a VE (Kiltenei *et al* 2012:374-375). While the three concepts – immersion, presence, and SoE – have overlapping connotations and are often used interchangeably, they refer to distinctive sensations.

I begin the chapter by specifically examining digital embodiment literature from the fields of video game studies and human-computer interaction (HCI) more generally. I then discuss how VR adds additional 'layers' to the SoE. The discussion thereafter moves towards a more philosophical framework of embodiment, by exploring phenomenological insights – mainly drawing from Maurice Merleau-Ponty's *Phenomenology of Perception* – to better understand the phenomenon as it is understood in video games, and VR, respectively. Drawing from phenomenology, I

discuss scepticism over (see Farrow & Iacovides 2014) and enthusiasm for (see Crick 2011; Klevjer 2012) the ability to reach (full) digital embodiment.

5.2 Digital embodiment in video games

Video games are often marketed as a means to transport players into exciting new worlds where they can live out fantasies embodied as various characters. In a sense, the idea of digital embodiment – as the means of *being* the video game character – has seemingly become generally accepted in the gaming industry. However, the meaning of, manner, and extent to which the player feels a sense of embodiment in video games has been subject to much academic debate. Analogous to the study of immersion and presence, *embodiment* is addressed in multiple disciplines and thus has acquired multiple meanings. The meaning of embodiment is further muddled by being associated with, or a contributor to, immersion and presence, particularly in VEs such as video games.

Furthermore, the fields of image studies and art history have largely neglected bodily experiences and encounters when understanding images, which has led this rising field to a frequent disparity between *body* and *embodiment* (Lauwrens 2018:85-86). In his writing on aesthetic appreciation, philosopher Arnold Berleant (2004:145) highlights two meanings of embodiment: the first is “to put into a body; to invest or clothe (a spirit) with a body”. In this sense, embodiment is almost used symbolically, as the “aura of physical presence [that] is embedded in [an] art work” (Berleant 2004:145-146). The second meaning is “to cause to become part of a body; to unite into a body”, which is a “response to art when the somatic participation of the appreciator is involved” in the perception of art (Berleant 2004:146). The second meaning seems to reflect more closely the embodied experience described in video game discourse, as it “conveys the active presence of the human body in appreciative experience” (Berleant 2004:147), if we consider the playing of a video game to be equal to what Berleant means by appreciative experience. Berleant (2004:145) further argues that embodiment does not refer to the visual only, but also involves one’s “culture, history, and personal experience”.

The different ways in which audiences experience films and video games highlights

Berleant's distinction between the two different approaches to embodiment. As previously noted, Poole (in Nitsche 2008:209) argues that "[i]n the cinema, the world is projected *at* you; in a video game, you are projected *into* the world".² Nitsche (2008:209) adds that it is not "you" who is projected into the virtual world, but rather access to an avatar, from which presence can emerge. In VR, one might argue, this projection of 'you' becomes more lifelike, as you are able to embody the avatar more literally in a way that *feels* more natural and authentic for the player. For example, as I raise my physical arm, I see my virtual arm raised in VR, tricking my brain into thinking it is my *actual* arm. Lanier (2017:85) argues that the "ultimate VR system" would essentially allow users to experience *anything* "with effectively perfect realism". However, reaching this pinnacle of immersive realism is not necessarily the goal, at least for gamers, according to Poole (2011:94 emphasis in original):

Counterintuitively, it seems for the moment that the perfect videogame "feel" requires the ever-increasing imaginative and physical involvement of the player to stop somewhere short of full bodily immersion. [...] You don't actually want to *be* there, performing the dynamically exaggerated and physically perilous moves yourself; it would be exhausting and painful. [...] You don't *want* it to be too real. The purpose of a videogame, then, is never to simulate real life, but to offer the gift of play.

Part of the fun of playing video games is that they are not entirely realistic. In *Red Dead Redemption 2* (2018), for example, the player is often required to perform mundane tasks such as bathing, shaving Arthur's beard, eating, and cleaning his horse. While shaving and bathing may serve aesthetic purposes, eating and horse grooming are game mechanics that affect Arthur's performance and, thus, how the player experiences the game. These tasks are frequented just enough to immerse players into the feeling of *living* inside the detailed world of the game, but not so much so that these activities too closely resemble mundane tasks in real life.

VR is currently the closest one can get to the 'full bodily immersion' in digital environments that Poole describes. Associated with the notion of immersion, Biocca (1997:11-12, emphasis in original) argues that "[e]mbodiment plays an important role

² Film theorists such as Vivian Sobchack would disagree with Poole's assessment of a seemingly passive film viewer. As previously discussed in Chapter Two (2.7), Sobchack (1992:8-9) describes the phenomenal experience of viewing a film as being a two-way-relationship, between viewer and film body.

in the design of virtual environments [...] [and that] the psychological effects or goals of progressive embodiment can be expressed as various forms of what is called *presence*.” Biocca (1997:20) argues that a user’s experience of *self-presence*, which he describes as “a users’ mental model of themselves inside a virtual world,” is the effect of embodiment – the feeling of (virtually) ‘inhabiting’ another body, while your physical body is in another location. Put somewhat differently, “[w]hen perception extends into the game world,” writes Swink (2009:28), “so does identity. [...] When an avatar in a game feels like an extension of your own body and senses, identity flows outward to encompass it in the same way.” Embodiment in virtual environments allows users to incorporate another virtual body as if it were his/her own. Through this proxy body, the user can experience a VE in a more relatable, life-like manner.

In describing a player’s sense of embodiment during gameplay experiences, literary studies scholar James Paul Gee (2008:258) explains that while playing a video game, the player “inhabits” a playable character (as a “surrogate” to the virtual world) and, therefore, inherits the goals of the surrogate character. The virtual world is designed around these goals. “By inhabit,” Gee (2008:258) writes, “I mean that you, the player, act in the game as if the goals of your surrogate are your goals.” Subsequently, according to Gee (2008:258), the player embodies the virtual character’s body and mind – the “mind” being the virtual character’s feelings, beliefs, and attitudes that the player learns and experiences by playing the game.

The *behavioural* change of the user to resemble and closer relate to or match the characteristics of a virtual avatar is referred to as the ‘Proteus effect’. Coined by VE and VR researchers Nick Yee and Jeremy Bailenson (2007:271), the ‘Proteus effect’ suggests that users may adapt their behaviour according to avatar characteristics. As Yee and Bailenson (2007:285) write in reference to their study: “the attractiveness of their avatars impacted how intimate participants were willing to be with a stranger.” While the notion of user behaviour in this regard is beyond the scope of this study,³

³ Yee and Bailenson (2007:285) found that the physical appearance of the avatar impacted the behaviour, such as the display of confidence of participants. Participants whose avatars were shorter, for example, were more susceptible to agreeing to unfair offers from those who had taller avatars (Yee & Bailenson’s 2007:285). Furthermore, studies involving the effects of digitally embodying morally corrupt characters in video games have been prevalent. Video games have often been blamed for causing violent behaviour. Due to the violent nature in many video games, the popular series *Grand Theft Auto* (GTA) is often referred to in this regard (Krapp 2014:345; Borchard

the avatar has an influence on the user's perception and response to the game. As Nitsche (2008:217) suggests, the player acknowledges and accepts the role the game designers have proposed by taking on the established character.

In *Half-Life: Alyx* (2020), the player assumes the role of Alyx Vance, a prominent figure in the resistance against the invading combine. Her goals shift throughout the game; first to rescue her father, then to acquire the 'secret weapon'. These goals are relayed to Alyx in her conversations with a resistance scientist, Russel, over comms, and thus become the player's goals as he/she embodies Alyx. The only or intended way to play and experience *Half-Life: Alyx* (2020) is to digitally *embody* the resistance fighter, who, against all odds, must save humanity.

Moreover, Gee (2008:259) explains that the virtual character also inherits the *player's* goals, as the act of digital embodiment means the player brings with them their personal experiences, morals, beliefs, and culture. While a player may experience a virtual world through the perspective of the character/avatar, the player may place his/her own goals as the character's goals and "enact" them in the virtual world. This is arguably one of the more significant differences between film and video game character embodiment, as interactivity allows for the user's own input and aspirations in the depicted world. These *player* goals may be minimal, from approaching an encounter either stealthily or brazenly to the exploration (or avoidance) of a game world. The result of completing the game, narrative-wise at least, will be the same, but the goals along the way differ from player to player. The core performance of the game character, as intended by the game designers, is what drives the narrative and experience, and not necessarily the demeanour of the player, as Nitsche (2008:216-

2015:450). In an autoethnographic study, Sociologist Kurt Borchard (2015) compares his experience of *Grand Theft Auto V* (GTA 5) (2013) versus *Super Columbine Massacre RPG!*, a video game based on the 1999 Columbine Highschool massacre, a mass shooting in which 12 students and a teacher were killed. The player controls Eric Harris, and is accompanied by an NPC Dylan Klebold (which are the real names of the killers), and 're-enact' the events that led up to massacre. While none of these video games turned the researcher toward violence, Borchard (2015:452-453) did find certain elements of *GTA 5* (2013) disturbing, mostly due to the high graphical fidelity of the game. However he grew to enjoy the game as means of escapism, and the fact that it is "not rooted in an actual, concrete event of horrific violence", thus confirming Poole's earlier argument on the realism of video games. On the other hand, *Super Columbine Massacre RPG!* brought no joy to Borchard (2015:452), being based on real events that almost mocks and trivialises "a situation where real people died."

217) explains:

Theatrical actors concentrate and develop their wide range of expressive vocabulary in order to give life to a fictional character presented to a paying audience. In contrast, most character options in games work the other way around. They are extreme concentrations by a designer and an integral part of the fictional world. They are the interactive options delivered by the system and accepted by the user who can experience this pleasure of “transformation” ...

In many fictional games, the player embodies a ‘fleshed out’ character, with pre-designed characteristics and traits.⁴ However, the player may (involuntarily) bring with them their own characteristics and goals while embodying the character. “Emotionally involving and meaningful gameplay [...],” writes Shinkle (2008:910), “is a function of the player’s physical presence, their actions and gestures at the level of the interface”.

Furthermore, the perspective from which the player digitally embodies the character affects the player’s immersive experience. In their study examining the immersive experience between first-person versus third-person perspective, HCI scholars Alena Denisova and Paul Cairns (2015:147) conclude that a first-person perspective elicits greater immersion. They write:

... in first person POV players feel as if they are a part of the story and the game environment; projecting their thoughts and actions onto their character and taking ownership of them – hence, reducing the distance between the game world and themselves. On the other hand, playing in third person POV distances the player from perceiving themselves as having direct action in the game world, as they watch their character perform actions and make decisions from the viewpoint of somebody who controls the avatar (Denisova and Paul Cairns 2015:147).

While Denisova and Cairns may be right about the level of immersion in first-person POV games, a third-person perspective is undoubtedly preferable in certain games, where for example, character customisation plays a large part of the game, and thus being able to see the character is important. Furthermore, certain games rely on a third-person perspective for the movement and combat system of the game, where a

⁴ RPG games often allow for more freedom for the player to design their own avatar. In many cases, the playable avatar may have set features, characteristics or goals, but in the case of *Skyrim* (2011) for example, a player may choose their physical appearance and create their own characteristics by role-playing and engaging in dialogue as they please.

much wider field of view is necessary to position the character accordingly for a more satisfying engagement. Additionally, a third-person perspective allows the ‘virtual camera’ – from which the player sees the game world – to consider composition and employ aesthetically recognisable cinematic tropes. A first-person perspective, however, as in the *Half-Life* (1998-2020) games, can assist in the SoE, as the character’s POV is the player’s POV, and through this perspective as the character, the player perceives the game world.⁵ This sense of engagement and embodied response is perpetuated in VR, as the player engages with the game world and characters in a more ‘physical’ and ‘life-like’ sense of scale. As such, the following section discusses how VR broadens the sensation of virtual embodiment.

5.3 VR embodiment

Many of the above observations concerning digital embodiment in video games can also be extended towards VR video games. As media scholars Stuart Bender and Mick Broderick (2021:32) highlight, the “additional layer” VR provides is the sensation of *being* in the environment, physically moving around and gripping virtual items. Thus the virtual body plays an essential role in the sensation of presence within VR (Kilteni *et al* 2012:374).⁶ Kilteni *et al* (2012:374-375) use the term ‘Sense of Embodiment’ (SoE) to refer to “the ensemble of sensations that arise in conjunction with being inside, having, and controlling a body”. A player/user may feel a SoE with or as the virtual body (the controllable avatar in the VR, as a representation of the physical, biological body) through the occurrence of three (not necessarily of equal contribution) subcomponents: the sense of ‘self-location’, ‘agency’, and ‘body ownership’ (Kilteni *et al* 2012:376-377,384).

Firstly, a sense of self-location refers to the relationship between one’s self and one’s

⁵ Alternatively, some games allow the player to experience both POVs. *The Elder Scrolls V: Skyrim* (2011) and *Grand Theft Auto 5* (2013) for example allow the player to choose between first- and third-person. In combat scenarios the player may choose first-person, as it may allow for more accuracy, whereas third-person may be preferable when exploring the game world. Riding a horse in *The Elder Scrolls V: Skyrim* (2011) or driving a car in *GTA 5* (2013) in the third-person for example can feel better, as the player may have more control by seeing the entire vehicle.

⁶ The term *virtual body* here, refers to the controllable body in the virtual world. However, it also refers to the *player/user’s body* in cyberspace, as a representation of the player’s biological body (in the physical world (Kilteni *et al* 2012:373)). The notion of the player’s body *being* both ‘in cyberspace’ as well as physically sitting and playing the game, is further explored in the following section.

body. This differs from the notion of presence, as presence is more concerned about the relationship between one's self and the environment (being 'there'). VR and HCI researchers Ferran Argelaguet, Ludovic Hoyet, Michael Trico, and Anatole Lecuyer (2016:4) suggest that the first-person perspective and "synchronous visuo-proprioceptive correlations during passive or active movements increase the sense of self-location". Secondly, a sense of agency refers to having complete *control* over the body, with active feedback from user input and physical action. "The close relationship between intention and outcome is also considered as a component of agency", according to Argelaguet *et al* (2016:4,9), who in their study found that users' virtual responsiveness to their physical movements trumped 'realistic' fidelity and thus provided participants with a higher sense of agency. Lastly, a sense of body ownership refers to "one's self-attribution of the body... [...] [which] implies that the body is the source of the experienced sensations" (Kiltner *et al* 2012:377). As such, the visual fidelity of the player's body plays a vital role in body ownership. As Argelaguet *et al* (2016:9) argue, "realistic virtual hand representation elicits [a] stronger sense of ownership."

When playing VR games such as *Blade & Sorcery* (2018) and *Boneworks* (2019), the player can feel a 'full' sense of embodiment as the virtual character.⁷ When the player looks down, they see *their* entire virtual body, including their arms, legs, and torso, that all interact with the VE (Figure 17). The embodied experience in these games effectively fulfills Kiltner *et al*'s (2012:374-375) experience of a SoE. The player's sense of location is the *location of the virtual body*. Furthermore, the player has *agency* over the virtual body, which mimics the bodily actions of the player. However, the extent to which the virtual body can 'mimic' the player's physical body is limited to tracking. Most consumer VR HMDs (which track the user's physical head position) are accompanied by hand controllers (which track the user's physical hand movements) to simulate interaction in the virtual world. Additional trackers, such as HTC's VIVE Trackers, can

⁷ Developing technologies like VR, and the VR video games that employ them allow for a more convincing sense of escapism from one's actual corporal body. These experiences are built around the idea of 'being' someone else. In the case of *Blade & Sorcery* (WarpFrog 2018) for example, players can live out their fantasies of being a powerful wizard or warrior, while forgetting about the tedium of the lived experience. Furthermore, the sense of (social) presence afforded by social VR applications like VRChat (2014) "foster natural and intimate forms of communication" for users who seek social support (van Brakel, Barreda-Ángeles & Hartmann 2023:[sa]).

be purchased, as modular upgrades, to track additional parts of the body, such as the legs and arms, to allow for 'full-body tracking'. Such trackers are a niche upgrade, with few applications and games that support full-body tracking. Full-body tracking allows for individual limbs to be tracked, and thus, the player's physical movements transition 'more smoothly' into the virtual world.



Figure 17: The author looking down a cliff in VR, the 'full' virtual body is incorporated in the game, *Blade & Sorcery*, 2018. Screenshot by author.

Without full-body tracking, the areas of the player's body that are not physically tracked (like the player's legs, for example) are simulated in the virtual world instead of mimicked. This simulation would be in accordance with the positioning of the (tracked) head and hands of the player and may result in inaccurate bodily actions in the virtual world. For example, the virtual legs will not lift if the player lifts his/hers own. When the player moves forward, however, the legs will simulate a walking motion but may not resemble what the player does with their legs. Despite this, players can still feel a sense of agency over the virtual body, as the virtual body moves and 'responds' when the player does.

Lastly, following Kiltenei *et al* (2012:374-375), VR games can offer players a sense of body ownership. When playing *Blade & Sorcery* (WarpFrog 2018) for example, I tend

to *react* with my virtual body as I would with my physical body. I flinch at sudden arrows or spells cast towards me and frighten when attacked unexpectedly. Furthermore, it can feel unnatural to block an incoming sword attack with *my* virtual arms or hands. If I cast a spell and hold it in front of me, I can *feel* the powerful magic in ‘my hands’ through the haptic feedback vibrations.

Digitally embodying a character in VR affects many ludological elements that significantly influence the gameplay experience. Trivial actions such as reloading a gun in VR become a skill one has to master. Where on a traditional flat-screen computer game, for example, the player may simply have to press ‘R’ to reload, while in VR, the player must use “their hands, fingers and controllers to mimic the movements of physically *gripping* the spent magazine, throwing it aside, again physically gripping the fresh clip from its storage location on ‘your’ belt, then inserting it into the correct part of the weapon” (Bender & Broderick 2021:39, emphasis in original). Various guns have different reload patterns that a player must familiarise themselves with. The player has to learn this, and creating interesting engagements in the game. In tense situations, when surrounded by incoming enemies in *Boneworks* (2019), for example, I have often forgotten to pull the slider back of the gun to complete the reload, which means it does not fire, resulting in confusion and alarm. Running a clip empty has also caused me to drop my weapon out of panic and fumble for my secondary weapon. These instances not only make for exciting and realistic gameplay, but highlight the embodied, sensory, and cognitive impact on the gameplay experience that is not offered in traditional flatscreen games (Bender & Broderick 2021:39).

While it is useful to look at the lengths video game designers will go to immerse players ‘into’ the body of the character/avatar, a philosophical framework to help underpin an understanding of the process of digital embodiment in VEs is beneficial. Therefore, in the following two sections, I look at how phenomenology has helped shape the theory of SoE within video games and VR, respectively.

5.4 A phenomenology of video game experience

In order to understand what it means to be digitally embodied in a game – the relationship between the player sitting on their chair with a controller in hand and their experience with or ‘as’ the character they control on screen – scholars have turned towards phenomenology (Tham *et al* 2018:183). While the previous section highlighted significant features, experiences, or affects that are attributed to the sense of embodiment, as well as the lengths game designers go to maintain the feeling, in this section, I discuss how insights from phenomenology – particularly Maurice Merleau-Ponty’s *Phenomenology of Perception* – is shaping a deeper understanding of digital embodiment as it pertains to video games more generally. Thereafter, in the following section, the discussion shifts towards phenomenological insights regarding VR.

Phenomenology can be broadly described as the philosophy of the *experience* of being in the world. It was established by the German philosopher Edmund Husserl around the beginning of the twentieth century and expanded upon by philosophers such as Martin Heidegger (1927), Jean-Paul Satre (1936), and Maurice Merleau-Ponty (1944). Merleau-Ponty (2012:lxix) describes phenomenology as “the study of essences”, such as perception and consciousness. A phenomenologist understands the world as being “‘already there’ prior to reflection” and attempts to “rediscover [a] naïve *contact with the world ...*” (Merleau-Ponty 2012:lxix emphasis added). “The first rule ...” of phenomenology, according to Merleau-Ponty (2012:lxix) is the “... disavowal of science.” For example, while a scientific description of any object may describe its matter, composition, or its relation to other objects, deriving conclusions through reflection and analysis, a phenomenological description would instead describe how the object is experienced through one’s perception. As such, Merleau-Ponty’s *Phenomenology of Perception* emphasises the living body, and how one’s interpretation of the world stems from an understanding of the body. “Everything that I know about the world, even through science,” writes Merleau-Ponty (2012:lxixii) “I know from a perspective that is my own or from an experience of the world without which scientific symbols would be meaningless.” In other words, we are always grounded or embodied, and all existence is only ever understood through the

experience of the lived-body.⁸

Drawing from Merleau-Ponty, philosophy scholar Irene Breuer (2020:2) describes virtual space (virtuality) as “an extension or projection of the real [which] also characterises the capacity of spatial reorientation of the own body.” In other words, a virtual space is a plane one can inhabit and *be in*. To illustrate the embodied experience of virtual space, Merleau-Ponty (2012:259) uses the example of a person who can only see the room they are in, through a mirror, tilted at a 45-degree angle. At first, the mirrored (virtual) world appears slanted and disorientating, but soon the person finds that the world has ‘corrected itself’ and notices that everything appears to have orientated again. Merleau-Ponty (2012:260, emphasis added) explains that it is not the person’s physical body that adjusts or corrects their orientation, “but rather [their] body as a system of possible actions, a *virtual body* whose phenomenal ‘place’ is defined by its task and by its situation. [Their] body is wherever it has something to do.” This re-orientation of one’s-self is reminiscent of Csikszentmihalyi’s (2008:71) flow theory, where one’s sense of physical self disappears, but in this case, is re-orientated *into* the space towards the task at hand. Within this new (virtual) place, a *virtual* body can reside and make sense of it. Merleau-Ponty (2012:260-261, emphasis in original) explains:

At first, the mirror image presents a differently oriented room, that is, the subject is not geared to the utensils it contains, he does not inhabit the room, he does not live with the man he sees moving about. After several minutes, and provided that he does not reinforce the initial anchorage by glancing away from the mirror, that miracle takes place: the reflected room conjures up a subject capable of living in it. This virtual body displaces the real body, so much so that the subject no longer feels himself to be in the world he is actually in, and that, rather than his genuine legs and arms, he feels the legs and arms required for walking and acting in the reflected room – he inhabits the spectacle. And this is when the spatial level shifts and is established in its new position. The spatial level is, then, a certain possession of the world by my body, a certain *hold* my body has on the world.

⁸ American philosopher Don Ihde (1979) considers our relationship to, and reliance of, technology in the contemporary landscape through the lens of phenomenology, in what is known as ‘postphenomenology’. Ihde (2009:22, emphasis in original) describes postphenomenology as “the examination of *technologies in their particularities*.” As a “modified, hybrid phenomenology”, postphenomenology “...finds a way to probe and analyze the role of technologies in social, personal, and cultural life that it undertakes by concrete – empirical – studies of technologies...” (Ihde (2009:23).

In other words, the discernment of the virtual is an active-lived experience – one that is experienced through an embodied-virtual body, while the ‘physical’ body is displaced. The reference to the *virtual* here is not in opposition to the *real*, as Lévy (1998: 26) contends, nor does it “[relate] to the illusory, false, immaterial, or imaginary”, according to Du Toit and Swer (2021: 22). Virtuality should instead be thought of as “a *change of identity*, a displacement of the center of ontological gravity of the object considered” (Lévy 1998:26 emphasis added). This *change* is not necessarily an active *act*, but rather occurs intuitively. Thus, Breuer (2020:1-2) argues that the “phenomenal and the virtual do not represent different modes of being, but are bound by a correlation ruled by sensation as a system of intensive forces.” Following Merleau-Ponty’s (2012:146, emphasis added) sentiment that “the body is our *anchorage* in a world”, Breuer (2020:5) explains that “the body’s motor intentions and the new perceptual field join forces, so that the actual body becomes one with the virtual body, as required by the new setting.” In other words, one becomes re-orientated or *re-anchored* with the virtual body – aligning perceptual fields of both the physical and virtual body.

On the matter of digital embodiment, Timothy Crick (2011:261) draws from Sobchack’s (2004:152) notion of the “cinematic lived body” (film-body) – briefly discussed in Chapter Two – and posits the “game body”, according to which the ‘in-game’ virtual camera perspective that “follows (or inhabits) a game character in a virtual world serves double duty as the perceptive organ of a ‘game body’ situated within the diegesis.” However, Sobchack (2004:152, emphasis in original) contends that contrary to the cinema, electronic media (such as video games) are so broad in their materiality and engagement that they “...[seem] so diffused as to belong to *no-body*.” Sobchack (2004:153) writes:

... this new electronic sense of presence is intimately bound up in a centerless, networklike structure of the present, of instant stimulation and impatient desire, rather than in photographic nostalgia for the past or cinematic anticipation of a future. [...] And this electronic world incorporates the spectator/user uniquely in a spatially decentered, weakly temporalized and quasi-disembodied (or diffusely embodied) state.

For Sobchack (2004:63), the film viewing experience elicits both prereflective bodily

responses and “reflexive comprehension of the seen (and, hence, the scene)...”. It is a fully embodied act that involves not only one’s eyes but all the senses, including touch and feel, and is “informed by the full history and carnal knowledge of our acculturated sensorium” (Sobchack 2004:63).

Contesting Sobchack’s stance on video games, Crick (2011:261), however, argues that video games can be experienced similarly, beginning by asserting how 3-D video games have increasingly emulated cinematic conventions, such as camera angles, lighting, compositions, movement, and thus may be experienced similarly. Drawing from Merleau-Ponty’s (2012:lxiv) assertion that our *experience* is composed of imagined perceptions as much as non-imagined ones, Crick (2011:266) writes that “... videogaming is a holistic experience and it is precisely our capacity as sensual embodied beings in the world that allows us to engage with a game’s artificial world in a way that would engage those senses in real life.” For example, I hold my breath when creeping through dark or tight corners of a horror game or tense my body when engaging in intense or exhilarating combat or action moments because I know what these experiences *actually* feel like. Crick (2011:266) also argues that the adoption and use of video games such as first-person shooters as military training tools, “... is particularly instructive in establishing a phenomenological link between embodied perception in the virtual and real world.” The use of military simulation video games for combat training suggests the medium’s capabilities to create a SoE in warfare scenarios.

Despite this, philosophy scholar Robert Farrow and HCI scholar Ioanna Iacovides (2014:229) question the appropriateness of the language of ‘full digital embodiment’, when referring to experiences in digital environments such as video games.⁹ They argue that the prospect of “complete sensory immersion” in digital environments – in which users may experience “complete embodiment” – is a “techno-utopian fantasy” (Farrow & Iacovides 2014:221,231). Regardless, game designers still pursue to create more convincing worlds in an attempt to mimic a ‘lifelike’ experience, with “digital interaction starting to use more (or all) of the body as a control device” (Farrow & Iacovides 2014:222). *Half-Life: Alyx* (2020) is a notable example of this. As previously

⁹ Interestingly, while sitting on opposing sides of the ‘full digital embodiment’ fence, both Crick (2011) and Farrow & Iacovides (2012; 2014) use Merleau-Ponty to support their arguments.

described, the world of Alyx is built from the ground up with a high level of detail and ‘raises the bar’ for visual fidelity. It is a game world built to interact with – using physical movements made possible by the HMD and controllers – to let players more convincingly ‘embody’ Alyx. While some games may offer conceivable embodied experiences, Farrow and Iacovides (2014:227,231) explore the limits of digital embodiment in virtual worlds, and, drawing from Merleau-Ponty’s “emphasis on the centrality of the body” in *Phenomenology of Perception*, “... expand the description of embodiment to include a wider sense of being...”, that game designers and researchers may further consider employing. Farrow and Iacovides (2012:4-5) posit three arguments drawn from Merleau-Ponty’s *Phenomenology of Perception*, that highlight significant phenomenological understandings of (and that are fundamental to) our lived experience, namely: Touching and Being Touched, Virtual Polymorphism, and The Intersubjective Lifeworld. The following subsections discuss how Farrow and Iacovides use these three arguments, drawn from phenomenology, to underscore their contention that a ‘full’ sense of embodiment in video games is out of reach.

5.4.1 Touching and being touched

Merleau-Ponty (2012:95) considers the body’s “double sensations”, referring to the alternation between the experiences of the subjective body and the objective body. Using the example of touching one’s right hand to their left, Merleau-Ponty (2012:95) describes the body’s innate and ambiguous ability to switch between the right hand touching and being touched, but it cannot experience both simultaneously. This is “part of the primordial experience of human subjectivity”, write Farrow and Iacovides (2012:4-5), who argue that digital world experience offers an asymmetrical experience of the sense of embodiment, as the player can never experience touch in the same way as we do in the ‘physical’ world. As such, Farrow and Iacovides (2014:229) disagree with Crick’s (2011:267) sentiment that a *fully* digital embodied experience can be reached in virtual worlds. They write:

Digital forms of ‘embodiment’ are never primordial. [...] We do not relate to bodies in virtual worlds (or in cinema for that matter) in the same way that we relate to our own corporeality. For one thing, we tend not to care too much about dying and we do not experience pain through our avatar: these phenomena are experienced as representation, not as embodied,

subjective experience. In this light, the ways in which players are 'embodied' within game environments are so unlike our everyday form of embodiment that we might question whether this kind of language is appropriate at all (Farrow and Iacovides 2014:227, 229).

In other words, Farrow and Iacovides oppose the 'language of embodiment' and contest the nature or extent to which the player could possibly 'feel' their in-game avatar/character while holding a controller or mouse and keyboard, as opposed to the existence one experiences in their own 'lived-body'.

5.4.2 Virtual polymorphism

Farrow and Iacovides' (2012:6) second argument against a phenomenological embodied experience in digital games derives from Merleau-Ponty's (2012:143) description of "habit" as "motor acquisition".¹⁰ Merleau-Ponty (2012:143-144) argues that for the body to "acquire" skills such as dancing, the body "catches" or "understands" it through *doing*. This prereflexive *acquisition* is extended to how one habitually incorporates 'instruments' associated with the body. Merleau-Ponty (2012:144) uses the examples of how a blind man would become habituated with a cane, or how a woman with a feathered hat, or one driving a car would avoid obstacles that would damage these bodily 'extensions' through sense, and not "explicit calculation". Merleau-Ponty (2012:144-145) writes:

To habituate oneself to a hat, an automobile or a cane is to take up residence in them, or inversely, to make them participate within the voluminosity of one's own body. Habit expresses the power we have of dilating our being in the world, or of altering our existence through incorporating new instruments. [...] But if habit is neither a form of knowledge nor an automatic reflex, then what is it? It is a question of a *knowledge in our hands*, which is only given through a *bodily effort* and cannot be translated by an objective designation.

One is able to adopt or extend instruments or technologies *onto* themselves through physical accustoming ('knowledge of the hands'). A blind man ceases to notice his cane and moves it without intention; in a sense, it aligns with the body-subject. Merleau-Ponty (2012:144) explains:

¹⁰ The term 'habit' is used here as being synonymous with *skill*, following philosophy professor Hubert Dreyfus (1996:[sp]), who explains that "when [Merleau-Ponty] wants to refer to skill acquisition he speaks of 'the acquisition of a habit'".

The blind man's cane has ceased to be an object for him, it is no longer perceived for itself; rather, the cane's furthest point is transformed into a sensitive zone, it increases the scope and the radius of the act of touching and has become analogous to a gaze.

Likewise, experienced or habituated video gamers seldom take notice of the mouse and keyboard or controller in their hand(s) when playing. This leads Crick (2011:267) to argue that “the avatar's (and virtual camera's) movement is incorporated within my corporeal schema and, as such, becomes an extension of my bodily basis of consciousness.”

However, Farrow and Iacovides' (2012:6, emphasis added) argue that one can incorporate technology (they use the examples of “clothing, spectacles or false teeth”) onto his/her phenomenal body because of the “*prolonged contact*” the technology has with the body. Furthermore, Farrow and Iacovides' (2012:6; 2014:222) argue that while mimetic game interfaces – which allow for bodily movements (such as the Nintendo Wii, which was popular at the time) – attempt to facilitate a more phenomenological sense of interaction in virtual worlds, they do not inherently lead to a sense of embodiment. Instead, as Farrow and Iacovides (2012:8) write, “[g]ame control systems should strive to be as ‘invisible’ as possible, phenomenologically speaking, if they are to promote immersion.”

Conversely, I view the habituation with the control device as being similar to a car, in that ‘prolonged contact’ comes with experience instead of a constant connection. Even in demanding encounters in various games, for example, such as a raid or arena battle in *World of Warcraft* (2004-present), which requires well-orchestrated, timed, and precise character movements and attacks, I don't consciously think or take note of the numerous keys required to move my character in the virtual world, I simply ‘get there’ and perform the ability, as if second nature or habitual. As an experienced player, my body has become habituated to the mouse and keyboard and the game's mechanics. The control devices – following Merleau-Ponty (2012:144) – cease to exist, and my concern lies not with what is required for me to do or press *physically*, but rather with my actions, movement, and presence *in-game*. This will be further discussed in the following section 5.5.

5.4.3 The intersubjective lifeworld

Lastly, Farrow and Iacovides (2012:6) argue that our meaningful experience is found within the context of the shared lifeworld [*Lebenswelt* in the original German]. “As social beings,” Farrow and Iacovides (2012:6) write, “we always find ourselves in a particular cultural and historical context that determines our basic orientation towards the world”, and in this context, they argue, game worlds often lack the sense of meaning one finds in the lifeworld. Farrow and Iacovides (2012:7) acknowledge that certain video games (they use *Heavy Rain* (2010) and *Mass Effect* (2007-2021) as examples) do attempt to portray worlds that convey meaning. Their contention, however, is in the description of being digitally embodied in these virtual worlds, which they argue cannot habitually elicit the same sense of intersubjectivity as in our lifeworld. In other words, video game worlds cannot offer the same level of context and meaning that gives our embodied experience of the ‘everyday’ its meaning. Thus, in order to experience a “more immersive or convincing sense of embodiment within digital worlds”, video game developers should strive to create digital worlds that are more convincing, meaningful, and offer a “sense of choice and responsibility” (Farrow & Iacovides 2012:9).

While acknowledging that there are video games that aspire to offer players a *sense of embodiment and meaning*, Farrow and Iacovides (2014:231) maintain that *full* digital embodiment in a video game is phenomenologically “fallacious”. Like Poole (2011:94), Farrow and Iacovides (2014:231) argue that the pursuit of full embodiment misses the point of the gaming experience, and game designers should rather look towards creating compelling “narratives, consequences and shared interactions ...”. It seems paradoxical to argue that full digital embodiment is not possible, yet developers should create more meaningful worlds. Although world-building and narrative are fundamental to an immersive experience, as we have seen, a sense of embodiment does play a pivotal role in creating a sense of presence within the game world.

Thus, since the player’s experience of a video game is (mostly) from the perspective and connection to the playable avatar, the pursuit to understand and further create a better sense of the embodied experience through playable characters cannot be sidelined. As such, while also drawing from *Phenomenology of Perception*, computer

game scholar Rune Klevjer (2012:31,34) argues that when a player is engaged in a video game, he/she are “relocated” into the virtual world; and, like Crick’s (2011) earlier arguments, they are (fully) embodied in a phenomenological sense within the game. The following section will discuss Klevjer’s (2012) reasoning for this contention.

5.4.4 ‘Full digital embodiment’ in video games

Similar to Crick’s (2011:261) “game body”, Klevjer (2012:19-20, 28) acknowledges the ‘bodily’ role of the controllable *virtual camera* within the game in what he terms the “camera-body”, through which the player experiences “locomotion”. For Klevjer (2012:4 emphasis in original), the *camera-body* extends the player’s senses into the virtual world using what he calls “*prosthetic agency*”; the sensation of “real-time control” in the game world, much like the use of a prosthetic limb. However, Klevjer’s (2012:20) “bodily prosthesis” departs from Crick (2011:261), in that it both (paradoxically) *extends* the player towards and *relocates* them into it. Klevjer (2012) uses phenomenology, turning towards Merleau-Ponty to substantiate his claim of ‘full’ digital embodiment.

Merleau-Ponty (2012:101-102) refers to the body schema’s (which he describes as “the global awareness of my posture in the inter-sensory world”) dynamic ability to ‘position’ itself towards a task. He writes:

When the word “here” is applied to my body, it does not designate a determinate position in relation to other positions or in relation to external coordinates. It designates the installation of the first coordinates, the anchoring of the active body in an object, and the situation of the body confronted with its tasks. Bodily space can be distinguished from external space and it can envelop its parts ... (Merleau-Ponty 2012:102-103)

In other words, one can feel a sense of presence within a given task, losing awareness of their actual physical body, while instead, orientated through a virtual body, “whose phenomenal ‘place’ is defined by its task and by its situation. [The] body is wherever it has something to do” (Merleau-Ponty 2012:260). Within the context of gameplay, Klevjer (2012:23) argues that the player’s “here” then, is positioned towards the game – as the task that is confronted. This could then be extended to VR, in that the player’s

'here' in a VR game is 'in' the virtual world.

Furthermore, Klevjer (2012:23,24) (re)iterates Merleau-Ponty's (2012:143) notion of the 'acquisition of habit', and like Crick (2011:267), expresses that a habitual player's peripheral device(s) (mouse, keyboard or controller), become "invisible". Concurring, referring to Merleau-Ponty's woman with the feathered hat, Keogh (2018:29 emphasis added) notes that the hat isn't simply incorporated, but rather "her *being* is actively made in part by the feather." The player's peripheral device(s) become(s) indistinguishable from the player. Therefore, Klevjer (2012:24) explains that "our experience of how our senses and organs relate to each other and to the world, and our sense of how we are placed in front of a situation, is being re-situated through the incorporation of a bodily extension." In VR, the HMD and controllers are the bodily extensions to the VE.

This raises the notion of the role of the avatar or playable character of the video game, which Klevjer (2012:27) compares to a marionette, that the player controls as if strung to their fingers, as extensions of their body. "When we play," explains Klevjer (2012:28 emphasis in original), "because the avatar extends the *body* rather than pure agency or subjectivity, screen space becomes a world that we are subjected to, a place we inhabit and where we struggle for survival." In addition to extending the body, the avatar also acts as a "prosthetic *proxy* ... filtering or channelling our body into shape and place, into screen space ..." (Klevjer 2012:28). Following Merleau-Ponty's (2012:95) philosophy on the duality of experiential sensations – in which the body acts as both *subject* and *object*, as demonstrated above – Klevjer (2012:28) argues that while the "body-subject" attends the task at hand – habitually engaging the controller while addressing the screen, the "body-object" – while sitting and 'gaming' – is *replaced* by the avatar (marionette), as a proxy, taking on the role of the "objective body". While Farrow and Iacovides (2012:4-5) contend that digital embodiment within gaming environments cannot uphold the dual nature of experiencing as a simultaneously subjective and objective body, Klevjer (2012:28) argues how the playable avatar, as a proxy, in fact, maintains it. Klevjer (2012:28, emphasis in original) explains:

The marionette's key function is this: while it *extends* the body-subject

and the corresponding bodily space into screen space, ... it functions as a stand-in or replacement of our objective body, a proxy on our behalf. The prosthetic avatar allows us to engage in a playful and temporary *separation* of subjective and objective body, across the material divide. In the moment of being captured by and channelled through the avatar, the body that is *here*, safely seated on the couch, will be rendered irrelevant in its objective dimension, as an object among other objects, in Merleau-Ponty's terminology – as that which is being touched. Because the extended body-subject is instead directed towards what is happening on the screen, the marionette comes to function as a replacement of the objective body, becoming the new, temporary manifestation of the player's body in external space. In other words: as a body-subject I may be throwing myself into the playground, no barrels held, but as body-object I am participating through a stand-in, a proxy, an incarnation of myself, an avatar.

As such, Klevjer (2012:29,34,36) argues that a player's embodiment into video games can be understood at a phenomenological level – eliciting presence in a habitable place – not implied fictionally or metaphorically, but a sensation of *being* in a game world “as a composite of flesh and technology, objectively existing within synthetic space”, thus reaching ‘full’ embodiment. Concurringly, Keogh (2018:22,32) argues that video game embodiment is understood as an amalgamation of both the playable character *in* the game and the player – playing the game, as one entity, and that “a phenomenology of videogame experience can privilege neither the actual nor the virtual but must account for the assemblage of both”. The player's *embodied being* then becomes an amalgamation of both the actual player themselves and the virtual playable character, which illustrates how the player both assumes the playable character's identity and goals and ambitions, as well as brings their own goals to the character, as Gee (2008:258) argues.

While both scholars draw from Merleau-Ponty's centrality of the body, and while Klevjer's (2012) study appears to address some of the concerns raised by Farrow and Iacovides (2012:4-5) in terms of how digital embodiment is phenomenologically experienced – specifically the issues of *Touching and Being Touched*, and *Virtual Polymorphism* – what isn't directly addressed is the issue of *The Intersubjective Lifeworld*. Farrow and Iacovides' (2014:230) primary concern here, following Merleau-Ponty, is that embodiment means “to be part of a shared, intersubjective, lifeworld [*Lebenswelt*] which is the source of meaningful activity”, and according to them, video games worlds do not often offer the same level of meaning.

However, sociology scholar Paul Scriven (2018), draws from Alfred Schutz's *The Phenomenology of the Social World*, to argue that players *do* experience intersubjectivity in video game worlds, particularly massive-multiplayer online games (MMOs) such as *World of Warcraft* (2004-present). The player, who has their own subjective experience of interaction within the game world through the avatar, can engage with other players, which in turn elicits "telecopresence" (Scriven 2018:206).¹¹ This social engagement allows players to acquire knowledge of the game world, according to Scriven (2018:206), who argues that it "contributes to the construction of a distinct set of typifications and overall context of meaning." This shared experience allows the player to 'organically' perceive the world by engaging with its constituents to further their understanding thereof. While Scriven (2018:196,202) notes that the player must try to interpret understanding from other players – who communicate using the game's *limited* social system(s) and character expressions – the interaction is still meaningful. "In considering the player character as a field of expression", writes Scriven (2018:207-208), "for the intentions of the remote corporeal player, we find that the experience itself, while still somewhat anonymous in nature, contains interactive aspects that allow intersubjective experience to manifest."

Although narrative and world-building play an essential role in a meaningful and immersive gameplay experience, the relationship between the player and the controllable character as the initial entry into, and *feel* of the game, is evidently fundamental to the entire experience, and thus it makes little sense for designers to shift their focus from the pursuit of 'full embodiment', as insinuated by Farrow and Iacovides (2014:231). As such, the concept of digital embodiment has seemingly become part of the video game industry jargon and is suggested in marketing, as seen in the descriptions of *The Witcher 3: Wild Hunt* (2015) and *Half-Life: Alyx* (2020) above. It has thus been subject to much academic discourse across varying fields, including; sports and health sciences (Kim, Prestopnik & Biocca 2014; Hilvoorde & Pot 2016; Hoffman *et al* 2020), education (Xu & Wang 2022; Mills, Scholes & Brown 2022) VEs, HCI and Game Studies (Slater *et al* 2009; Ash 2016; Kalina & Johnson-Glenburg 2020; Pandita, Yee, & Won 2020). Comprehending the extent to which, and the

¹¹ Telecopresence, a phrase coined by sociology professor Shanyang Zhao (2005:390), is defined as "an electronically mediated social context for human interaction ... in which individuals are electronically linked together while physically separate in different locations."

sustention of digital embodiment is crucial to formulating a method towards understanding an immersive (VR) gaming experience. Phenomenological insights on the matter prove to help shape a better understanding of digital embodiment in video games as the sensation of *being both* player and character. As such, for this study, particularly in developing and applying my research method on immersion, ‘full’ digital embodiment is implied when referring to the player/avatar relationship. The discussion now shifts towards phenomenological insights into digital embodiment in VR.

5.5 A phenomenology of VR experience

In references to the “simulation technologies” of film, flight and military simulators, video games, and imaging technologies, Ihde (2012:133,143) argues that embodiment is not always foregrounded, and “by taking it into critical account, we are more likely to be able to develop more interesting and innovative simulations.”¹² VR is a platform that embraces the body fairly literally, using physical movement to interact within the medium. Understood in this way, it is not difficult to see how digital embodiment within VR can be interpreted. Donning an HMD, a user may look down and see an entire virtual body or wave his/her hands and see his/her virtual hands *mimicking* them. By many accounts, the user’s body has become the virtual body.

However, Klevjer (2012:29, 36) argues that digital embodiment within platforms that offer “1:1 *motion control*” – referring to the Nintendo Wii and later VR – differ from *proxy embodiment*, as they create a *mirror* image of the player, instead of a habitually-earned *extension* into the virtual world. For Klevjer (2012:29), the ‘avatar’ in a VR game is the player’s “familiar physical self”, which contradicts many of the arguments about a sense of *proxy embodiment* in traditional flat-screen video games. Klevjer’s (2012:29,36) main concern with the sense of embodiment experienced in platforms such as VR is that of movement, which relies on a level of physicality that he finds limiting in VR. Similarly, Ihde (2012:143) argues that while the gaming perspective in video games *implies* embodiment, it is “locally positioned”, limiting the player’s “motile movements in front of the screen”. Though Ihde (2012:143) notes here that he is not

¹² Importantly, Ihde (2012:143) contends that users do embody technologies, however, “we cannot actually escape our selves, our bodily selves in this development”. Klevjer (2012:29,34,36) and Keogh’s (2018:22,32) notion of ‘full’ digital embodiment however, does not involve the player ‘leaving their body’, but instead, is understood as *being both* physical player and *virtual* avatar as one entity.

addressing platforms like the Wii, I would argue that VR is a platform that (partially) addresses this issue, as the player is able to move around physically (limited only by their playspace area).

As previously highlighted, a major challenge for VR is the adoption of ‘life-like’ walking that can be simulated in the virtual world. While a user may physically move around in a space to move in the virtual world, they are limited to the physical size and layout of the room they are in and run the risk of knocking into walls or furniture. Thus, to traverse larger areas in VR, users are provided with a few options, such as ‘teleporting’ – where they would point to a location and be instantly relocated there; or ‘full-locomotion’ – where much like ‘traditional flat-screen’ video games, users can use the joystick on their controller to move around a space.¹³

Klevjer (2012:30) argues that the playable character in VR-like environments then cannot “do triple jumps Mario style or fall down a deep ravine ...”, because the player cannot do so physically. For this reason, Klevjer (2012:36) sees embodiment in traditional video games – through *proxy embodiment* – “no less immersive than its more ambitious VR sibling.” Thus, while Klevjer’s proxy embodiment is applied to and intended for traditional video games more explicitly, it can also be considered when understanding a sense of embodiment in VR. However, the VR landscape was more rudimentary in 2012 when Klevjer published his findings. Though the aspiration of VR may be to incorporate our bodily motion in its total capacity, including a solution to integrate ‘natural walking’, Klevjer would not have known at the time of the (compromised) hybrid approach VR currently incorporates in most video games, using physical movement with locomotion to cross space. One *is*, in fact, able to perform acrobatic feats, such as a triple jump, in VR. Instead of physically doing it, however, some game developers also give players the option to jump using a button on the controller. For example, the player can physically jump, which would be replicated in *Blade & Sorcery* (Warpfrog 2018). However, players may not feel comfortable

¹³ While full-locomotion may offer a more immersive experience, as users are not teleporting around the world, but rather ‘walking’ it, novice VR users are prone to VR (motion) sickness using full-locomotion for navigation (see Sanchez-Vives & Slater 2005; Nilsson *et al* 2018:2). Therefore, many games still offer comfort functions such as the ability to ‘teleport’ as means to navigate around for newer VR users, while games that cater for experienced VR user’s such as *Boneworks* (2019) have warnings stating such.

physically jumping with an HMD on, as they cannot see the ground or know where and how they may land (in the physical world). This is exacerbated when combined with other physical movements, such as sword fighting in combat scenarios, as the game requires. Therefore, the player can choose to jump by pressing a button on the controller. The longer it is pressed, the higher the virtual character jumps – which is much higher than one physically could. Thus, VR avatars can in fact perform many of, if not all, the actions that their traditional flat-screen ‘siblings’ can. The actions performed in VR, however, may feel more truthful to our natural experience of the physical world than in traditional video games, as they are (mostly) physically performed by the player.

Crick (2011:266-267), Klevjer (2012:23-24), and Farrow and Iacovides’ (2012:6) refer to Merleau-Ponty’s (2012:144-145) *acquisition of a habit* in reference to the seamless mastery of a game’s control device. For the habituated VR user, the controllers in hand and HMD on the face become *invisible* extensions for the body-subject. The user adopts this hybrid approach to movement, combining physical movements alongside the controller’s locomotive options, and the player habitually performs all actions required. Even with a lack of full-body tracking, as discussed earlier, one is able to feel a sense of embodiment within games like *Blade & Sorcery* (Warpfrog 2018) as one habitually adopts this new virtual way of being. Klevjer’s (2012:29) “familiar physical self” that is *felt* in VR is the fundamental objective of the experience. VR is essentially a product of “our innate fascination with *imitation*” of our ‘familiar physical self’ (Bender & Broderick 2021:32, emphasis added).

Driven by this interest in a virtual replication of our lived experienced, haptic force feedback attempts to mimic physical touch (Bender & Broderick 2021:32). While the player is physically touching the VR controller, he/she is also ‘being touched’ back by small vibrations, that, when simulated along appropriate visual and audio cues tricks one into thinking they can *feel* the virtual world. This symmetrical experience of ‘touching and being touched’ attempts to mimic our primordial experience of the world (Farrow & Iacovides 2012:4-5). In this sense, VR adds an additional layer, which is “a more immediate embodiment of the user [into the virtual world]” (Bender & Broderick 2021:32).

Furthermore, as highlighted earlier, users habituate more easily or *naturally* to VR controllers than they do with a mouse and keyboard on computers (Seibert & Shafer 2018; Hufnal, Osborne, Johnson, Yildirim 2019; Bender & Broderick 2021). To the inexperienced, using the mouse and keyboard to ‘walk’ up to a door in a game, and press ‘e’ to open it, may not come *intuitively*, whereas in VR, interactivity with objects comes more instinctively. Players feel more immersed in virtual worlds when they feel adept with the controller, according to Skalski *et al* (2011:225). Moreover, VR controllers and HMDs are getting lighter and smaller as the technology evolves with each iteration. Less cumbersome devices will allow users to more easily habituate and adopt the devices as extensions of themselves in Merleau-Ponty’s terms.

Finally, VR is developing into a medium that attempts to better reproduce our experience of being in *intersubjective lifeworlds*, which, as Farrow and Iacovides’ (2014:230) suggest, is lacking in video games. Scriven (2018:196,202) notes that players can gain meaningful social and ‘worldly’ experiences through interaction with others in video games. Admittedly, the interactive features in most games are limited. Players may need to interpret how other players feel when communicating through game social mechanics, which lack social queues such as expressions that are perceived in ‘real-world’ scenarios. In VR, however, communication can become more expressive and personal with the notion of physical gestures. Furthermore, as evidenced by the newer generation of VR HMDs, such as Meta’s Quest Pro, which offers built-in facial tracking using internal cameras, eye movement and expressions can be captured and (re)incorporated into the virtual space. Each generation of technology brings more of the user’s *self* into the virtual world. Even without these expressive features, while playing VR multiplayer games such as *Pavlov VR* (2017), talking to and standing next to another player feels more intimate or personal. I am looking into their eyes, and they look into mine. They use their hands when they talk, and their presence can be felt. VR adds an additional layer to an intersubjective experience by effectively reducing the amount of interpretation the user must employ to compensate for the lack of ‘physical presence’ of others.

This is ultimately the experience that Zuckerberg envisions for Meta’s Metaverse. The Metaverse endeavours to create the “successor to the mobile internet”, a centralised virtual world which is accessed using VR and AR technologies to emit a sense of

presence amongst users (Meta 2021). “For VR,” write Tham *et al* (2018:181), “the feeling of presence determines the overall mediated experience. As a result, the concept of presence has great practical relevance to the design, evolution, and evaluation of VR technologies.” Thus, driven by the pursuit to induce and maintain feelings of presence, Meta envisions their Metaverse as a social space to connect people, as well as a place for work, exercise, and games. In such a virtual world, one would be present amongst masses of other users, who are going about different aspects of their lives, reminiscent of the “techno-utopian fantasy” following Farrow and Iacovides (2014:231). Paradoxically, one may question the meaningfulness in such a Metaverse, in which (intersubjective) relationships and everyday interaction are engaged only through avatars.

5.6 Conclusion

In this chapter, I discussed what it means to be digitally embodied in a video game. While the concept is seemingly colloquial within the video gaming industry, it has become convoluted, in a sense, with studies spanning across a range of academic fields such as video games, HCI, sports and health science, and education. The relationship between the player and the playable character plays a crucial role in the player’s sense of presence within the virtual world and, thus, the game’s overall immersive experience. Therefore, efforts towards increasing and sustaining the sense of embodiment can be seen within video games. Drawing from the study of phenomenology further gives us a better understanding of the embodied relationship, as *being* both player *and* playable character, as Keogh (2018:22, emphasis added) surmises:

To account for embodied textuality, then, is to be reflexive; it is to account not only for how the player instantiates videogame play but also for how the player is incorporated into, becomes part of, and is ultimately made by the system of videogame play they instantiate. This accounting ultimately points toward locating the videogame experience as a coming together of the player and the videogame not as preexisting, separate, distinct subjects or objects but as a *cybernetic assemblage of human body and nonhuman body across actual and virtual worlds*. Neither player nor videogame come first, but both are made in the relationship with each other, and it is through this amalgam that I am embodied in and as the videogame text, as both “Nico Bellic” the character controlled

in the world of Grand Theft Auto IV and “me” the player of Grand Theft Auto IV.

Since the player’s phenomenal experience as both player and in-game character is fundamental to understanding the experience of a video game, it is important to consider it when analysing immersion of a (VR) game. As Tham *et al* (2018:183) write, “[s]ince consciousness is susceptible to bodily as well as mental sensations, VR researchers often adopt phenomenological approaches to studying user experience in immersive environments ...” The user’s phenomenal account of VR applications such as video games provides a useful understanding of the medium, according to Bender and Broderick (2021:15). Therefore, a phenomenological – and in this case, autoethnographic – description of my own gameplay experience will serve as the foundation of this study’s research method, which is explained in the following chapter.

CHAPTER SIX

RESEARCH METHODOLOGY: DEVELOPING AN AUTOETHNOGRAPHIC METHOD FOR ANALYSING THE NATURE OF IMMERSION IN (VR) VIDEO GAMES

6.1 Introduction

In Chapter One, I established the need for more studies to approach the experience of immersion in video games qualitatively. Similarly, in Chapter Three, I discussed a need for a new (revised) model that accounts for more immersive experiences employed in video games, which I highlight across the study. This new model also needs to account for the advent of immersive emergent technologies, such as VR and the new gaming experiences it offers. Therefore, applying insights gained throughout the study, in this chapter, I devise a qualitative research method that comprehensively accounts for immersion as it is experienced in (VR) video games.

I begin by exploring the importance of play itself for analysing and researching video games, and maintain that researchers should have experience with video games to analyse how games immerse players. I discuss how an autoethnographic method would be suitable for studying the multifaceted nature of immersion in video games. Autoethnography allows for more prolonged exposure to the game in question and a more in-depth account of the experience, which, as I have established throughout the study, is necessary, considering the phenomenon's complexity. I then discuss how the tools of reflexivity and situatedness will help (re)position one as both player and researcher. This is necessary as, while 'immersing' him/herself in the video game, the researcher must still provide an accurate and objective description of his/her experience.

Thereafter, I develop a new (revised) model through which to frame the immersive strategies experienced in video games. Drawing from and revising both Ermi and Mäyrä's (2005) SCI and Calleja's (2011) Player Involvement Model, the proposed model incorporates insights obtained throughout the study to provide a method that more profoundly accounts for the immersive experience in (VR) video games. Lastly, after developing my new method, the chapter concludes by describing how it was

applied in this research to *Half-Life: Alyx* (2020), to understand how emerging VR games can immerse players, as well as further demonstrate the application of this new model. The immersive experience and analysis of *Half-Life: Alyx* (2020) is then discussed in the following chapter.

6.2 Playing to research: autoethnographic research in video games

It has been established throughout the study that immersion is a profound and complex phenomenon, which makes it difficult to research – especially within a multifaceted medium like video games. To understand the nature of immersion as experienced in (VR) video games, the researcher must establish a method that accounts for the multidimensional layers associated with immersion. According to Aarseth (2003:3), there are three main ways to acquire knowledge about a video game: firstly, by learning from the developers; secondly, by observing others play the game or reading reviews; and thirdly, by playing the game. Aarseth (2003:3) argues for the importance of play, suggesting that any informed approach to video game studies should necessarily involve the researcher playing the game to truly understand the experience. He writes:

Once we have mastered the game ourselves, or other games in the same genre, non-involved observation and player interviews can be quite effective, and even provide insights that our own play could not produce. But informed game scholarship must involve play, just like scholars of film and literature experience the works first hand, as well as through secondary sources. (Aarseth 2003:3).

Many studies that analyse and measure various notions of immersion and presence within VEs, particularly from the field of HCI, employ quantitative approaches, using forms of focus groups and questionnaires (Jennet *et al* 2008; Bender & Broderick 2021:32). In these studies, various participants may be asked to play certain portions of a game, for example, after which they may be asked to account for their immersive experience, often through a form of questionnaire. While this research method may provide valuable contributions to understanding immersion and presence within various contexts (see, for example, Ermi & Mäyrä's 2005; Jennet *et al* 2008; Slater *et al* 2010; Skalski *et al* 2011; Zhang *et al* 2017; Seibert & Shafer 2018; Hudson *et al* 2019), it may struggle to address all (or the majority) of the multifaceted layers that

make up for immersive experiences as discussed throughout this study. Since video games can take several hours to complete, acquiring an accurate account of the experience through a single focus group or play session may be challenging.

Furthermore, immersion may be affected by many factors residing outside of the game or platform. The type of player – whether a “newbie, casual [or] hardcore” player – as well as their play style – whether they are the type of player who plays competitively or instead chooses to explore the limits of the game’s mechanics (Aarseth 2003:3) – may affect the level or nature of immersion experienced. A player’s “personal and social contexts” (Ermi & Mäyrä 2005:9), as well as their ‘activeness’ in gaming communities, “and other off-line plans and thinking ...” (Calleja 2011:4) outside of gameplay, may also affect the player’s experience of immersion. Moreover, to reiterate Calleja (2011:31-32), “immersion” is often used colloquially: thus deriving meaning (and in this case, data) from “the general populace”, which may lead to generic assessments of immersion, as usage lacks the “theoretical connotations of the term”. Studies that seek to analyse immersion through the analysis of *others* must consider these factors. Thus, it is important for researchers to clarify the type of player they are, their experience with the game, and with video gaming in general.

As established throughout this study, much of the (immersive) gameplay experience is derived from the *act of playing* the game. Many immersive elements and strategies that contribute towards the gameplay experience may not be observable or understood by the researcher without playing the game. Phenomena such as ‘game feel’, affect, and the sense of embodiment are sensations that cannot be experienced or genuinely understood by observing *others* play. Moreover, when analysing a video game, Lankoski and Björk (2015:26-27) suggest playing the game carefully and repeatedly to allow for different experiences and to try different things, by “push[ing] the system to reveal how it behaves ... [one could ask] [w]hat happens when one does this? Is it the same every time? What cannot be done in that situation?”. For example, while studying immersion in the virtual world of *Half-Life: Alyx* (2020), it would be useful to look at the limitations of the game experienced in the playthroughs: as video games immerse players at a multitude of levels, they also may fall short if not conducted correctly. For example, to understand how the physics of the world reacts to the player’s actions – one could analyse what works and what does not. It is, therefore,

vital for the researcher to describe and contextualise the game in question so that the reader may understand the type of game, its general narrative, and what the player is *able* to do within the game. Additionally, following Aarseth (2003:3), insights into the game's design and development also shed light on the developer's intentions for the player's (immersive) experience throughout the game. I have demonstrated this throughout the study by reviewing interviews with the developers and playing through the developer commentary of the *Half-Life* (1998-2020) games. This allows me to contrast my own gameplay experience with the *intended* experience of the game developers to discuss – in this case – how immersion is experienced.

Furthermore, when glitches or bugs occur within video games and virtual reality experiences, it immediately detaches all sense of immersion, reminding players of what they are 'actually' doing.¹ The disruption of presence can occur when the user is made aware or reminded of the technology being used (The International Society for Presence Research [sa]). This is perpetuated in VR, as the real world can 'get in the way', as bumping or knocking a chair or the wall can break immersion. By actively playing the game him/herself, the researcher can account for all these various elements, strategies, and hindrances of immersion throughout the game. Moreover, he/she is able to explore the game at leisure, allowing him/her to explore the kind of questions Lankoski and Björk (2015:26-27) raise above.

Therefore, a method that accounts for the *researcher's* phenomenal experience through, and description of, a game allows for a deeper understanding of immersion in (VR) video games. In this study, therefore, I employ autoethnography to help address these issues faced when researching the complex phenomenon of immersion within the multifaceted medium of (VR) video games. An autoethnographic method allows me (the researcher) to experience the game first-hand, and to analyse my (immersive) *experience* of the game. Autoethnography also allows for the necessary *extensive* exploration, allowing the researcher to more deeply *immerse* themselves into the video game, and a more profound analysis of the immersive experience that the phenomenon evidently requires. The following section, therefore, discusses

¹ Glitches or bugs refer to the video game freezing, crashing or performing incorrectly. This could be due to a hardware problem, with how the game is running on the computer, or a gameplay/mechanical problem, or loss of internet connectivity which heavily disrupts online gameplay.

autoethnography in studies of video games.

6.2.1 Video game autoethnographic studies

As a study about the nature of the immersive *experience* of a player, this research will employ an autoethnographic method as a means to understand the gameplay experience first-hand, in combination with the application of the theoretical perspectives on immersion in (VR) video games that I have referred to throughout the study. The word ‘autoethnography’ derives from ethnography, which Lankoski and Björk (2015:78) describe as a “method of knowing a social world by experiencing it ... which considers experience, either the experience of the informants or researcher, as data.” Originating from anthropology, in which researchers study particular cultures, ethnography allows researchers to embed themselves within an environment, gaining context to study the experiences of others first-hand (Lankoski & Björk 2015:78). It is owing to this “embeddedness” that Lankoski and Björk (2015:78) argue how “ethnographies have become a popular method for researching virtual worlds and online computer games.” Accordingly, autoethnography recognises the researcher’s own experience as data. As Lankoski and Björk (2015:85) describe, autoethnography “acknowledges the subjective self as part of the process of doing ethnography and seeks to document the feelings, thoughts, and experiences generated by research and embodied by the researcher”.

Furthermore, the study will explore cyber or digital autoethnography, which accounts for the researcher’s experience with cyberspace and digital technologies. While autoethnographic studies have conventionally focused on the “physical dimensions of human experiences”, according to Atay (2020:271), cyber or digital autoethnography accounts for the researcher’s *virtual* experience. Atay (2020:271) writes:

... not many autoethnographies have focused on human experiences in cyberspaces. Similarly, scholars working on autoethnographic research have widely ignored human experiences and cultural identities within mediated cultures as well as within digital spaces and cyberspaces.

This gap in autoethnographic research is apparent in the study of video games. While there are video game studies that employ autoethnography (see Sundén 2012;

Borchard 2015; Sutherland 2020), very few employ autoethnographic methods to account for and understand the nature of *immersion* in video games, and even fewer consider video games within VR, which is the focus of this chapter.

Atay (2020:272) explains how cyber or digital autoethnography emphasises the researcher's embodied experience in a virtual space. He writes:

... cyber or digital autoethnographies would focus on interactivity and digital embodiment... [and] would feature the embodied digital experiences or the way in which embodiment and digitalized identity performances create a total cyber immersion... [T]hese autoethnographies would take an immersive virtual reality or cyborg approach to explore self within cyber and digital cultures (Atay 2020:272).

By employing such a method, I am able to *embed* myself within the video game and account for my own embodied immersive experience throughout the game. This allows me (the researcher) to play and experience the game extensively, which will help address the complex nature of immersion, which is experienced and affected by several attributes as established throughout the study.

Furthermore, studying video games using autoethnography allows researchers to experience the video game within the confines of their home, as it would 'conventionally' be experienced. 'Lab-based methods' would have participants play a video game in a controlled, lab-like environment, which may affect the user's experience of immersion or presence – where they may feel they are under observation. If users feel comfortable in their environment, they are more likely to feel immersed in the video game, as their attention is less likely to be distracted by the lab-like conditions of an experiment. This is particularly relevant with reference to VR, as users may feel uncomfortable 'performing' or 'acting out' in VR if under scrutiny. Thus, my autoethnographic method will allow the researcher to fully engage with the medium and game at length without distraction, which, when considering immersion, is imperative. Furthermore, since the *researcher* (as the player) will (and should) have a better grasp of the delineations of the concepts of immersion and presence, this method allows him/her to systematically interrogate the nature of immersion in (VR) video games by account of their own experience.

6.2.2 Reflexivity and situatedness: establishing the role as both player and researcher

Since playing is pivotal in the study of video games, and I will be employing an autoethnographic method, it is essential to establish my function as both player *and* researcher. Drawing from Aarseth's argument on the importance of play by the researcher, Lammes (2007:25,28) proposes an approach that incorporates the tools of both *reflexivity* and *situatedness* to account for the level of involvement of the researcher and to acknowledge the context of the video game. Firstly, *reflexivity* is described as a "means to show the position of the researcher as being simultaneously an observer and a participant ... [i]t is most commonly used in the process of making description of fieldwork in which the researcher unavoidably becomes more and more involved with [his/]her material" (Lammes 2007:28). By incorporating the tool of reflexivity within an autoethnographic study, researchers can reflect on (and take note of) their involvement within the game both through the lens of the player, as well as the "observational role as academics" (Lammes 2007:28). While the study involves this researcher playing the game to experience sensations of immersion and presence (which involves 'forgetting' about the mediation), as the researcher, my role would also include the ability to observe what or how I am being immersed. According to Lammes (2007:28), "[t]he tool of reflexivity serves to render this process clearly by always reflecting upon your own involvement, thus paradoxically creating distance in the process of getting closer ...". Thus, while immersing myself in the game of *Half-Life: Alyx* (2020), I must also be cognisant of immersion strategies throughout the game, and recognise 'moments' of presence. As established, however, immersion and presence paradoxically involve a lack of awareness of the technology and mediated process. 'True' feelings of immersion and presence may mean that I possibly *forget* my purpose as the researcher while embodied 'as' Alyx in City-17. Thus, recording the gameplay experience to employ observational tools such as reflexivity at a later stage is necessary. I develop this argument further in the following sections.

Secondly, Lammes (2007:29) argues that *situatedness* emphasises the context of the game and the role of the digital avatar, more specifically (as in the case of this study), the embodied relationship between player and *character*, as it is understood within the game environment. Lammes (2007:29,30) explains:

... [reflexivity] serves to make sure that the researcher position herself as a player, whilst [situatedness] is employed to secure that game culture is viewed as a local and embodied social practice and to avoid making universal knowledge claims. [...] They both guarantee that the researcher as player does not pretend to observe her material from “out there” but through play. Reflexivity by rendering visible how the researcher “goes native”, situatedness by not “standing back” and rephrasing objectivity as a local, embodied and ‘fractured vision’.

Situatedness thus substantiates the confidence that the study is faithful to an authentic video gaming experience. By employing reflexivity and situatedness in my autoethnographic study, I can engage with the VR game as a ‘local’ – as a typical computer gamer would, within the comfort of my home – while also recognising my observational responsibility as a researcher. However, while some readers have access to VR, many do not, so the researcher has the challenge of providing an authentic account of what it *feels* like to experience VR (Bender & Broderick 2021:9). As such, phenomenological descriptions could help in this regard. A phenomenological account of one’s immersive experience during gameplay would also reaffirm that the researcher/player does not make universal claims about the experience, following Lammes (2007:29).

6.2.3 Accounting for the player/researcher’s experience through phenomenological description

A theoretical framework to guide my interpretation of immersion within the gameplay experience will further give the study nuance. I look towards phenomenology to assist in this regard. In their book *Virtual realities: case studies in immersion and phenomenology* (2021), Bender and Broderick (2021:27) argue that phenomenology is effective as a method for analysing VR experiences. Phenomenology validates the *subjective* experience of what Bender and Broderick (2021:27) refer to as the “researcher-critic”. According to Bender and Broderick (2021:48), the “researcher-critic is defined as a self-aware scholar willing to immerse themselves in the VR text under analysis and capable of reflecting on the experience they have had.” VR scholarship is challenged by “practical limitations”, according to Bender and Broderick (2021:9), “unlike conventional film and television criticism” (and I would include ‘traditional’ video game scholarship here too), as many scholars and readers may not have access to VR. This has led to critics speculating “on what the experience *might*

be like rather than what it actually *is* like” (Bender & Broderick 2021:7-8, emphasis in original). Thus, a phenomenological description of the immersive experience of VR video games is beneficial, as it attempts to provide an “authentic account of the immersive experience for the reader who cannot experience the same material” (Bender & Broderick 2021:9).

Drawing from film phenomenology,² specifically its emphasis on the sensuous, embodied experience, Bender and Broderick (2021:28-29) posit what they call *VR phenomenology*, which “puts the body of the user at the centre of the VR experience ... [and] also privileges the subjective experience of the researcher-critic.” While the researcher-critic does not need to understand all the technical aspects of VR, Bender and Broderick (2021:29) argue that he/she must (at least) have experience with VR. The researcher-critic must have their ‘VR legs’,³ and have a basic understanding and familiarity with the platform, that. Furthermore, the researcher-critic must “... be aware of the present issues and technological developments [of VR] and, above all, be sensitive to their own experience” (Bender & Broderick 2021:29).

Moreover, while the viewer’s/player’s body plays a pivotal role in the experience of films, video games, and VR as previously established, Bender and Broderick (2021:32) argue that VR adds “the additional layer of a more immediate embodiment of the user.” They write:

We do not simply see the image on the screen with our eyes as if the screen were our eyes; rather, we also move through the VR environment as if we were in that environment, and we reach down and grip a virtual object—via the controller—as if we were gripping the object in the real world. Indeed, we are gripping a real object in the real world—the VR controller. This is of course why there is repeated interest in developing haptic suits and haptic gloves that provide force feedback to the user to mimic the physical force of holding particular objects. Users and

² Bender and Broderick (2021:28-29) reference Sobchack’s (1992) seminal work on the embodied experience of film, as well as Barker’s (2009) arguments about touch, both of which are discussed in Chapter Two (2.7).

³ Within the VR industry, having one’s ‘VR legs’ refers to the user’s tolerance towards nausea. In Merleau-Pontian terms, it translates to one’s *habitation* with the VR platform, and his/her ability not to get motion sickness. This is normally something that comes with experience with the medium. Games like *Blade & Sorcery* (WarpFrog 2018) always made me feel sick within minutes of playing when I first started VR, as the game is designed for more experienced VR players who are comfortable moving around with full locomotion. Gradually however, I became accustomed to the medium, and can now play the game for hours, as I ‘grew my VR legs’.

inventors alike are embracing their own phenomenological understanding of the medium. This physical embodiment is likely related to our innate fascination with imitation (Bender & Broderick 2021:32).

Thus an autoethnographic method that employs phenomenological description allows the researcher to account for these bodily sensations and subjective experiences throughout their engagement in VR. By *experiencing* them first-hand, the researcher-critic can gain insightful understandings of immersion and “can use their own bodily and cognitive engagement with a VR experience as the basis of a nuanced analysis” (Bender & Broderick 2021:34). Similarly, Keogh (2018: 22) writes that “[t]o account for embodied textuality, then, is to be reflexive; it is to account not only for how the player instantiates videogame play but also for how the player is incorporated into, becomes part of, and is ultimately made by the system of videogame play they instantiate.” Thus, the description of the VR game experience must account for the sensuous experience of the body. This can be achieved by describing the sensory immersive strategies that the game employs, from the audio-visual cues and haptic feedback to lesser-sensory strategies, such as ‘game feel’ and affect, and towards narrative and world-building strategies – all within the context of how the player *experienced* these strategies/elements. Therefore, the researcher’s reflexive awareness of these strategies during gameplay is, essential.

The researcher-critic’s phenomenological description of his/her *experience* within VR must be detailed enough that the reader can understand “how it *feels* to have the experience” (Bender & Broderick 2021:11, emphases in original). Simply explaining what happened or stating that ‘I felt immersed in the moment’ may not suffice. As Merleau-Ponty (2012: lxxi-lxxii) writes, “[p]henomenology involves describing, and not explaining or analyzing. [...] Everything that I know about the world, even through science, I know from a perspective that is my own or from an experience of the world ... [and] pure description excludes the process of reflective analysis just as much as it excludes the process of scientific explanation.”⁴ Giving a detailed account of what happens in a particular part of the game, for example, by describing *how I* experienced it, and *how I* reacted and *felt*, can give the reader a better understanding of what happens and how it is experienced. Furthermore, the description should allow the

⁴ The use of *reflective* here does not contradict the tool of ‘reflexivity’ as I intend to apply in my method, but instead refers to notion of finding *meaning* through analyses.

reader to understand what I (as the player) am *able to do* in a given moment of gameplay so that they may understand my (re)action as the player – and thus further gain a better understanding of the experience as a whole (Bender & Broderick (2021:36)).⁵

Lastly, since I will be looking at the nature of my immersive experience in a VR video game, it may become difficult to account for the entire experience in my description. At times I will be *immersed* in the game, which means I may temporarily neglect my role as a researcher, which is to describe the sensations that lead to the feelings of immersion and presence. Thus recording my gameplay experience is necessary to help employ the tool of reflexivity as discussed above. Following Merleau-Ponty (2012:lxvii), phenomenological description excludes reflective analysis; however, the ‘analysis’ of my recorded footage is not to reflect or to account for meaning or interpretation, but rather, to *retrace* my immersive *experience* of gameplay moments, to be able to describe the nature of immersion in (VR) video games.

In addition to being able to review my gameplay to describe my immersive experience, recording my entire playthrough also serves as ‘evidence’ that I did play the game in question for this study. Like all methods, autoethnographies have challenges and gaps to consider. When considering autoethnography, Lankoski and Björk (2015:86) argue that “[t]he researcher must be confident in the methodological soundness and the ethical viability of what they have done to publish their findings and leave themselves open for criticism and potential accusations of malpractice.” Similarly, Bender and Broderick (2021:41) suggest that some form of “evidence or declaration that the researcher-critic actually experienced the VR being discussed [is important,] if they are making claims about its effect on the user/audience.” By providing my recorded experience of the game and footage of me physically playing it in VR, along with my phenomenological description, I further verify that I indeed undertook the endeavour as claimed. A link to my full playthrough can be found in Chapter Seven (7.1) after establishing my research method.

⁵ Since VR phenomenology is a developing area, Bender and Broderick (2021:32) suggest that it is beneficial to borrow “terminology, nomenclature and concepts” from the established fields such as HCI. Considering the nature of this study, the keywords and footnotes describing relevant terms used in the fields of HCI and video game studies throughout the study may further prove useful in my own phenomenological description of *Half-Life: Alyx* (2020).

What is now required is to determine a direction to consider which immersive elements or strategies of the video game are necessary to investigate. As established throughout the study, players are immersed through various means during gameplay. Therefore, accounting for them all may be overwhelming. Moreover, as video games are lengthy media to consume – with some games requiring hundreds of hours of gameplay to fully experience or complete – an *entire* playthrough may not be feasible for academic study. Incorporating a model that frames immersive elements and strategies within video games will help narrow the scope. In Chapter Three (3.5-3.7), I discussed how Ermi and Mäyrä's (2005) sensory, challenge-based, and imaginative immersion (SCI) model and Calleja's (2011) Player Involvement Model make for valuable tools for understanding the immersive experience of video games. However, I argued that these models do not explore many of the immersive strategies and phenomena discussed throughout the study. Furthermore, they do not address the advent of VR (video games) as a new medium that introduces new insights into the immersive experience. Thus, to avoid a procrustean use of the SCI model and Player Involvement Model, which do not quite fit *all* the aspects of immersion discussed throughout the study, it is necessary to expand upon them and develop a new model that accounts explicitly for (more of) the immersive strategies I have examined.

6.3 The Player's Immersive Experience (PIE) model

In this section, I develop a new model to analyse the nature of immersion as experienced in (VR) video games, which I call the *Player's Immersive Experience* (PIE) model. This new model takes inspiration from Ermi and Mäyrä's (2005) SCI and Calleja's (2011) Player Involvement Model to establish new immersive dimensions not accounted for in these models. By employing insights discussed throughout the study it also revises and expands upon the dimensions that are accounted for. The 'updated' model also considers the advent of immersive media such as VR (and AR), which is reflected in its dimensions.⁶ Given that I have established how immersion is a multidimensional experience, like the Player Involvement Model (Calleja 2011), this new model accounts for the player's experience of immersion through multiple dimensions – I have been referring to them as “immersive strategies” – which are

⁶ Although this model was developed to accommodate VR, it is still also applicable to 'traditional' flatscreen video games.

interrelated, (mainly) experienced unconsciously and collectively, but are not necessarily of equal contribution. The eight revised immersive strategies in the PIE model are *sensory immersive strategies*; *bodily immersive strategies*; *game feel, affective, and empathetic immersive strategies*; *world-building immersive strategies*; *narrative immersive strategies*; *ludological immersive strategies*; *social immersive strategies*; and *immersion disruption*. Almost paradoxically, the final dimension accounts for aspects or experiences of the video game that *disrupt* feelings of immersion and presence. While a few dimensions are indebted to the SCI and Player Involvement Model, I revise and expand upon what constitutes each dimension and what aspects of each dimension can be analysed during gameplay. This will be discussed in the following subsections.

Using the phenomenon of light refraction in the formation of a rainbow as a metaphor, Figure 18 illustrates how the PIE model – with its overlapping dimensions – frames how immersion is experienced in (VR) video games. Immersion (white light) is achieved here through the experience of seven (not necessarily of equal contribution) dimensions or *strategies* (each represented here as a colour of the spectrum). These strategies should not be thought of as rigid, individual experiences, but rather an amalgamated experience. The closer one moves towards the middle, the more blended the experience of these strategies becomes, eliciting a higher and more sustained sense of immersion. In contrast, the eighth dimension, *immersion disruption* (represented in black to indicate the absence of light and, thus, the absence of immersion), is positioned as a ring on the outside of the spectrum.

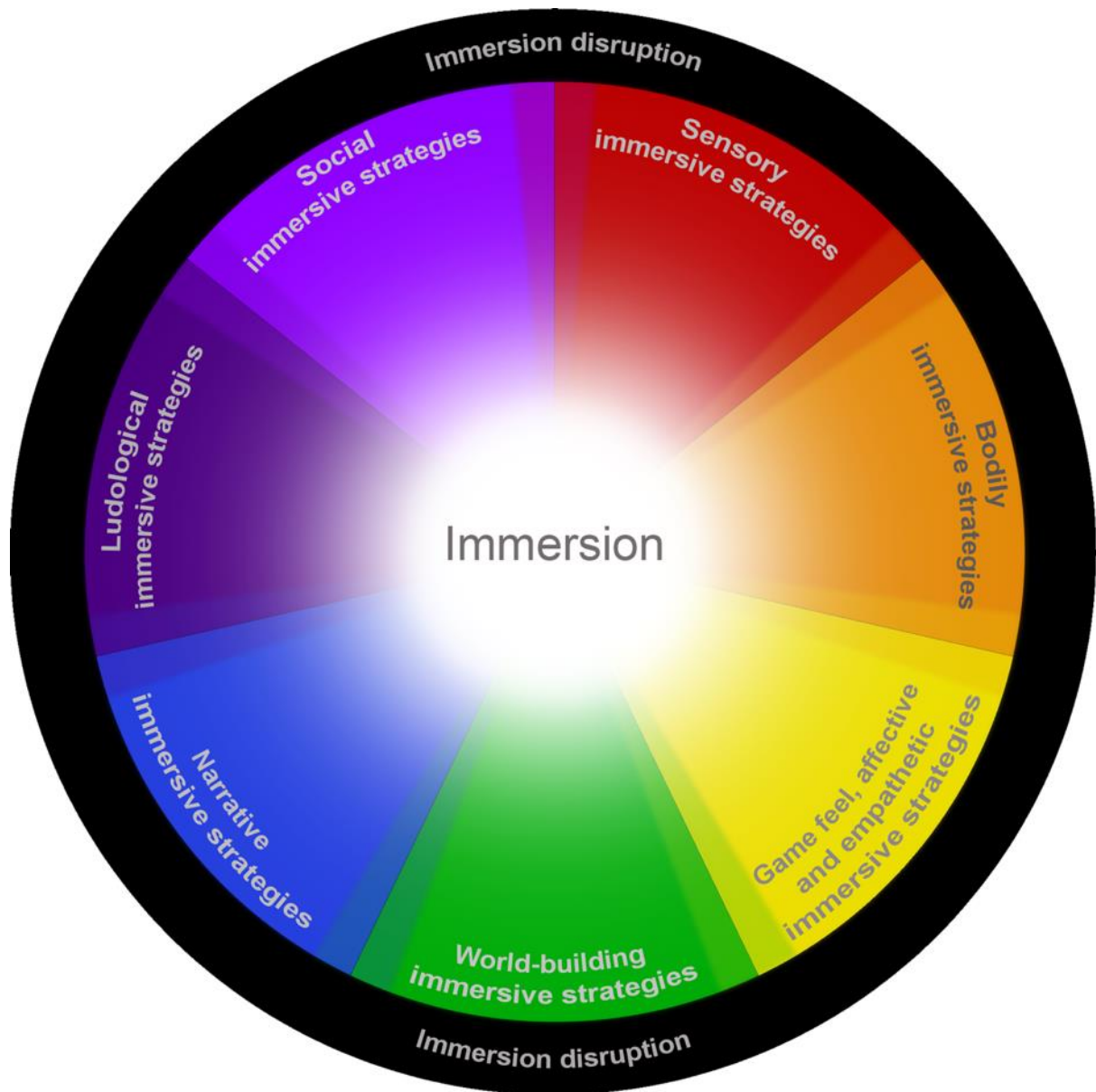


Figure 18: The Player's Immersive Experience (PIE) model.

Although there is no linear order in which these strategies are experienced or prioritised, I have grouped dimensions that account for corresponding aspects of immersion. However, these dimensions do not only overlap with their corresponding dimension but are interconnected across the spectrum. Even in the most rudimentary of games, such as Tetris (1984), one does not experience immersion solely through one immersive strategy.

While this model is explicitly centred around the *game's* immersive strategies and the *player's experience* of those strategies, it is also important to factor in how aspects

outside of the game itself may influence immersion. This is reflected in both Ermi and Mäyrä's (2005) SCI and Calleja's (2011) Player Involvement Model, as discussed in Chapter Three. Concurring, as I argued above, these factors – such as the researcher/player's experience with the video games, for example – should be established upfront by researchers in their description of their methodology. I will demonstrate this in section 6.4. In the following subsections, I discuss each of the dimensions/strategies, describing how and why they are necessary to account for the player's experience of immersion.

6.3.1 Sensory immersive strategies

Indebted to the first dimension of the SCI's model, *sensory immersion*, this dimension looks at the extent to which the player's senses are engaged. This is an essential aspect of immersion to consider, as, at a fundamental level, immersion has been understood to engage our senses, as discussed and illustrated throughout Chapter Two. Recurring themes regarding the development of sensory immersion strategies in image-making experiences included how increasingly realistic images surround the viewer hermetically, blocking out the physical world. Augmented sounds, including music, would also accompany visuals. Moreover, experimental immersive strategies were then developed to engage more of the viewers' senses, namely touch and smell, with experiences such as the *Sensorama* in 1962. As discussed in Chapter Two, the aim of sensory immersion as a strategy is to focus the user's senses (thus full-bodied attention) solely on the medium, blocking out the physical world.

While this immersive strategy relates to how the gaming *platform* (such as a PC or VR) engages the user's/player's senses, it still applies to how video games incorporate and apply these strategies to engage the player's senses during gameplay. For example, to account for sensory immersion, one could analyse the nature of or extent to which the video game's fidelity and audio stimulate the player's senses and affect his/her immersion to bring about a sense of presence in the virtual world. As such, while Ermi and Mäyrä's (2005:7) 'sensory immersion' does account for the player's sensory experience, it is limited to the audio-visual aspects of a game and does not include the player's other senses, such as how touch and haptics affect immersion. Haptic feedback, for example, was first incorporated in arcade video games as early

as the 1970s (Wolf 2008:39) and has become a staple feature in modern controllers today, including VR controllers. Furthermore, Sony's latest HMD, the PlayStation VR2, incorporates haptic feedback in the headset itself, allowing players to 'feel' "the rush of an arrow flying past your head to the thrust of a speeding vehicle" (PlayStation VR2 [sa]) while playing the video games that incorporate it. Consequently, it is important for any model that analyses immersion to stay updated in terms of the rapidly changing technological environment. Therefore, using this dimension, researchers/players can examine and account for their sensory experiences, which include (but are not limited to), the visual and audial fidelity of the video game, and the extent to which players can 'feel' and touch.⁷

6.3.2 Bodily immersive strategies

While it is important to account for the player's senses in the experience of immersion, the role of the player's body plays an integral part in the gameplay experience. In Chapter Five, I discussed the concept of embodiment and how video games elicit a sense of embodiment (SoE). The chapter concluded by describing how 'full' digital embodiment is an experience in which the player becomes an amalgamation of both the playable character *in* the game and the player – playing the game. Furthermore, a SoE plays a vital role in the user's experience of presence in VR and is made possible through the experience of 'self-location', 'agency', and 'body ownership' (Kilteni *et al* 2012:374-377,384). As such, the body (both physical and virtual), plays a vital role in the immersive encounter with a video game. Calleja's (2011:59, emphasis added) dimension of *kinesthetic involvement* in the Player Involvement Model alludes to this but is predominantly centred around the "exertion of [...] agency in the instance of gameplay, *focusing on movement and control.*" While the mastery (or habituation) of control over the avatar or virtual body plays a vital part in the SoE, it is only a portion of the digital embodied experience that occurs during gameplay, as discussed in Chapter Five.

⁷ Though it is often referred to as the 'sixth sense', I reserve the concept proprioception for the following dimension(s): *bodily immersive strategies* and *game feel, affective and empathetic immersive strategies*, which, more specifically account for the player's bodily experience during gameplay. Again, this signifies the overlapping nature of one's immersive experience, and the difficulty of accounting for it as separate components.

For example, Gee (2008:258-259) describes how when digitally embodying a game character, the player inherits the goals of the playable character, and by extension, brings their own goals and morals to the surrogate character. Accounting for one's virtual embodiment in a video game thus involves acknowledging the player as the composite of both the virtual character and physical being, in a phenomenological sense. Moreover, the perspective from which the game is played (third-or first-person, for example) affects the sense of embodiment and, thus, the game's immersive experience. Lastly, as discussed in Chapter Five (5.5), the advent of VR video games evokes new fields of enquiry regarding digital embodiment and agency in the virtual world. Therefore, a dimension that includes and accounts for the player's entire bodily experience during gameplay is important in the analysis of immersion in video games.

6.3.3 Game feel, affective and empathetic immersive strategies

In Chapter Three, I argued that the affective responses elicited by video games are perhaps one of the more prevalent incentives for playing and returning to them, and, according to Shinkle (2005:2), video games rely on affective influence for positive game experiences. Calleja's (2011:44) *affective involvement* dimension thus accounts for the "various forms of emotional engagement" within and beyond the gameplay experience. Calleja's focus in this dimension centres around the player's *feelings* and affective *responses* towards the video game. For example, when considering this affective dimension, one may analyse how a horror scenario or fight sequence elevates the player's heartrate and sense of fear. While the player's affective response is a fundamental aspect of the immersive gameplay experience and, thus, a critical dimension to adapt into my new model, I further expand this dimension by including the concepts of 'game feel' and empathy.

As I discussed in Chapter Three (3.4), 'game feel' refers to the player's *feeling(s)* concerning the fluidity and tangibility of control over the movements and actions in the video game. Game affect, on the other hand, is a more imperceptible, unconscious response during gameplay. Game feel shares similarities with Calleja's (2011:59) dimension of *kinesthetic involvement*, and like affect, it is often a more subtle, intuitive response to interactions within a game. Furthermore, much like affect, game feel is often an unintended or un-programable aspect of game design and is most noticeable

by its absence. The inclusion of game feel becomes more significant when considering VR, as the medium is built around ‘recreating’ the *feeling* and tangibility of our real-world experience, as previously discussed.

Similarly, it is also crucial to include the concept of empathy in this dimension. In Chapter Three (3.3), I discussed how video games attempt to create a sense of empathy in the player through story and characters. Furthermore, video games allow for “embodied empathy”, which according to Tronstad (2008:253,256), allows the player to feel “a kind of physical or bodily connection to the [playable] character”. This becomes more prevalent and pertinent in a VR video game, where the player perceives the virtual body as his/her own – as discussed in Chapter Five. Though VR has often been described and marketed as a tool to deliver empathy – claims that have also been met with scepticism and criticism, as discussed in Chapter Three (3.3) – it is beneficial to explore how the medium affects the player’s sense of empathy. In this dimension, therefore, I explore how game feel, affect, and empathy are employed as immersive strategies in the gameplay experience.

6.3.4 World-building immersive strategies

The Player Involvement Model’s *spatial involvement* dimension is, importantly, distinguished from the narrative dimension, while the SCI model merges the two as ‘imaginative immersion’. While these two video game design aspects share overlapping elements, they are distinct components of the video game and should be analysed as such. As highlighted in Chapter Four, the game world of *Half-Life: Alyx* (2020) was established long before the narrative was designed and implemented. The narrative gives reason and context to the events of the game. By separating these dimensions in an analysis, the researcher can approach and address the *experience* of each individually. Calleja’s (2011: 43, emphasis added) *spatial involvement*, however, is centred around the “engagement with the spatial qualities of a virtual environment in terms of *spatial control, navigation, and exploration*”. As I discussed in Chapter Four, world-building is a multifaceted concept that emphasises the creation of expansive imaginary worlds that players yearn to return to and learn more about. One such world-building strategy is the concept of ‘micronarratives’, which, as I discussed, are events or scenarios designed to make game worlds feel like authentic,

lived-in environments and expand the overall narrative theme. As such, when considering this dimension, it is beneficial to analyse Sierra's (2021:51) three micronarratives, namely, *static micronarratives*, which are events or small discoveries that the player has little control over or intervention with; *dynamic micronarratives*, which do allow for the player to interact with and potentially alter; and lastly, *emergent micronarratives*, arguably the most immersive of the three, which arise from player interaction with the game to attain individual playthrough encounters and experiences. Thus, in addition to exploring "spatial control, navigation, and exploration" as in Calleja's (2011:43) 'spatial involvement' dimension, this world-building dimension allows researchers to explore how game designers have expanded the game world and analyse how it has been decorated with detail or scenarios that feel authentic and contribute towards the overarching story (Sierra 2021:58), liveliness and 'feel' of the game.

6.3.5 Narrative immersive strategies

This dimension draws from Calleja's (2011:44) *narrative involvement* dimension, which looks to analyse the narrative and story elements rooted within the game by the developers and the narrative derived from the player's own experience. In this dimension, one can explore the immersive means deriving from the video game's narrative and expand on the insights established in Chapter Four, particularly regarding the overlapping elements of world-building and narrative and the challenge of directing the player's attention towards narrative beats in VR. As argued in Chapter Four, narrative is an essential element (or strategy) of video game immersion – hence its incorporation here from the Player Involvement Model as a dimension to analyse separately. However, it is understood here as one of many pillars contributing to the player's immersive experience and not viewed as the focal lens from which to analyse video games. The narrative gives *reason* and *meaning* for gameplay activity and cannot exist in video games without the ludological elements. Thus, when analysing video game narrative through this dimension, the researcher can explore how the narrative serves as a tool to expand the game world and give meaning to the player's (ludological) action throughout the experience.

6.3.6 Ludological immersive strategies

In this dimension, I explore the ludological strategies that affect the player's sense of immersion during gameplay. Similarly, Calleja's (2011:44) *ludic involvement* dimension from the Player Involvement Model looks towards the aspects of play within video games. However, Calleja's (2011:149-150) *ludic involvement* is closely centred around the player's decision-making "that enables players to work their way through a hierarchy of goals either self-assigned, set by the game, or set by other players." These decisions and goals are considered through the context of the game rules or mechanics.

In my revised dimension, however, I focus more closely on the game's mechanics, specifically regarding to the player's experience of the game's ludological elements such as progression and challenge systems, the sense of flow, re-playability, pacing and learning curves. In a sense, this dimension is more reflective of Ermi and Mäyrä's (2005:7) 'challenge-based immersion', which I discussed in Chapter Three (3.5.2), but expands upon it by analysing ludological elements beyond only challenges and flow.

While it is useful to analyse the player's decisions and goals within the confines of the game mechanics, as in Calleja's (2011:149-150) *ludic involvement*, by accounting for the player's phenomenological experience of the game as I describe above, the player/researcher can analyse their decisions and goals by considering their experience of the game's mechanics, through their phenomenal description of their gameplay. Furthermore, understanding how these ludological elements are experienced or altered by VR video games allows for a better understanding of the capabilities and potential of the medium.

6.3.7 Social immersive strategies

In this study, I focused predominantly on the immersive experience in single-player video games. Nonetheless, the concept of immersion deriving from the social aspects and encounters in a game (specifically the concept of *social presence*) was discussed in Chapter Three (3.4). Heeter (1992:263) describes social presence as the "extent to which other beings (living or synthetic) also exist in the world and appear to react to

you.” In single-player games, NPCs are used to populate the game world to simulate the experience of an intersubjective lifeworld. In multiplayer games, these social experiences are shared with other players. This dimension, which I call social immersive strategies, is inspired by Calleja’s (2011:43) dimension of *shared involvement*, which considers the player’s awareness of and interactions with other agents (players or NPCs) within a virtual world. Calleja (2011:100-111) further explores the dimension of *shared involvement* through three ‘sub-dimensions’: *cohabitation*, *cooperation*, and *competition*. Cohabitation refers to how other agents (players or NPCs) of the game world make the virtual environment feel like a shared, inhabited space. Cooperation refers to the collaboration between players in multiplayer games towards shared goals. Lastly, competition refers to the competitive aspects brought through play – from the competitive elements in multiplayer games to competing with AI enemies in single-player games.

In addition to the above, I consider how VR expands upon the game’s social aspects and the player’s social capabilities in this dimension. As discussed in Chapter Five, the physical nature in which users/players can engage, interact and perceive others in VR raises new questions about how the medium attempts to better reproduce our experience of being in *intersubjective lifeworlds*. In his preface to Merleau-Ponty’s *Phenomenology of perception*, translator Colin Smith (in Merleau-Ponty 2002: xxii) explains that:

The phenomenological world is not pure being, but the sense which is revealed where the paths of my various experiences intersect, and also where my own and other people’s intersect and engage with each other like gears. It is thus inseparable from subjectivity and intersubjectivity, which find their unity when I either take up my past experiences in those of the present, or other people’s in my own. For the first time [...] [t]he philosopher tries to conceive the world, others and himself and their interrelations.

In other words, Merleau-Ponty recognises that our ‘worldly’ experience is influenced by others. (VR) video games are trying to recreate this experience in the virtual world through the player’s engagement with other constituents, which this dimension accounts for.

6.3.8 Immersion disruption

Finally, in contrast to the above dimensions that look at the various aspects and strategies that immerse players in video games, this dimension allows researchers/players to acknowledge and account for the moments or elements that *disrupt* immersion during gameplay. While much can be learned about the multidimensional concept of immersion in video games by accounting for and analysing its various dimensions and strategies, it is also beneficial to understand how immersion (and presence) can be disrupted during gameplay. Since this model is best applied using the autoethnographic method described above, by playing and accounting for the gameplay experience themselves, researchers and potentially game designers can further experience and recognise why immersion and presence may be disrupted.

As discussed in Chapter Two, feelings of immersion and presence can be broken or interrupted if a player is reminded about what they are doing. For example, if a video game crashes or freezes, the gamer is immediately ‘brought back’, and reminded that they are sitting in front of a system playing a video game. In a sense, immersion is the ‘blocking out’ of these immersion-breaking distractions and experiences. Similarly, presence is experienced when the player “fails to accurately acknowledge the role of the technology in the experience” (The International Society for Presence Research [sa]). A player’s presence in the virtual world is a fleeting sensation and can be disrupted if he/she realises their limitations within the virtual world or is reminded of their *presence* in the physical world. These aspects could be unintended experiences, such as game bugs, crashes, glitches, or game design decisions and features that inadvertently disrupt immersion and presence.

Now that I have established the dimensions, or strategies, that constitute the PIE model, in the following section, I describe my research method as applied to *Half-Life: Alyx* (2020). This application will further demonstrate the extent of the new model, as well as highlight the need for a revised model that accounts for (more of) the immersive strategies as experienced in (VR) video games.

6.4 Applying the research method to *Half-Life: Alyx*

In light of the arguments above, the following describes my research method for analysing the nature of immersion in narrative-based (VR) video games as it is applied to *Half-Life: Alyx* (2020). Since the analysis of a game must also establish the researcher's video gaming experience (especially since I will be discussing my subjective experience of the game), I explain the type of video game player that I am, my experience as a gamer, and my experience with *Half-Life: Alyx* (2020) more specifically.

6.4.1 Establishing the player-critic's video gaming experience

I consider myself an avid gamer, having played video games ever since I could. I primarily play games on PC (computer), and I got into VR video gaming in 2019, playing online multiplayer and single-player games.⁸ I play an array of video games, the latest to completion (at the time of writing) being *Hogwarts Legacy* (2023) and *Sons of the Forest* (2023). Between offline/single-player games, I've accumulated several thousands of hours of play time in online games like *Dota 2* (2013), *World of Warcraft* (2004-present), *Rust* (2013), *Counterstrike: Global Offensive* (2012), *Call of Duty* (2003-present) and *Battlefield* (2002-present), amongst others. While I have logged many hours in various multiplayer games, I always enjoy playing 'offline'/single-player games – many of which I have referred to throughout the study – such as *The Elder Scrolls V: Skyrim* (2011) and *Red Dead Redemption 2* (2018). I would consider the *Half-Life* (1998-2020) series amongst my favourite games. This is likely due partly to nostalgia, as the original *Half-Life* (1998) was my first traditional FPS game. The games themselves were each critically acclaimed – both the original *Half-Life* (1998) and *Half-Life 2* (2004) revolutionised video gaming at their respective times (Bates 1998:[sp]; Adams 2004:[sp]; Rossignol 2004:[sp]). I replayed the *Half-Life* games multiple times, particularly *Half-Life 2*, as the physics engine allowed for unique occurrences that no other game offered at the time.

While I'm not an immense fan of science-fiction, the *Half-Life* (1998-2020) games have always been the exception. The story of *Half-Life* (1998-2020) is both haunting and

⁸ Following Bender & Broderick (2021:207), my experience of VR video games is at the point that “the novelty of immersion in VR, and in any given experience, [is] no longer a dominant factor”.

enthralling. The following section contextualises and briefly summarises the *Half-Life* (1998-2020) video games.

6.4.2 *Half-Life* contextualised

Since the descriptions of my immersive experiences of *Half-Life: Alyx* (2020) are not in the linear order of the game's story but instead reflects the eight dimensions of the PIE model, it is important to contextualise and give a brief synopsis of the events in the *Half-Life* games, as they relate to the events of *Half-Life: Alyx* (2020). This will help readers better understand my experience and descriptions of the game. *Half-Life: Alyx* (2020), Valve's highly anticipated instalment in the *Half-Life* series, finally arrived over a decade after fans were left in suspense due to the gripping cliff-hanger at the end of *Half-Life 2: Episode Two*, which originally debuted in late 2007.

The *Half-Life* (1998-2020) franchise has a long and influential game history, narratively, mechanically and commercially. Having left Microsoft, Gabe Newell and Mike Harrington founded Valve Corporation and began working on their first game, *Half-Life*, in 1998. Each iteration of a *Half-Life* game attempts to revolutionise the gaming industry in some form. *Half-Life* (1998) transformed the first-person shooter genre and storytelling in video games in various ways. For example, the simple notion of NPCs moving their mouths when speaking was novel at that time. Moreover, the game world is particularly linear, and the narrative seems to unfold organically around the player as they traverse the world – also a novelty.

The player embodies Dr. Gordon Freeman, a theoretical physicist from MIT who is late for work in the opening scene of *Half-Life* (1998). The game starts with a tram ride inside Black Mesa Research Facility, an underground research facility in New Mexico. Gordon's specialty is Anomalous Materials, and he is tasked with performing a test on an alien specimen that has just arrived. The test goes wrong, resulting in a 'resonance cascade' – an alien portal storm, causing alien life to teleport into the Black Mesa Research Facility, killing and destroying everything in their path. Gordon battles his way to the surface, facing aliens and government forces – who were sent to neutralise aliens and scientists to clean up and contain the disaster. Gordon eventually manages to stop the alien evasion by traveling to the alien world *Xen* to stop the creature known

as the Nihilanth, who holds the portals to Earth open. After defeating the Nihilanth, Gordon is hired by the mysterious 'G-man'.⁹ Little is known about G-man, who can be spotted watching Gordon at a distance throughout the game. G-man seemingly disappears when followed and so clearly yields other-worldly abilities. Upon hiring Gordon, G-man places him in stasis before obscurely stating, "... I will see you up ahead", which is then followed by the game's credits.

Half-Life 2 was released six years later, in 2004, and revolutionised the FPS genre again with its use of the Source Engine, which allowed for convincing in-game physics systems, as I have discussed before. The game takes place around 20 years after the events of the original *Half-Life* (1998). Gordon is woken from his stasis by G-man, who vaguely explains that much has changed in the time that has passed. "The right man in the wrong place can make all the difference in the world", the G-man tells Gordon before leaving him on a train arriving at City-17. After the events of *Half-Life* (1998), Earth is discovered and conquered by the Combine, an intergalactic alien empire which enslaves and drains planets of their resources. Humanity has been enslaved, with its military forces devastated and entire cities wiped out. Situated in Eastern Europe, City-17 is home to The Citadel, the Combine headquarters on Earth. Gordon's (now thought of as the hero who saved Earth) sudden return reignites hope in the resistance, who are headed by former colleagues from Black-Mesa. Gordon also meets Alyx Vance, the daughter of former Black-Mesa colleague Eli Vance, a figurehead of the resistance. After a long journey spanning three or four in-game days, the game ends when Gordon manages to destroy The Citadel, which severs the Combine's tie to their home world, trapping the remaining Combine on Earth.

Valve had seemingly done the impossible, creating a sequel that surpassed their original game, again being met with commercial and critical success. Former IGN editor Dan Adams (2004: [sp]) writes, "Half-Life 2 is, simply put, the best single-player shooter ever released for the PC. [...] What Valve has created is simply a masterpiece - a work of art in the genre." PC Gamer's Jim Rossignol (2004:[sp]) writes how "Valve had surpassed not only themselves, but everyone else too. Half-Life 2 is an astounding accomplishment. It is the definitive statement of the last five years of first-person

⁹ The name 'G-man' originates from the character model's name in the *Half-Life* (1998) game files.

shooters. Everything else was just a stopgap. *Half-Life 2* (2004) is a near perfect sequel.” Following the success of *Half-Life 2* (2004), Valve decided to release further sequels as episodic, shorter games that would release more frequently. *Half-Life 2: Episode One*, released in 2006, was followed by *Half-Life 2: Episode Two* in 2007. During the episodic games, Gordon (the player) spends much of his time journeying with Alyx, escaping City-17, which is set to explode after the events of *Half-Life 2* (2004), and head to White Forest, a rebel science base, where the remaining resistance plans to stop the Combine from re-establishing their portal to their home world. The resistance successfully stops the Combine, permanently cutting off any ties with Earth. Alyx and Gordon then prepare to head to the North to rescue a fellow resistance member who has made an important discovery but are suddenly attacked by Combine Advisors – bio-mechanical slug-like entities that lead the Combine forces on Earth. They are hyper-advanced creatures who are seen ordering the Combine throughout the games and can move things telekinetically. They pin Alyx and Gordon down, and kill Eli Vance – the head of the resistance, and seem to drain him for information before being interrupted by Dog, Alyx’s robotic companion. The game ends with Alyx holding the remains of her father and weeping.

Valve postponed and then seemingly cancelled a third instalment. The company is well-known for its lack of communication with the community, who begged for a resolution to the story. While many rumours of ‘Episode 3’ and even a ‘Half-Life 3’ circled the internet over the following years, Valve had seemingly moved on to other projects. Around a decade later, the *Half-Life* series’ lead writer Marc Laidlaw left Valve and released what he called *Epistle 3*, a synopsis of what Laidlaw insinuates could have been the plot for *Episode 3* but written with name and gender changes to characters for copyright reasons. This love-letter to the fans of the series seemingly all but confirmed that Valve had indeed moved on from the franchise.

As time passed, Valve had moved into the VR space, and in 2019 released its own HMD – the Valve Index. Later that year, following many rumours of a *Half-Life* title for VR in the works, Valve announced *Half-Life: Alyx* (2020) as “[a] full-length game built from the ground up for virtual reality” (Half-life [sa]). Taking place five years before the events of *Half-Life 2*, *Half-Life: Alyx* (2020) is a prequel set during the period of the Combine’s dominion over Earth.

One plays as Alyx Vance, who is 19 years old at the time and plays a crucial part in the fledgling resistance headed by her father, Eli. The game's opening places Alyx (the player) on a balcony, facing the Citadel (the combine's headquarters on earth) under construction, as helicopters and Striders work in the distance. The player is invited to take in the scenery and interact with the nearby objects on the balcony, and from the looks of things, Alyx is on a reconnaissance mission. Alyx then receives a video call from her father, who confirms they had successfully stolen a data package from the Combine and plan to decipher it. The Combine become alert to this and capture Alyx and her father (Figure 19).



Figure 19: Eli and Alyx Vance get captured by the Combine, *Half-Life: Alyx* 2020. Screenshot by author.

Alyx is then rescued by Russell, a fellow resistance scientist – who crashes the prisoner car carrying Alyx. Russell gives Alyx a headset that allows him to communicate with and see what Alyx sees, keeping the two in constant ‘touch’. Alyx then heads to Russell’s lab and the two plan on rescuing Eli. Russell equips Alyx with a handgun and a pair of ‘Russell’s’ – ‘gravity gloves’ that allow the wearer to pull items at a distance to themselves. Alyx then sets off through the Quarantine Zone – an alien infested and restricted area – to intercept the train carrying her father prisoner. After successfully rescuing Eli, the data package is decoded, and Alyx, Eli, and Russell discover that the Combine were keeping a ‘Secret Weapon’, stored in a vault in the

Quarantine Zone. They decide that Alyx should investigate the weapon, as it could possibly be used against the Combine. Later, they learn that the vault is a large alien structure hovering over the Quarantine Zone, and the weapon is, in fact, a person whom they believe to be Gordon Freeman, who mysteriously disappeared after the events of *Half-Life 1* (1998) and was thought to be dead. Alyx intends to rescue Gordon Freeman and eventually enters the vault. After making her way through the strange interior of the vault and battling her way to the prison, Alyx frees the figure inside, who turns out to be the mysterious G-man. G-man teleports them both away, seemingly outside of time and space, and rewards Alyx for her efforts by offering ‘something she does not yet know she wants.’ G-man then brings Alyx to the moment her father dies, which has not happened yet, and offers her the opportunity to save him, which Alyx does. By doing so, G-man suggests that Alyx makes for a suitable replacement for the current hire – Gordon Freeman – and puts her in stasis before the game ends. After the credits, players are rewarded with a final scene. The player ‘awakes’ again as Gordon at the events of *Half-Life 2: Episode Two* (2007), where Eli was originally killed, only now he lives, and Alyx has disappeared – essentially addressing and re-writing the (infamous) cliff hanger fans were left with for over a decade.

Half-Life: Alyx (2020) is still largely considered one of the best VR gaming experiences. While the story creates intriguing possibilities for the future of the franchise and VR storytelling, the gameplay in VR is what the game is mostly praised for. IGN’s Dan Stapleton (2020:[s]) writes in his review:

Back when VR first became a real thing and we all started spitballing which game worlds we’d most like to be fully immersed in, *Half-Life* topped my list (tied with *BioShock*). It took a few years, but *Half-Life: Alyx* has more than realized that potential. With it, Valve has set a new bar for VR in interactivity, detail, and level design, showing what can happen when a world-class developer goes all-in on the new frontier of technology. In a lot of ways, it feels like a game from the future, and one that the rest of VR gaming will likely take a good long while to match, much less surpass.

It is important to note that while I am a fan of the *Half-Life* series (1998-2020) and thoroughly enjoy playing *Half-Life: Alyx* (2020), I do find faults with the game, and can critically analyse the game’s immersive experience. The method I employ ensures I

maintain a level of reflexivity, and I acknowledge my observational role as a researcher. Furthermore, by describing my phenomenal experience of the game, I analyse my experience of and journey through the game rather than what it *means* to me.

6.4.3 Research method

Having developed a new method for analysing immersion qualitatively, and having established my video gaming experience, my position as the researcher-critic, and contextualised the game in question, I describe how I applied my research method for this study. *Half-Life: Alyx* (2020) is a VR-only game requiring a VR HMD connected to a computer. This means the game cannot be experienced by ‘stand-alone’ headsets like the Oculus Quest 2 unless it is connected to a computer. For this study I used the now discontinued Oculus Rift S. The game has several settings that the player can adjust to their comfort, such as playing while seated, and various movement options, from teleporting (where the player aims to a location to teleport to, which as previously discussed, is more comfortable for new players), to ‘full’ locomotion (where the player can use the controls to move around smoothly). Since I am experienced with VR, I opt for the settings that allow for the most immersive experience for my playthroughs. More specifically, I played through the game while standing with full locomotion (referred to as ‘continuous’ motion in the game), with smooth turning (which allows me to turn ‘smoothly’ using my controller, additionally to physically turning my body).

As mentioned earlier, owing to the size and complexity of modern video games, Lankoski and Björk (2015:28) suggest that the researcher find a part or parts of the game to be analysed, as the entire game may be too extensive to be analysed as a whole, and that the researcher would have to build a rough understanding of the game by playing it to establish which parts would be suitable for analysis. However, having played through *Half-Life: Alyx* (2020) around three times before undertaking this study, and since it is a linear game, the game is short enough that I played through the entire game for analysis.¹⁰ I completed the game in seven play sessions over a week,

¹⁰ While I have played *Half-Life: Alyx* (2020) a few times since its release in 2020, I had not played it in over a year. This was so I could go in and have a ‘genuine’ experience of the game for this study, as I have since forgotten many of the encounters throughout the game. While I recall the main story, some of the puzzles and the way forward, the game felt ‘fresh’ to me.

totalling just under eight hours of playtime.

The gameplay was recorded using Open Broadcaster Software (OBS), a (free) popular application used for screen casting, streaming, and recording. Since I looked to analyse my immersive experience in VR, it was also necessary to see my physical body during gameplay to observe (re)actions and responses. Therefore, I also setup a webcam (Logitech C922 pro) to capture my (physical) gaming ‘performance’. OBS then allowed me to overlay the two video feeds, placing my physically playing performance on top of my gameplay footage (much like popular streaming and ‘let’s play’ videos, depicting both the game and the player). This allowed me to review my playthrough for analysis and observe my experience of immersion both in-game and my (physical) bodily response(s) to immersion. The recorded footage was saved to my computer, where they were available for my analysis. After each gameplay session (which ended due to fatigue or discomfort from standing for hours), I noted prominent thoughts about the game’s immersive experience while the experience was still fresh. The recordings were used as a reference to ‘retrace my steps’ when needed and as examples from my gameplay to accompany my phenomenological description. Adobe Premiere Pro 2022 was the software used to edit the clips of the gameplay and string my individual playthrough sessions together as one full playthrough.

Recording in VR proved to be challenging. Firstly, it requires a powerful gaming computer, particularly to run a game like *Half-Life: Alyx* (2020).¹¹ Secondly, what the user sees in VR, and what observers see on the flatscreen projection of the game (which is what is recorded) are very different. Since the user in VR is looking at two screens (one per eye, which our brains then merge as one), to record the footage, one must choose which ‘eye’ to record. I chose the right eye, as this allows the viewer to see how I aim down the sights of my gun with my right eye, for example. However, this also means the field of view (FOV) that the viewer sees on a flatscreen, does not quite represent what the user sees in VR.

¹¹ According to *Steam* (*Half-Life: Alyx* [sa]), the minimum system requirements to run *Half-Life: Alyx* (2020) are: “... a 64-bit processor and operating system, OS: Windows 10, Processor: Core i5-7500 / Ryzen 5 1600, Memory: 12 GB RAM ,Graphics: GTX 1060 / RX 580 - 6GB VRAM, VR Support: SteamVR.”

Furthermore, watching VR 'footage' on a flatscreen can nauseate viewers because the HMD is constantly moving. The VR user's head moves around a lot in VR, particularly in action moments or when searching around. This constant movement feels natural for the VR user, but for a viewer, watching VR footage constantly move around can be uncomfortable. To compensate for this, there are ways of applying 'smoothing' or 'stabilisation' to the footage, making it appear less jerky for viewers. However, this comes at the cost of reducing the FOV even further. So, while the recorded VR footage allows viewers to get a sense of what it is like for the user to be *in* the game, it can never accurately represent the experience of VR. That said, *Half-Life: Alyx* (2020) has a smoothing option for the spectator. Initially, I opted to turn this feature off – as I thought the wider FOV would be more important for my analysis afterwards. However, the shaky footage in session 1 (about an hour and a half) makes it too difficult to watch. Therefore, I applied the smoothing option to the spectator view in the subsequent playthrough sessions.¹² It is also worth noting (since I am discussing immersion) that the game's heads-up display (HUD) seen in the images and videos of my playthrough is only visible to the spectator's view (which is what was recorded) and not to me, the player inside the HMD.

After completing the game, with the recordings as a reference, I described and analysed my immersive gameplay experience of *Half-Life: Alyx* (2020) through the following dimensions of the PIE model: *sensory immersive strategies; bodily immersive strategies; game feel, affective and empathetic immersive strategies; world-building immersive strategies; narrative immersive strategies; ludological immersive strategies; social immersive strategies; and immersion disruption*. The analysis of the game, while applying my revised model, is the topic of the following chapter.

¹² My first gameplay session trialled my recording setup. I thought to record with a higher FOV, with no smoothing, but then switched after reviewing footage. I also discovered my computer mouse was left on screen for the first few minutes. In preparation for my playthrough of *Half-Life: Alyx* (2020), I had tested playing other VR games to adjust my settings. However, recording in VR proves challenging, and each game has different options in terms of the FOV output and smoothing. Since I was looking to analyse immersion, I avoided testing in *Half-Life: Alyx* (2020), as I wanted my playthrough experience to be 'fresh'. This also meant that even though I was adjusting settings during my first gameplay session, I kept the footage instead of replaying it, as my (re)actions in the playthrough were 'genuine'.

6.5 Conclusion

In this chapter, I developed an autoethnographic method of analysing immersion in (VR) video games. This method considers the multifaceted nature of both immersion and (VR) video games, allowing for a more rigorous analysis and description of immersion as *experienced* in (VR) video games. It permits the researcher to extensively explore immersion first-hand and describe his/her experience through the relevant dimensions I established in my new (revised) model of video game immersion, which I call the *Player's Immersive Experience* (PIE) model. The PIE model more profoundly accounts for the immersive experiences discussed throughout the study. This is especially pertinent to VR video games, for which there is as yet no model that accounts for the new capabilities and experiences they afford.

The chapter began by arguing the need for the researcher to play video games and establishes the need to use a qualitative methodology to understand the nature of immersion in video games. Autoethnography allows the researcher to play the game in question themselves. Furthermore, it allows for a more in-depth account of immersion, which, as established throughout the study, is a complex phenomenon, particularly when considering the lengthy and multifaceted nature of video games. The researcher's (recorded) account for the nature of immersion in the (VR) video game is benefited by a phenomenological approach in his/her description. Phenomenological description emphasises the researcher's *experience*, in this case, of immersion in the game (VR) video game, privileging the *subjective experience* of the 'researcher-critic'. The description should be comprehensive enough that readers understand the context of each given situation as well as understand what the player can do in the game. This is particularly pertinent, as many readers may not have access to VR (video games), to understand the experience. The tools of reflexivity and situatedness allow and remind the researcher to acknowledge their role as both player and observant researcher, while staying true to the embodied experience within the context of the game world.

Lastly, in Chapter Three, I established a need to revise Ermi and Mäyrä's (2005) SCI and Calleja's (2011) Player Involvement Model, and develop a new model that accounts for (more of) the immersive strategies established throughout the study, as

well as emergent immersive media such as VR. Thus, I developed a new model focusing on the immersive strategies incorporated in video games to better understand the nature of immersion. I conclude this chapter by describing my methodology as applied to the pertinent video game *Half-Life: Alyx* (2020). As established, this method necessitates the researcher to establish their experience as a video gamer and acknowledge any outside parameters that may affect their immersive experience of the game. After that, I contextualise the game in question, in this case, the *Half-Life* franchise (1998-2020), before describing the application of my method to the game. In the following chapter, I discuss the immersive experience of *Half-Life: Alyx* (2020).

CHAPTER SEVEN

IMMERSION AS IT IS EXPERIENCED IN *HALF-LIFE: ALYX*

7.1 Introduction

Following the establishment of my research methodology and development of my new (revised) model – the *Player’s Immersive Experience* PIE model – to analyse immersion in (VR) video games, in this chapter, I describe and analyse my immersive experience of *Half-Life: Alyx* (2020) through the application of my model. Through phenomenological description, this application will demonstrate the immersive strategies employed to induce immersion in emerging (VR) video games and how to account for them. It will also further establish the necessity for a revised model – such as the PIE model – to analyse this experience. A better understanding of immersion – how it is experienced, and how it is induced – will not only provide insights for (VR) game developers to create better (more immersive) gaming experiences, but it will also provide a deeper philosophical understanding of *how* and *why* (VR) video games serve players’ desires to leave their actual lived realities to escape into other worlds.

My analysis of *Half-Life: Alyx* (2020) is categorised by the eight dimensions established in the PIE model, and not in the game’s sequential order. However, since immersion is experienced as an amalgamation and overlap of these dimensions, much of my description is similar too. For example, discussions surrounding the concepts of kinaesthesia and proprioception could overflow into the dimensions that consider the sensory, bodily, and game feel immersive strategies. Furthermore, to help the reader visualise various contexts, the description may also be accompanied by an image or a short video from my playthrough of the moment in question (using a QR code).¹ My full playthrough of *Half-Life: Alyx* (2020) conducted for this study can be found below (Video 2).²

¹ Scan the QR code with a smart device, or alternatively, click on it to watch the video.

² The full eight-hour playthrough is not provided with the expectation that readers watch it in its entirety. Rather, it serves as evidence of my claims made about the game. The subsequent images and shortened videos are highlights taken from this full playthrough, and serve as visual examples to accommodate my description.



Video 2: My full playthrough of *Half-Life: Alyx*, 2020.
Video by author.

7.2 Sensory immersive strategies experienced in *Half-Life: Alyx*

In Chapter Two, I contextualised the evolution of immersive strategies in image-making experiences. These strategies predominantly focused on targeting the viewer's senses, with each iteration engaging more of the viewer's senses into the imaginary world. VR arguably strives to be the pinnacle of immersive media, culminating multiple senses to bring more of the user into the virtual world. In this dimension, I look at how (VR) video games can engage the player's senses to induce the perception of immersion and presence.

Half-Life: Alyx (2020) has a high graphical fidelity (possibly the highest in any VR game to date). The lighting, ambient particles, and atmospheric smoke in various areas of the game often had me stop to appreciate how *real* the game world looks. Smoke and dust particles that float around *feel* as if they are right in front of me in VR. While stopping to appreciate the realism of the virtual environment I was in – a darkened interior of an old hotel passage – the paradoxicality of the moment struck me. I was staring at a surrounding virtual hallway that *felt* so tangible – which, in this case, could mainly be attributed to the convincing lighting, as most of the area was dark – it truly felt as if I were there, though I was *aware* that I was standing in my office with an HMD on. The feeling of presence necessitates that the mediating technology be disregarded; however, as the researcher, I also need to employ a level of reflexivity to be aware and understand feelings associated with presence. While maintaining a level of reflexivity and awareness as the researcher challenged or disrupted feelings of presence, those feelings quickly returned as I continued playing, indicative of the convincing game world.

Players hear sounds that are faithful to the visuals they are experiencing throughout

the game. These sounds range from the familiar ambient sounds of City-17 to the individualised noises various items make when the player interacts with them. The sounds are augmented and adjust according to my headmovement and body position. For example, while walking around the environment (physically and using locomotion), my (Alyx's) footsteps can be heard stepping over the environment, and sound as expected when moving over various materials such as wood, concrete, or metal. The footsteps (sounds) match the speed at which I move, whether I am walking slowly, or fully pushing the joystick on the controller. When jumping down a hole or ledge, I hear my body landing with the appropriate sound and 'weight'. Furthermore, music is used to affect my emotional state, depending on the context of the events occurring around me.³

While realism is not the determining factor for an immersive experience (Brown & Cairns 2004:1; Nitsche 2008:204), visual fidelity in VR – particularly when considering the virtual body – plays a prominent role in the user's sense of presence (Argelaguet *et al* 2016:9). Through sensory immersion, artworks such as the panorama aimed to *transport* the user *into* the depicted world. In many cases – though often fleeting – I felt as if I *was present* in the virtual world of *Half-Life: Alyx* (2020). This was owed to what my senses were perceiving. Thus, accounting for their own sensory experience allows players/researchers to further explore the extent or nature to which the senses are engaged as a strategy to bring about immersion. While this dimension is incorporated in Ermi and Mäyrä's (2005:7) model, as *sensory immersion*, theirs is limited to analysing the audio/visual aspects of the game. In my dimension, I also include other sensory strategies, such as touch and haptics. This becomes increasingly pertinent when one considers the advent of VR video games, since the medium of VR attempts to incorporate more of the player's senses into the virtual world.

The ability to 'touch' and 'feel' the virtual world has become an essential feature of any VR experience. To reiterate Lanier (2017:214), "... If you can't reach out and touch the [VR] virtual world and do something to it, you are a second-class citizen within it". A prominent example of the extent to which the player 'feels' the virtual world can be

³ The use of music as means to immerse me through a sense of synaesthesia is thus discussed in section 7.4.

described in my experience of the health syringes in *Half-Life: Alyx* (2020). Throughout my playthrough, I found that I always used the health syringes I would come across even when I did not need the health, as I liked the *feeling* of ‘injecting’ myself with them. To use the syringe, I must first pop the needle out by pressing a button on the controller. An appropriate clicking sound is made, with a brief haptic vibration – I *feel* the needle popping out with a jolt. I can then inject it anywhere on my (virtual) body. As I do so, I *feel* a brief haptic vibration in the controller as the syringe empties its contents.

This seemingly arbitrary aspect of the game highlights how one may take for granted the engagement of one’s senses in mundane activities in the physical world. When our senses are acknowledged and incorporated (faithfully) into a video game, specifically in a VR game that emphasises the player’s physical actions, it can make for very satisfying and immersive experiences. However, when considering the sensory immersion, one may be limited to thinking about how the physical *platform* engages the senses, such as how an HMD blocks out the physical world in contrast to looking at a monitor. This dimension instead analyses the sensory immersive strategies incorporated by the game itself.

7.3 Bodily immersive strategies experienced in *Half-Life: Alyx*

While interrelated with the above sensory dimension, here I specifically consider the immersive strategies that affect the player’s sense of embodiment throughout the gameplay experience. As discussed in Chapter Five, digitally embodying a virtual character – from whose point of view the game is experienced – plays a pivotal role in the player’s perception and immersive experience of video games. Again, this becomes more pertinent when applied to the medium of VR, which is built around the notion of bringing the user’s body ‘into’ the virtual world. While the above dimension looks at how my senses are engaged, such as the fidelity and experience of my surroundings, here I look more closely at how – through a sense of embodiment (SoE) – I feel present in the virtual world. As I established throughout Chapter Five, the character of Alyx in the video game, and the player – who digitally embodies her – are seen and experienced as one and the same. Throughout these dimensions, I may describe my physical actions as the *player* or refer to the *character* of Alyx specifically

– to describe how *she* fits into the game’s narrative, for example. This is not because they are understood or experienced as separate entities, but rather to help better understand how bodily immersion affects both the physical and virtual body, which are *experienced* as one entity during gameplay.

All physical movements in *Half-Life: Alyx* (2020) come instinctively to me. At the start of the game, the player is placed on a balcony overlooking the city. To look at the streets below, one physically leans over the edge, as depicted in Figure 20, holding the balcony rails. Engaging and examining objects throughout the game world are all done instinctively. Doors are opened by pushing the handle down and pulling or pushing it open. Books can be picked up and examined. Bottles can be shaken to create bubbles in the liquid inside. These may sound like obvious or trivial interactions, but many VR games do not employ this level of interactivity with the game world. When this level of interaction in a VR video game is *not* there, it quickly becomes evident that one is engaging in a game, which illustrates the immersive significance of these ‘trivial’ interactions. Since the game is played on a medium built around physical interaction, this level of interactivity is almost expected in other VR games, especially since it has now been possible.



Figure 20: The author physically leaning to look over the balcony rails at the streets below, *Half-Life: Alyx*, 2020.

Screenshot by author.

Unlike the ‘fully-embodied’ virtual character of *Blade & Sorcery* (WarpFrog 2018), discussed and depicted in the previous chapter, in which the player can see a full virtual body when they look down (Figure 17), *Half-Life: Alyx* (2020) ‘disembodies’ the player in a sense. The only visible part of Alyx (the player’s character) are the hands, which look realistic and are finger-tracked.⁴ The main reason for ‘disembodying’ Alyx in this way, according to Valve senior developer Robin Walker, in an interview with Game Informer’s Ben Reeves (2020:[sp]), was to allow for the most accurate tracking and comfortable experience for the broad range of players. Walker elaborates (Reeves 2020:[sp]):

We know where your hands are, and we know where your head is, but there’s actually a significant amount of variation in humans about the various length and movements between those points. The unfortunate reality is if you get it right, people don’t notice it, but if you get it wrong, it stands out an enormous amount. However, it was interesting how much of people’s awareness around various things like that fell away the moment they were in dense environments. The less dense the game was, the more you had time to think about those sorts of things like your arms.

Thus Valve compromises by having ‘floating hands’, which is something used in many (often smaller) VR games. While there are VR video games that allow players to digitally embody a ‘full-body’ – as previously highlighted – they seem less frequent. To compensate for the lack of ‘full-embodiment’, Valve simulates bodily sounds, including footsteps over various textured surfaces and Alyx’s (the player’s) clothing, so that even while a player cannot see their body, the body is heard and accounted for.

Despite not having a ‘full’ virtual body, in a sense Alyx’s (whole) body is ‘there’; while I cannot see it, I can engage with it and ‘feel’ it. For example, I cannot walk through objects such as a barrel in the virtual world, as my virtual ‘feet’ (which are not visible) block me from it. Furthermore, when I recover health by injecting myself with a health syringe, as described above, I can do so by injecting any point of the body, even the parts not represented, like the torso (Video 3). I often chose to inject it into the underside of my arm, as if into my veins. I feel powerful or fearless when injecting

⁴ Certain hand-controllers, such as Valve’s Index controllers track the user’s individual finger movements, which can be translated into certain software and games.

myself, gripping the syringe tightly and then jabbing it into myself rather violently.⁵



Video 3: Injecting myself with a health syringe on my (non-visible) virtual arm, *Half-Life: Alyx*, 2020.
Video by author.

The lack of a ‘present’ virtual body did not affect me during my playthrough, as, like Walker (quoted in Reeves 2020:[sp]) suggests, I was more concerned with my actions and the details of the game world while playing. Similarly, in many traditional (flatscreen) FPS games, the player often cannot see their entire virtual body, only their arms and hands. This also does not necessarily disrupt immersion in these games. As such, Kiltner *et al* (2012:376-377,384) argue that a SoE is experienced through the occurrence of three (not necessarily of equal contribution) subcomponents: the sense of ‘self-location’, ‘agency’, and ‘body ownership’. Below I describe how – despite not *seeing* my virtual body – the occurrence of these subcomponents furthers the impression of digital embodiment in *Half-Life: Alyx* (2020).

While playing *Half-Life: Alyx* (2020), I *physically react* to things in the environment as if I was there *with my own body*, which is reminiscent of Sanchez-Vives and Slater’s (2005:333,335) revised definition of presence as a human *response*, and Kiltner *et al*’s (2012:376-377,384) senses of body *self-location and agency*. For example, in the early portions of the game, while trying to focus on shooting the ‘Xen growth’ on a zombie’s leg (which would cause it to explode in a single shot), it hurled a suitcase at me, causing me to physically flinch out the way (Video 4), depicting my level of presence at the time.

⁵ Ironically, I am in fact terrified of needles in the physical world. This reiterates Poole’s (2011:94) argument that “... perfect videogame ‘feel’ requires the ever-increasing imaginative and physical involvement of the player to stop somewhere short of full bodily immersion.” While immersive gameplay may call for more convincing mimicry of the physical world, I don’t *actually* want to inject my physical self, but rather *play* as if I am.



Video 4: Flinching from a flying object, *Half-Life: Alyx*, 2020.
Video by author.

My evasive reaction to the suitcase flying at ‘my’ face indicates a sense of agency – as I have complete control over the virtual body within the context of the game. Moreover, reacting in such a manner comes across as an instinctive response, as if it were my physical body, indicative of my sense of self-location in the virtual world, following Kiltner *et al* (2012:376-377,384).

Furthermore, the sense of body ownership is best illustrated by my experience during the ‘horror’ chapter of the game: *Jeff*. During this section, Alyx must make her way through a Vodka distillery while avoiding Jeff, the blind, hulking abomination that roams the factory. Amongst other ‘sound traps’ that the player must avoid to prevent Jeff from rushing towards them, the factory has alien plant life that spews gas, causing Alyx to cough. Jeff himself emits the same gas. To avoid coughing, Alyx must cover her mouth. To do this, the player holds the controller up to their mouth. If Alyx does start coughing, holding one’s hand to their mouth would muffle the cough (Video 5). This quickly became instinctive and felt like a natural response. If Alyx ever started coughing, I would panic and quickly cover my mouth. Upon reviewing the gameplay footage, however, I noticed that my hand is in fact not touching my physical face, which surprised me, as it does not feel that way when playing.



Video 5: Covering my mouth to avoid coughing, *Half-Life: Alyx*, 2020.
Video by author.

In the HMD, I see Alyx’s hand (wearing the gravity gloves – ‘the Russells’) while I physically ‘cover’ my own mouth. I never once felt that I was *mimicking* the act of

covering my mouth, but rather felt as if I was really doing it. I did not notice that I am in fact holding controllers while playing; as such, I perceived Alyx's hands as my own.⁶ Following Merleau-Ponty's (2012:144-145) concept of "motor acquisition" – which I discussed in Chapter Five (5.4.2) – the lack of awareness of my controller and its proximity to my own body is suggestive of my *habituation* of it, adapting it onto myself as a bodily extension. This demonstrates the necessity to differentiate between sensory immersion – which focuses on how the game is physically perceived through the senses, and bodily immersion, which allows researchers to account for the strategies (such as sense of 'self-location', 'agency', and 'body ownership' (following Kilteni *et al* (2012:376-377,384)) that contribute towards the SoE and thus, a sense of presence in the game world.

Lastly, associated with the experience of digital embodiment is the concept of kinaesthesia, which, as established above, Calleja (2011: 43) uses to consider the aspects involved around the *movement and controls* the player is afforded in a game. "The link between player and game", Calleja (2011:62) explains, "is created through the kinesthetic relationship between player and avatar." In Chapter Five, I established how this relationship between player and game is understood phenomenologically, as one entity. Kinaesthesia instead considers the manner in which the player is able to master control over the digital avatar, which in turn further affects the SoE and, thus, immersion during gameplay. Since *Half-Life: Alyx* (2020) is a VR game, in which the control over Alyx is achieved with physical motions and the use of the controller buttons, a discussion around the kinaesthetic experience of the game will help further understand how this control is experienced. This is best demonstrated by referring to the gunplay aspect of the game.

As in other VR shooting games, the guns in *Half-Life: Alyx* (2020) are handled using physical movements. Reloading my handgun means I must eject the empty magazine with a button on the controller, reach over my shoulder to grab more ammunition, insert it into the gun, and pull the slider back. This does not ever feel tedious or repetitive

⁶ In testing the 'limits' of my digital embodiment to Alyx, however, I did notice that while I can sweep objects off a shelf with my hands, they go right through (known as clipping in video games) where my virtual arms would be, so the 'illusion' of having a 'full virtual body' is limited.

throughout the game, and even though I have done it countless times, I can still fumble out of panic in combat scenarios. Throwing a grenade is done with the appropriate arm gesture after priming it. All of these actions come intuitively when playing through the game. Unlike many ‘traditional’ flatscreen games, there is no need to be ‘taught’ (through a tutorial of any kind) how to throw the grenade or aim down the sights of the weapons. One is already accustomed to these are bodily gestures. However, while physical movements feel natural, they also lead to mistakes, which cause panic during combat. Video 6 shows how I forgot to reload my gun and panicked when it failed to shoot. I quickly reloaded it after a slight fumble, but all this chaos caused me to try to shoot the enemy through a glass that clearly is not penetrable, wasting all my bullets and forcing me to duck for cover again. These fumbles and moments of panic do not often happen to me in video games.



Video 6: Panicking in combat situations, *Half-Life: Alyx*, 2020.
Video by author.

Considering kinaesthesia here – following Calleja’s (2011:43) model – allows one to further acknowledge its more significant role in the experience of one’s SoE and interaction during gameplay. While new players would have to learn to master their control over the digital avatar, it should (eventually) become intuitive, specifically in scenarios that require it – such as the example above. Developers may be interested to know how the player masters the control of the avatar during gameplay, particularly during such tense moments. While the *presence* afforded by VR allows for a new layer of tension – which is physically exhibited, as my hands tremble when dropping the grenade I tried to pull towards me (*Video 6*) – it could be experienced or interpreted as poor game design if the fumbles and panic were a result of frustration from poor character/button mapping. In the case of *Half-Life: Alyx* (2020), I was able to master the controls quickly and, for the most part, able to act out my intentions during gameplay. It is indicative from the responses displayed in the combat example above that I am experiencing all three sub-components (‘self-location’, ‘agency’, and ‘body ownership’) required to experience the SoE, following Kiltani *et al* (2012:376-377,384).

I hold my breath during combat scenarios like this, specifically when I aim down the sights of my gun, to improve accuracy. Physically ducking from enemy fire and swiftly swinging around to face different enemies leaves me tired. By the end of the fight, I can be heard exhaling deeply as my body untenses. Though this heightened SoE may be a fleeting experience, it demonstrates the extent to which this (new) medium can incorporate the player's body *into* the virtual world.

Exploring bodily immersive strategies in a dimension of its own allows researchers to further understand how the sense of embodiment is experienced across different games, and how it contributes towards feelings of immersion. Further including arguments from Calleja's (2011:43) *kinesthesthetic involvement* dimension additionally establishes how control over the digital avatar is an important aspect that affects the fluidity of interaction (as the avatar) during gameplay. Notably, the advent of VR necessitates a dimension that accounts for the bodily experience during gameplay. Exploring this dimension reveals how the (VR) video gaming industry is incorporating more of the player's body into the gaming experience, and how through a sense of embodiment, the player can inhabit the virtual world.

7.4 Game feel, affective and empathetic immersive strategies experienced in *Half-Life: Alyx*

In Chapter Three, I discussed how players respond to immersion on an affective level in video games. This is reflected in Calleja's (2011:44) *affective involvement* dimension, in which the player's "various forms of emotional engagement" with the video game are considered. Following authors like Shinkle (2005:3) (discussed in Chapter Three), affect, however, here refers to "... synaesthetic, embodied perception. It is a full-body, multisensory experience, temporally and corporeally delocalized, incorporating emotions but not reducible to them." This is a broad sensation to account for and analyse. I also include the sensations of 'game feel' and 'empathy' here. Although these concepts are interrelated with affect, they narrow the scope of accounting for the affective experience during gameplay. The sensation of 'game feel' refers to "... the tactile, kinesthetic sense of manipulating a virtual object" (Swink 2009:xiii). This is similar to Calleja's (2011:59) dimension of *kinaesthetic involvement*, but like game affect, it refers to the subtle, unconscious tactile sensations *felt* during

gameplay that are often an unintended or un-programable aspect of game design. This again reflects the complexity of studying the (immersive) gameplay experience. It is also important to include how empathy is used in (VR) video games. In Chapter Three (3.3), I established how video games can produce profound feelings of empathy in the player through their stories and characters. Moreover, VR has often been described, marketed (and criticised) as a tool to engineer feelings of empathy. Thus, what follows is a description of how I experience these concepts while playing *Half-Life: Alyx* (2020).

The chapter *Jeff in Half-Life: Alyx* (2020) elicits the genuine terror of being trapped in a factory with a grotesque monster. While the feelings generated throughout this level may result from the game developer's painstaking efforts to induce fear in the player through systematic design and playtesting, no other medium than VR has had me physically hold my breath and panic at the slightest sound I make. Video 7 exhibits the panic experienced throughout this chapter and other parts of the game that employ horror elements that are intensified by VR. While trying to quietly make my way through the distillery, I notice Jeff roaming too close. Jeff's presence is certainly felt in VR. His loud footsteps and grotesque noises make me aware of his location. Jeff will often seem to look at or head towards me when moving to another location. When this occurs, I immediately panic and tense up, thinking he sees me somehow. In this particular instance, he is quickly distracted by a bottle's throw. Before moving on, I decide to pull over a few bottles using my gravity gloves ('the Russells') to store for later distractions. However, I botch my second catch, causing the bottle to smash into the wall beside me, and I flee in sheer panic. While anxiously escaping, I keep knocking more items over – constantly alerting Jeff to my location. I then come across a headcrab (a small crab-like creature) – strategically placed by the developers – that begins to knock items down in front of me, further giving up my location to Jeff, whose footsteps can be heard behind me. Without thinking, I react by pulling out my handgun and shoot at the headcrab to stop its noisy shenanigans, before realising that my gunshots would definitely attract Jeff. These rash actions of mine were instinctive, as the 'fight or flight instinct' kicked in, causing me to panic – which is attributed to my sense of immersion in the experience.



Video 7: Fear of Jeff, *Half-Life: Alyx*, 2020.
Video by author.

My affective responses in these instances include a rush of adrenaline and what feels like an elevated heart rate as my body tenses up. I also sometimes feel goosebumps, as if all the hairs on my body are standing up. My heavy breathing can also be heard in the recordings after winning a battle or experiencing tense moments. While I have experienced these ‘feelings’ in other games, including traditional flatscreen video games, the presence elicited by VR heightens them. In a traditional flatscreen video game, a player could play a horror game with the lights on, or look away if they are frightened. Feelings of presence in the virtual world can more easily be disrupted by the physical world. In VR, on the other hand, the only ‘escape’ is to take off the HMD and stop playing altogether, as the player is positioned ‘in’ the virtual world, as opposed to ‘looking at it’ through a screen. VR also presents a lifelike sense of scale and bodily (re)action in the gameplay experience. If Jeff comes charging, or a headcrab jumps at *me*, I react as if I am physically there, in ways traditional flatscreen games cannot afford. Few other mediated experiences have caused me to ‘yell’ out loudly as frequently as VR gaming experiences. Although the *Half-Life* games would not typically be classified as horror games, they contain horror elements. Horror works particularly well in VR, as the player is almost ‘stuck’ in the environment, and cannot look away, something *Half-Life: Alyx* (2020) takes advantage of. There are many more moments throughout my playthrough of *Half-Life: Alyx* (2020) when I shout out in fright, needing a moment to gather myself before moving on.

Music also plays a significant role in these affective responses. The ominous horror-themed music that can be heard in the background during such scenes puts me on edge, ‘informing’ me to stay alert. Likewise, during action scenes, the synaesthetic nature of the music that is played during combat inspires me in the moment. The music assists with the intensity of the moment, during which I am immersed and *feel* the need to ‘play the part’ more tactically, ducking behind and engaging strategically. The

music is dynamic and is triggered by the player's action – when entering a new environment for example – and keeps playing until the engagement is over. In traditional flatscreen video games, music works in the same dynamic way: the player's interaction influences it. In VR, however, coupled with the *physical* interaction and engagements, during fighting scenes, for example, music *moves* me as the player in a more tangible way, as I feel more *present* in the VR virtual world. When the 'action music' starts during a gunfight, for example, I feel more (physically) energised to move around the space, quickly reacting to the situation more intently, as if I were physically there. This demonstrates how the game elicits (physical) natural reactions and affective responses, and depicts my sense of immersion in the moment and presence in the game environment. These reactions and responses cannot be attributed to any one immersive strategy on its own, but rather a combination of immersive strategies and even subliminal elements not incorporated or intended by the game designers following Shinkle (2005:2) and Anable (2018:44), which I discussed in Chapter Three (3.4).

Consequently, 'game feel' is also significant here. It *feels* satisfying to reload and handle the weapons in the game. A lot of this *feeling* can be attributed to the sound, animation, and tactile design (using haptics), which gives me the *impression* that I am handling a futuristic weapon. Though it requires the appropriate physical actions, and is done so countless times throughout the game, it never felt monotonous, or tedious to fire or reload the weapons in *Half-Life: Alyx* (2020).⁷ Similarly, as I mentioned above, it *felt* satisfying to inject my virtual body with health syringes, even when I did not need to. Moreover, manipulating objects in the virtual world – sweeping items off a shelf with physical arm movements, for example – is pleasing and *feels* natural. During the *Jeff* chapter, all the objects that decorate the game world can be used against me. It is satisfying to handle the glass bottles delicately, for example, and then throw them to divert Jeff. Finally, combat in VR is heightened by my proprioception, as I account for my bodily presence in the virtual space, causing me to physically flinch or duck for cover. These are all instances in which VR elevated the kinaesthetic *game feel*. I discussed in Chapter Three (3.4) that describing the experiences of game feel and affect is difficult beyond describing its satisfaction. Swink (2009:xiii) writes that "... the

⁷ Though these actions may not feel tedious in non-VR video games, they do not feel as satisfying or significant as in VR.

player will never notice the feel of a game. It will just seem right.” Employing reflexivity requires the researcher to account for these sensations that are meant to ‘go unnoticed’. I would argue therefore that the absence of satisfactory ‘game feel’ is in fact noticeable and can prevent what should be a more immersive experience. VR makes these above-mentioned examples in *Half-Life: Alyx* (2020) – which would typically be mundane aspects of traditional video games – *feel* more convincing, and though they are a small part of the overall game’s experience, they go a long way in immersing the player during gameplay. These various experiences are attributed to the culmination of immersive strategies, which further illuminates the overlapping nature of these immersive dimensions in video games.

Lastly, through ‘embodied empathy’, enriched by VR, the player is encouraged to empathise with the character of Alyx throughout the game. By journeying through the game ‘as’ Alyx over the course of a few hours, the player learns a lot about her character, and begins to understand her emotional responses and motivations. These are primarily learned through communications with Russell over comms. Since I am digitally embodied as Alyx, I share *her* determination to see her quest through.⁸ This reflects Gee’s (2008:258-259) argument that being embodied as the character, the player takes on their goals. A prominent example of a scene created to solicit this embodied empathy, is Alyx’s reaction as she watches her father fall down a pit (though he is rescued moments later) (Figure 21).

⁸ Playing the previous *Half-Life 2* (2004-2007) games will further deepen the player’s knowledge/understanding of Alyx’s character, and her close relationship with her father.



Figure 21: Alyx reaches over a pit to rescue her father, *Half-Life: Alyx*, 2020. Screenshot by author.

After crashing the prisoner train carrying him, Eli is found dangling above a pit. As I futilely reach out to him, Alyx's trembling voice signifies her panicked state. When the rope snaps and Eli falls, Alyx screams in horror and begins to cry. Although (having played the sequels to the game) players can discern that Eli survives this moment, it demonstrates the capacity of VR video games to position players in immersive situations that can strongly elicit empathy, due to the significant sense of presence the player can feel there.

However, I find that games that employ cinematic cutscenes can also elicit strong feelings of empathy by employing tropes used in film. Although cutscenes are not as interactive, players can watch as characters in a cutscene can fully display (and act out) their emotional state in a pre-rendered video sequence. By contrast, in VR video games like *Half-Life: Alyx* (2020), empathy is emitted (mainly) from the embodied avatar's *voice* (on my behalf as the character), and I am never able to truly 'see' how he/she is feeling.

Nevertheless, the presence afforded by VR enables me to also empathise with *other* agents in the virtual world. For example, at one stage, Alyx comes across a Vortigaunt

(an alien race now allied with the resistance) in his hideout.⁹ The Vortigaunt explains that the Combine had experimented on him, and that he has been severed from ‘the vortessence’, cutting off his connection to his kin. He is animated to express immense sadness, which, in VR, I can witness and ‘feel’ on a more life-like scale (Figure 22).



Figure 22: The Vortigaunt expressing sadness to Alyx, *Half-Life: Alyx*, 2020. Screenshot by author.

As soon as Alyx agrees to help the Vortigaunt, he quickly lightens up with a childlike demeanour (Figure 23).

⁹ Vortigaunts are an alien race once enslaved by the Nihilanth and were hostile to Gordon Freeman in the original *Half-Life* (1998). Since gaining their freedom after Gordon defeats the Nihilanth, they have allied with the resistance. Through what they call the “vortessence” they have a hive-mind like connection amongst each other, and have a unique relationship with time – being able to transcend it to some degree.



Figure 23: The Vortigaunt gleaming as Alyx agrees to assist him, *Half-Life: Alyx*, 2020. Screenshot by author.

As discussed in Chapter Four (4.3), when a character is addressing and looking at *you* in VR, it feels more authentic than in a traditional flatscreen video game. This is because the two screens I look through in an HMD serve as the user's eyes in the virtual world and move with the user's movements. This effective strategy has thus become a trope in VR – as seen in the VR short films *Henry* (Lopez Dau 2015) and *Wolves In The Walls* (Billington 2018) discussed in Chapter Four (4.3.2) – to bolster a connection between the user and characters on screen (Nash 2021:118). Here the Vortigaunt 'acts out' a pre-rendered sequence, which is created to make the player feel sorry for him. What further sells the moment is how he can track and follow me through this sequence. Although his reactions to *the player's* actions are limited, he involves *me* as the player into the scene, demonstrating the capacity with which VR could induce empathy.

Considering that VR video games are still a novel medium, with innovations still being developed to utilise the sense of presence VR elicits, it is crucial to keep informed on how the medium affects empathy. Although, as Murray (2020:24) argues, having one watch a 360-degree video in VR does not automatically engineer empathy (as insinuated by Milk (2015:[sp])), whom I discussed in Chapter Three and Four), the medium is capable of eliciting significant feelings of empathy in new immersive ways.

This dimension, though complex, allows researchers/players to account for the various ‘feelings’ elicited by video games and addresses how they affect immersion. Including the sensations of ‘game feel’ and empathy gives the researcher/player more specific aspects of the game to address when navigating the intricate concept of game affect.

7.5 World-building immersive strategies experienced in *Half-Life: Alyx*

In Chapter Four, I discussed how world-building is a multifaceted concept that emphasises the creation of expansive imaginary worlds that players yearn to return to and learn more about. In game design, the term refers to “... everything from level design to visual aesthetic” (Sierra 2021:30). The player’s journey through and experience of the game world plays a significant part in the gameplay experience and, as such, is often analysed alongside the narrative of the game. I have argued why it is important to consider the immersive strategies used in the design and experience of the game world in its own dimension. Accordingly, Calleja’s (2011: 43) dimension of *spatial involvement* looks at the “spatial control, navigation, and exploration” experienced in the game world. As an extension of this, in this dimension I explore how the design of the game world in *Half Life: Alyx* expands upon the narrative and theme of the video game. I explore the concept of ‘micronarratives’, specifically Sierra’s (2021:51) *static micronarratives*, which are events or small discoveries that the player has little control over or intervention with; *dynamic micronarratives*, which the player can interact with and potentially alter; and lastly, *emergent micronarratives*, arguably the most immersive of the three, which arise from player interaction with the game to attain individual playthrough encounters and experiences.

The game world of *Half-Life: Alyx* (2020) is rich with detail, which encourages exploration, interaction, and rummaging for loot. I always find myself picking up the random clutter that is found throughout the game world, from workshop tools to stationary, testing to see if it can be interacted with, and appreciating the minor details, as I examine items up close. It can be assumed that the novelty of interacting with trivial items in VR would eventually wear off, but I never got bored picking up and engaging with virtual objects. This may be because very few VR games allow for this level of interaction, but it is also engaging to observe the detail of objects in the game world, examining the lengths to which the game designers had gone to decorate the

game world (Figure 24). Exploring the game world and examining its detail forms part of the player's narrative experience, which I established in Chapter Four and will further explore in terms of the following dimension.¹⁰



Figure 24: Holding a floppy disk while Russell explains to Alyx what it is, *Half-Life: Alyx*, 2020. Screenshot by author

This attention to detail makes the game world feel authentic and inhabited. Since the game world is decorated with interactable items, rummaging through them in search of ammunition, resin (used to upgrade weapons), and health syringes is very satisfying in VR. Loot is found by exploring areas carefully. It is often stored on shelves behind items, in drawers or inside boxes. The player is encouraged (through the reward of loot) to spend time in new areas and to interact with the objects in the game world. Video 8 shows how items can be sieved through and buckets emptied in search of loot.

¹⁰ To reiterate, a game's narrative includes the player's entire experience of, and actions through the game's world, including the story.



Video 8: Rummaging through interactable items in search of loot, *Half-Life: Alyx*, 2020.
Video by author.

While looting for items is not a particularly immersive aspect of video games generally, in VR – if implemented correctly and items interact as expected – it can make for a remarkably immersive interaction. As I discussed above, mimicking (more of) how we experience the physical world in VR (though a challenge in game design) can lead towards a more (extensive) sense of immersion, as the player’s expectations from the physical world are met in the virtual one. This is consistent with Wolf’s (2017:205) argument that world-builders are challenged to create rich and vast imaginary worlds with enough familiarity and consistency with the ‘actual’ world. To that end, micronarratives are a world-building strategy that attempts to expand the richness of the game world. Exploring how they are employed in *Half-Life: Alyx* (2020) will illustrate how the concept of world-building affects the player’s experience of their journey through the game world, as well as their understanding of the themes and story of the game, thus “solidify[ing] [the] players’ perception of the [game] world as a realistic place” (Sierra 2021:58).

Half-Life: Alyx (2020) mainly employs *static* micronarratives, findings that the player *may* come across but has little or no intervention with. For example, *if* the player picks up a floppy disk to examine it, as in Figure 24, Russell explains to Alyx what it is and begins a short conversation about life before the Combine invasion. These reactions from Russell to the player’s engagement with items throughout the game world encourage further exploration and allow the player to ‘organically’ learn about the game’s world. Another example of this world-building strategy is when I peer through the ‘peephole’ of a seemingly inconspicuous door – which I must physically lower my head to do (Video 9). On the other side, antlions, the dangerous insect-like creatures I had just been fighting (Russell comically calls them “leggies” as they attack with their sharp legs), are being harvested by the combine, for an orange liquid substance.



Video 9: Peering through a door to explore more of the game world, *Half-Life: Alyx*, 2020.
Video by author.

The player is left to deduce the Combine's purpose for this. As the player proceeds through the level, the orange liquid is seen around areas to contain the rampant Xen flora growth (Figure 25).¹¹ For me this further depicts the Combine's ruthless methods of maintaining control. These small encounters and details throughout the game world can be easily missed but are exciting for players – like me – to come across, and who wish to learn more about the *Half-Life* (1998-2020) universe.



Figure 25: The orange 'antlion extract' used to contain the Xen overgrowth, *Half-Life: Alyx*, 2020.
Screenshot by author.
(Lightened by author).

While many of these static micronarrative experiences are 'optional', in that they are

¹¹ Xen is the alien world Gordon was sent to at the end of the original *Half-Life* (1998), to stop aliens from being 'portaled' to Earth. Xen flora is seen growing rampantly in areas that have been left uninhabited, thus is widespread in the Quarantine Zone that the game takes place in. It seems to spread like fungi, and can be rather grotesque, with tentacles and putrid growths that seem to breath. But it can also be beautiful to look at, with glowing lights and flowers that emit a charming sound.

scattered around the game and are not integral to completing the game, they serve as a reward for players who take the time to find them. Much of the detail and world-building elements are not expressed directly in the narrative or dialogue of the game, but rather learned and interpreted (organically) by the player as they play through and explore the game (over multiple playthroughs). This contrasts with the story experience (which I discuss in the following section), which is conveyed more directly and linearly to the player. Micronarratives, on the other hand, and world-building more generally, help shape a more “individualistic play experience” (Sierra 2021:57). Even in distinctly linear games such as *Half-Life: Alyx* (2020), players are still able to come across ‘static micronarratives’ if they take the time to explore and interpret the details that decorate the game world.

The notion of VR further expands upon the exploration of the game world, and within VR video games, micronarratives (even the lesser interactive ‘static micronarratives’) can elicit new forms of engagement during gameplay. I seem to spend a lot more time exploring in VR video games than in traditional flatscreen games. I find that I examine minor details of the game world – including the ‘everyday objects’ that decorate the environment, picking up and inspecting inconspicuous items. This is consistent with what the developers observed while creating *Half-Life: Alyx* (2020) (The game awards 2019). A prime example would be coming across the scavenger hideout towards the later part of the game (Video 10). It is never *stated* to be a scavenger hideout, but it could be deduced when looking around the space. The inhabitant has evidently lived there for some time, judging by the empty food stocks and collected items. The dead (pet) rat in the cage under the bed suggests the scavenger may have been killed, captured, or been away for an extended period. After looting (stealing) the ammo and resin, I examine the deconstructed Combine helmet. It suddenly struck me (in this playthrough) that this scavenger could be Barney, a resistance member and friend of Gordon’s from Black Mesa, who was undercover with a similar Combine helmet at the beginning of *Half-Life 2* (2004). After fiddling with the Combine helmet pieces, I notice small nuts and bolts on the workbench, and ‘test’ to see if they are interactable – indeed, they are. I then turned to empty a can full of corks – which suggests that the scavenger drank a lot, and also noticed a toy tiger with a cork fence on their (dying) pot plant – which suggests they were bored or lonely. While my experience and interaction in this single room do little for the game’s overall story, and may seem trivial

in the broader context of my narrative experience, it goes a long way to establish a rich world.



Video 10: Exploring a scavenger's hideout, *Half-Life: Alyx*, 2020.
Video by author.

'Discoveries' like these illustrate attention to detail by the developers and also allow the player to interpret their own meaning, which can make each subsequent playthrough unique – even if only slightly. This room gives me a few insights into the harsh dystopian existence in a world ruled by the Combine, which I could only speculate about during the previous games. While I do like to explore the game world in traditional flatscreen games, I find that I do not spend the same amount of time examining minor details – even in expansive game worlds like *Hogwarts Legacy* (2023) – as I do in VR games like *Half-Life: Alyx* (2020).

While Calleja's (2011:43) *spatial involvement* dimension is centred around the player's "spatial control, navigation, and exploration" of the game environment, by extension, this dimension allows researchers to explore the world-building strategies that prolong the player's immersive experience during gameplay. While the dimensions explored above consider how the player's senses are engaged and 'transported' into the virtual world, how – through an SoE – the player feels *present* in the game, and how the player's emotions are affected, in this dimension, researchers can explore how expansive and rich worlds can extend these immersive experiences. It also highlights how the prospect of VR expands upon the player's perception and experience of the game world and how the world-building strategies can be incorporated. As I have shown, even the lesser-interactive (and immersive) 'static micronarrative' encounters can arouse significant feelings of immersion, particularly in VR, as I can physically interact and ravage through the game world to (self) discover more detail. These examples illustrate how world-building strategies are employed to make me want to spend more time in the virtual world and further suggest how VR amplifies the experience.

7.6 Narrative immersive strategies experienced in *Half-Life: Alyx*

Comparable to Calleja's (2011:44) *narrative involvement*, here I consider the narrative and story elements embedded within the game by the developers and the narrative derived from the player's own experience. In Chapter Four, I established that, though world-building and game narrative have overlapping elements and share the same aim of immersing the player using 'imaginative' means, they are best analysed individually, as the design process and strategies they employ are intrinsically different. This dimension also allows researchers to explore how the game's embedded narrative serves as a pillar to *complement* the experience of journeying through the game world, as discussed in Chapter Four (4.2). Following Dansky (2021:6), successful game narratives employ three techniques, namely, *immersion*, in which the narrative provides a believable context that engages the player's full attention; *reward*, in which the story is used as motivation to keep players involved in order to reach the narrative climax; and *identification*, as means to establish the meaning and reasoning in the game world. Furthermore, the advent of VR raises new challenges, such as directing the player's attention towards narrative beats in fully interactive game worlds that encourage player agency, which is important to examine here.

Since *Half-Life: Alyx* (2020) is a particularly linear game in terms of world-building and narrative structure, narrative derived from the player's own experience is more limited, since each playthrough is not vastly unique. As the player progresses through the linear path created by the developers, they come across narrative beats that develop the story in a way similar to film. However, the player can advance at their own pace, spending as much time as they want to explore the game environments before moving on. They may choose to engage in combat differently – or interact with the environment differently – which can lead to slightly varied experiences on each playthrough. An example of this would be my *own* 'deductions' from my experience in the scavenger's hideout discussed above. This again highlights how game narrative is considered an account of the player's experience through the game world – in which they develop their own stories and the experience of the overall story designed by the game creators, as discussed in Chapter Four.

Despite this ability to explore and interact in video games, the player is still driven by the *intended* story created by the game developers. Following its predecessors, *Half-Life: Alyx* (2020) does not contain ‘traditional’ cutscenes, in the sense that cinematic videos are not used to unload narrative exposition. Instead, the pre-choreographed/rendered ‘cutscenes’ play organically in the game world, leaving the player to move about freely during these scenes. While confined to a single room or small space, the player can choose to ignore the NPCs talking to them and do their own thing. While this kind of storytelling can be more immersive than the ‘traditional’ cutscene approach, it presents challenges for the developers, who may not want the player to miss important story exposition. As discussed in Chapter Four (4.5), this is exacerbated in VR since the player has more freedom to (physically) look and face in all directions. Forcing the player in any way to look in a particular direction can feel disorientating in VR.

Throughout my multiple playthroughs of the game, I have not found that I missed any story or important plot points. This is because *Valve* can *subtly* direct my attention, often tricking or inviting me into looking in a particular direction without expressively ‘forcing’ me to do so. An example of this subtle direction can be described from a sequence in the early parts of the game when Russell explains his plan to save Eli. As depicted in Figure 26, Russell is positioned across a table, with a hologram map of the city lighting the table. The player is almost expected to stand across from Russell but is not forced to be there. To involve the player, Russell asks Alyx to place an object on the table that would represent her in the rundown of his plan. This allows me to choose a random object from the clutter around Russell’s lab, which involves *me the player* in the interaction and ensures that I am standing in position when Russell continues his dialogue.



Figure 26: Russell lays out his plan to Alyx to save Eli, *Half-Life: Alyx*, 2020. Screenshot by author.

Additionally, doors are also used as a restrained method for directing attention to specific sequences or events that the developers want the players to witness for narrative or gameplay reasons. This is particularly relevant to VR video games, where the doors are opened with the player's appropriate physical action. A prominent example of this in *Half-Life: Alyx* (2020) occurs during the sequence of being hunted by the Strider – a giant bio-mechanical creature – towards the end of the game. In the developer commentary of the game, Valve developers explain how a pull-up door is used to draw the player's attention to the creature's 'gauss canon' (*Half-Life: Alyx* 2020). Having the player open the door positions themselves at the desired location and occupies the player's hands, which ensures that they are not doing anything else (Video 11). When I open the rollup door, music begins to play, which alerts me that something is about to happen. I watch as the Strider performs a new ability to blow up the wall in front of me with its canon. In the developer commentary, it is explained that players needed to witness and understand the Strider's capabilities to deal with it going forward.



Video 11: Using doors to direct player attention, *Half-Life: Alyx*, 2020.
Video by author.

Valve demonstrates here how, when leaning into the interactive quality unique to video games – and heightened by VR – players can *feel* in control over events they are experiencing while being subtly directed. At no point during gameplay do I feel that control is taken away from me. The key ‘theme’ here for game designers is *subtlety*. Delicately making the player *feel* as if he/she is directing themselves through the game world while taking on the role of “invisible guide” (Bateman 2021:111) allows the player to both enjoy the ‘freedom’ to interact as he/she pleases, while simultaneously navigating through the game’s narrative. This becomes more crucial when considering VR video games, as ‘forcing’ VR users to look in any way can cause immediate discomfort and thus disrupt immersion.

Though subtly directing attention may be the aim of creating immersive gameplay, it may still be necessary to employ methods that ‘more aggressively’ *ensure* players do not miss important story exposition. Hence, Russell’s constant line of communication with Alyx – by using a headset with a camera – allows him to see what Alyx sees. This can be interpreted as a narrative crutch, as Russell is sometimes used to ‘help’ direct Alyx’s (the player’s) attention in certain scenarios. Video 12, for example, illustrates how Russell directs Alyx’s attention to the window to reveal the vault Alyx must head toward. While having Russell point out where Alyx should look can come across as unintrusive and conversational in this case, it can also be interpreted as a safety net created to avoid any chance of missing crucial narrative exposition.



Video 12: Russell directing Alyx's (thus the player's) attention. *Half-Life: Alyx*, 2020.
Video by author.

The above examples also demonstrate how the game narrative serves to *complement the experience* of journeying through the game world – by stimulating the player to proceed further – and is not considered the sole driving force of the gameplay. Narrative instead operates as a ‘reward’, provides ‘context’, or ‘identification’, to give meaning and reasoning to the game world (Dansky 2021:6). Thus, in addition to Calleja's (2011: 44) *narrative involvement*, which considers both the embedded and player-derived story, this dimension allows the player/researcher to more closely consider how they are being directed towards narrative beats, particularly in VR. Although narrative techniques in VR are still being developed – as I argued in Chapter Four – understanding how the narrative immerses players of VR video games is pertinent, as it suggests where the emerging medium could lead.

7.7 Ludological immersive strategies experienced in *Half-Life: Alyx*

A fundamental aspect of any video game is its ludic qualities. Any model that studies the immersive experience in video games should therefore include how the ludological elements of the video game affect immersion, hence the inclusion of Ermi and Mäyrä's (2005:7) *challenge-based immersion* and Calleja's (2011:149-150) *ludic involvement* in their respective models. As previously mentioned, Ermi and Mäyrä (2005:7) focus on the challenges and flow-inducing features of the game, while Calleja's (2011:149-150) dimension centres around the player's decisions and goals within the context of the game's mechanics. In this dimension, however – which I call *ludological immersive strategies* – I focus more specifically on the game mechanics employed to immerse the player, such as the game's progression and challenge systems, the sense of flow, re-playability, pacing, and learning curves.

In Chapter Three (3.5.2), I discussed how different games have varying methods for

dealing with progression, in which the player is rewarded for progressing through ever-increasing challenges. The player's engagement with these challenges incites Csikszentmihalyi's (2008:71) previously referred to 'flow-state', in which the player is immersed by the task at hand. Video games may employ various challenges and progression features to keep players stimulated. RPG games, for example, typically use a levelling system: as the player completes quests and defeats enemies, their character earns experience (XP) to level up, which increases their power, granting access to new abilities or weapons. Progression in *Half-Life: Alyx* (2020) is – by contrast – more linear, as Valve follows the same linear formula as in the predecessor games. For example, as the player progresses, two additional new weapons are 'found' in the game world. As a progression system, the player can search the game world for 'resin', which is collected and used to upgrade their weapon of choice. Weapon upgrades become progressively more expensive, and the player must choose which guns they want to invest in. Moreover, they cannot upgrade them all in a single playthrough, which allows for greater replayability.

As discussed above, thoroughly searching the game world is highly satisfying in VR. I never left a room before searching every drawer and shelf. Most of the time, one finds nothing of value, but coming across any resin, ammunition, or a health syringe releases just enough dopamine to keep me searching, which never got dull. No other game has kept me in a single room, exploring it entirely. However, this type of progression system is nothing new. Searching every corner on a 'traditional' flatscreen video game could quickly feel tedious for the player. Yet, the interactivity afforded by VR makes trivial things like *physically* bending down to open a virtual drawer satisfying and immersive. It is also integrated seamlessly with the world-building strategies that encourage exploration. Again, this is indicative of the multidimensionality of one's immersive experience, and the complexity of designing, and understanding the gameplay experience. My account of these ludological strategies is better understood phenomenologically, as I experience them *kinaesthetically* in VR. In other words, my bodily motion in the physical world – to engage in the virtual world – goes unnoticed while playing. For brief moments, I experience the virtual world in much of the same way as I experience and interact in my lived experience of the physical world, in the sense that I am not consciously aware of my actions or proprioception as I manoeuvre the physical world. This is reminiscent of Merleau-Ponty's (2012:260-261) contention

of one's ability to re-orientate themselves into virtual spaces, as, "[m]y body is wherever it has something to do." These ludological 'tasks' occupy the player's phenomenal 'place', following Merleau-Ponty's (2012:260).

While much of the fun and challenge I experienced playing *Half-Life Alyx* (2020) is through exploration and combat in VR, like its predecessors, the game uses 'mini-games' in the form of puzzles. These puzzles serve as tools to regulate the game's pacing to break up intense combat experiences with slower 'resting points' for the player. They are also designed to evoke a sense of flow in the player, engaging his/her attention solely towards the task at hand. However, as I discussed in Chapter Three (3.5.2), they work best when they are integrated seamlessly into the game world and do not disrupt feelings of presence or frustrate the player.

A prominent example of this would be the electricity puzzle, in which Alyx (the player) holds up the multi-tool to trace electric wiring hidden behind in-game walls, flicking switches to control the flow of electric current (normally to open a pathway or to get the power back on as illustrated in Video 13). While these puzzles come in many forms, and are usually brief, some require significant concentration, leading towards a 'flow state'.



Video 13: Solving an electricity puzzle, *Half-Life: Alyx*, 2020.
Video by author.

Being in VR, these puzzles take advantage of the player's affordance of space. These 'flow-states' are achieved while utilising the game world's physics, leading to feelings of presence as I concentrate on solving the puzzles. While tracing the electric wiring behind shelves, I do not think twice about knocking the contents off the shelves, as I feel part of the virtual world. This example again illustrates how Valve embraces VR's physical interactive capabilities and integrates puzzles to be part of the game world, in contrast to puzzles and minigames in many other video games, which can feel

disconnected from the rest of the game.

Video games will regularly require players to learn and familiarise themselves with the game's mechanics, combat systems, and movements. Players are often taught about these through various means, mainly through some tutorial. Tutorials can be a separate experience one goes through before being permitted to play the game, or sometimes, they are integrated into the narrative of the game, such as the gun range training sequence at the beginning of earlier *Call of Duty* (Activision Blizzard 2003-present) titles. Being explicitly taught or shown something, like how to engage certain enemies, can feel like one's hand is being held through the game instead of it feeling like a 'natural' learning experience. Games that attempt to integrate these learning curves seamlessly into the flow of the gameplay, create a more organic and immersive experience. The *Half-Life* games (1998-2020) have always pioneered the latter approach, never taking control away from the player.

This learning curve 'philosophy' has been continued in *Half-Life: Alyx* (2020); a prominent example of this is the introduction or 'tutoring' of new enemies. Newer, more formidable enemies are strategically introduced to the player at intervals when the player is equipped to handle them. These new enemies are usually first encountered at a safe distance so that the player can choose if or how they would like to engage. By design, this allows the player to 'learn' about the new enemy and to understand how to deal with them going forward. This is best illustrated by the first encounter with the armoured headcrabs (Figure 27) in *Half-Life: Alyx* (2020). As the player walks into the room, an armoured headcrab leaps at the fence, clinging onto it, while two others keep trying to attack the player through the fence. The headcrabs' armoured shells render them impervious to Alyx's gunfire, unlike the headcrabs encountered before. From the headcrab clinging to the fence, the player can quickly learn that their weak spot is the glowing 'heart' beneath them. The two others on the ground further teach the player that the headcrabs perform a growl, rearing back on their hindlegs before each leaping attack. The growl is an audible cue of an incoming attack and alerts the player that the weak-spot underneath is momentarily exposed.



Figure 27: Introduction of the armoured headcrab behind the safety of a fence, *Half-Life: Alyx*, 2020. Screenshot by author.

Enemy introductions throughout the game are by design, presenting a new enemy ‘organically’ in the game world that does not feel too staged or scripted by the developers. When a new enemy is introduced, it is as if I have just happened across it. I never feel as if I am being *taught* how to engage with it, but rather, I am presented with new scenarios that I ‘figure out for myself’. Through constant playtesting and reiteration, Valve makes players feel as if they are solving issues for themselves.

Video games employ several ludological elements and strategies that make up the systems and mechanics that the game runs on. Some of these ludological elements are often reason enough for players to play the game, and thus, they should always be considered in the player’s immersive experience of video games. The above examples are but a few of the ludological strategies that Valve employs to immerse players during gameplay, and it is clear that they work best when integrated into the game’s overall narrative and its world. Ludological systems and mechanics are constantly being improved upon for new games. Researchers and game designers must be kept abreast of ludological developments that affect the player’s immersion, particularly how the advent of VR can increase or extend it. Game designers are able to produce more immersive experiences for players by integrating ludological features and experiences that take advantage of VR’s phenomenal capabilities. Moreover, by

further understanding the nuances of immersion and the lengths that are taken to sustain players 'in' video games through features of play and engagement, it becomes clearer how the medium is the leading form of entertainment (Entertainment Software Association 2019), as discussed in Chapter One.

7.8 Social immersive strategies experienced in *Half-Life: Alyx*

Drawing from Calleja's (2011:43) *shared involvement* in the *social immersive strategies* dimension, I consider the player's immersive experience derived from interactions with other agents (players or NPCs) within a virtual world. Since I am applying my method to *Half-Life: Alyx* (2020) – a single-player game – I explored the sense of social presence elicited by the NPCs of the game, and how the medium of VR extends the sensation.

The player meets Russell (a fellow resistance scientist) in the early sections of the game and is in nearly constant communication with him throughout most of the game using a headset with a camera (so Russell sees what Alyx/the player sees). The character of Alyx develops a wholesome relationship with Russell as he guides her ventures through City-17. In addition to narrative exposition, which may help the player progress, Russell is good company to Alyx (and the player), explaining (often trivial) things Alyx encounters, such as what the world was like before the Combine's invasion. Having an NPC communicate with the player may not be a novel or necessarily immersive interaction. However, when an NPC appropriately *reacts* to the player's interaction in the game, one may be more convinced.

As such, interacting with the game world can elicit reactions from Russell – which also encouraged me as the player to explore more. If I saw or did something extraordinary, I expected and even anticipated a comment or reaction from Russell. In this way, Russell's 'company' feels more authentic. At one point, I open a portable toilet in search of loot; Russell uncomfortably remarks on the act, offering to turn off his visual/audio feed so that Alyx may have privacy (Video 14). While this moment is awkward and amusing, these *believable* reactions from Russell – that tie into the player's interaction in the game – help create a shared-like, more immersive experience.



Video 14: Russell's reaction to Alyx opening a portable toilet, *Half-Life: Alyx*, 2020.
Video by author.

Through most of the game, the player typically interacts with enemy NPCs, which are mostly fought at a distance and do not provide much opportunity to analyse the many elements that could lead to a sense of social presence. However, being in VR, the 'presence' of the enemy NPCs is undoubtedly 'felt' throughout the game. For example, it is unnerving when the heavily armoured Combine Chargers slowly advance towards me in skirmishes with Combine soldiers. The heavy clank of their footsteps accurately represents their intimidating size and weight.¹²

However, considering the *social presence* elicited by NPCs, it is difficult not to think of the ending of the game when Alyx releases the G-man from prison (Video 15). Although this is an interaction with an NPC, it demonstrates how VR can add a new level of depth to social interaction in video games. Upon release, G-man teleports himself and Alyx into a void, seemingly outside of space and time – similar to the other *Half-Life* games when he appears. His glinting eyes and head follow the player's movements in space (Figure 28).

¹² Also noteworthy, are the encounters with headcrabs – small crab-like creatures that jump and latch onto the player's face, which in VR, is particularly frightening.



Figure 28: G-man interacts with Alyx after being freed, *Half-Life: Alyx*, 2020. Screenshot by author.

As G-man talks, he walks around me and seems to disappear into the abyss. His voice can still be heard in the darkness surrounding me. The use of spatial audio may not be unique to this kind of sequence in video games, but in VR, it invites me to turn my head to try to search for G-man in the dark before his reappearance. This works well in VR, utilising the entire space around me.¹³ As he slowly paces around, I turn my head, and often my whole body to try to follow him. If it were played using a traditional mouse and keyboard, however, turning around constantly using the mouse to try and track G-man talking would likely become frustrating. His wandering around me in such a fashion is clearly used to intimidate me (Alyx), which is consistent with G-man's otherworldly, mysterious demeanour. As the voice actor for G-man, Mike Shapiro, states in an interview with independent games journalist Tyler McVicker (2020:[sp]), G-man's (iconic) and slow way of speaking, with random pauses and inflections holds the listener at every word, as if toying with them. This 'toying' with the player is more amplified in this VR scene than in the previous games. As G-man speaks, ghostly versions or projections of himself leave his body (as if showing off his multidimensional capabilities). These apparitions catch my attention, as my head follows them

¹³ In Chapter Four (4.5.2), in my analyses of pertinent VR short films, one of my observations/critiques was that none of them really made full use of the 360-degrees of space around me, one of the novelties that VR offers.

wandering in the space around me, at times making me second-guess which G-man is the ‘real’ one.



Video 15: The G-man converses with Alyx after being freed, *Half-Life: Alyx*, 2020.
Video by author.

G-man’s *presence* in this scene is captivating. His ‘performance’ demands my attention as he speaks while walking around me. His glowing eyes, expressions, and demeanour make me feel uneasy – and makes for a compelling and convincing moment. However, while scenes like this engagement with the G-man, are particularly immersive – and grab the player’s attention – there is little interaction that the *player* can have throughout these scenes. The character of Alyx is the one who is being addressed and talks to the NPCs. Any (re-)action or response from the NPC to the *player’s* interaction in the moment is minimal. If the *player* feels neglected, has little control, or elicits little *reaction* from the other agents of the game world, the sense of social presence can begin to diminish. Thus, scenes like this, though novel and as exciting as they are in VR, may be fleeting. While it does feel as if I am standing in front of a ‘being’ in this scene – it is still an NPC – that has been pre-rendered and choreographed – with a limited range of reactions to me as the player.

As such, it would be beneficial to apply this method to *multiplayer* VR video games to analyse how the medium develops upon social immersive strategies with regards to other players. In Chapter Five (5.5), I briefly highlighted how – given the more immediate sense of presence in VR and the use of physical gestures – social interactions feel more natural in VR video games than in traditional ‘flatscreen’ video games. The sense of (social) presence afforded by social VR applications like VRChat (2014) “foster natural and intimate forms of communication” for users who seek social support (van Brakel, Barreda-´Angeles & Hartmann 2023:[sa]). The social aspect of VR experiences is becoming increasingly more relevant, with the advent of the *Metaverse*, and each new iteration of HMD bringing more of the user’s senses into the virtual world, which allows users to be more expressive – attempting to edge the

experience to resemble our intersubjective lifeworld experience more closely. As such, it is necessary to include a dimension – such as this *social immersive strategies* dimension – that allows one to account for, and analyse, how video games can elicit meaningful social interactions from NPCs or other players.

7.9 Immersion disruption as experienced in *Half-Life: Alyx*

Finally, in contrast to the above dimensions that account for the game's strategies employed to immerse the player, here I consider how immersion can be disrupted. While much can be learned by analysing how games immerse players, it is also beneficial for researchers and designers to understand how immersion is disrupted. Game designers would benefit from insights that account for instances of immersion disruption and would work to address them. Furthermore, such insights further help to understand the fickle sensation of one's immersive experience and recognise the strategies game designers employ to sustain players in the experience. These aspects could be unintended experiences, such as game bugs/glitches, crashes and lag, or game design decisions and features that inadvertently disrupt immersion.

In my playthrough of *Half-Life: Alyx* (2020), I experienced various instances that interrupted my immersive experience. The most significant issue I encountered, was frame-per-second (FPS) drops in certain moments of the game. FPS affects the smoothness of the game. If it drops below a certain point, even for a brief moment, the player is experiencing lag, in which their interaction with the controller and what they experience in the game is affected. This is particular problematic in VR, as the user instantly feels nauseated by the world around them lagging when they move their head. Whenever this lag occurred, my presence was immediately 'brought out' of the game, and I had to briefly pause what I was doing to recover from the nauseating feeling. FPS drops could be caused by several reasons, but in this case, I believe my aging computer was to blame.¹⁴ Regardless, in a study that analyses the nature of the player's immersive experience, it is important to consider outside factors that could compromise the experience.

¹⁴ Recording the playthrough would also use some of the computer's resources, which would impact the game's performance.

Another factor to consider here is the occurrence of game bugs or glitches. This refers to when the game performs in a manner unintended by game designers. These are usually issues that are (and should be) corrected in the game development and testing phases, but due to the complexity of the multiple systems video games run on, bugs and glitches are not uncommon. During my playthrough of *Half-Life: Alyx* (2020), my ‘Alyx tool’ – which is used to solve puzzles throughout the game – sometimes did not work. For example, I would be trying to solve an electric puzzle, and the tool simply would not turn the switches. This was frustrating to experience and required me to reload the game to fix it so I could proceed. While this only happened two or three times during my playthrough, it was highly disruptive.

Lastly, it is also important to consider any decisions, aspects or strategies employed in the video game that, in fact, counterintuitively, disrupted immersion. In *Half-Life: Alyx* (2020), for example, Valve was very cautious in its approach to never discomfort the player at any time in VR. As Valve’s first VR game, and since VR is still a relatively novel gaming experience to many players, the game can come across as very ‘safe’ to more experienced VR gamers. For example, there is no option for the player to sprint or jump in the game. As I discussed in Chapters Three and Five, these actions can be nauseating in VR, as new users must habituate themselves to the perception of jumping or sprinting in the virtual world while their physical body stays in one place. As a compromise to jump in *Half-Life: Alyx* (2020), the player holds a controller thumbstick down to bring up a marker that they can use to point to a location and ‘teleport’ to areas in the game. While jumping is conceivably a difficult action to incorporate in VR, I demonstrated in Chapter Five (5.5) how video games like *Blade & Sorcery* (Warpfrog 2018) utilise a hybrid approach, allowing players to physically jump if they prefer or use the controller to jump with the press of a button, much like a traditional video game.

The lack of the ability to run can also disrupt what should be a more immersive experience. When moving around in combat or getting away from *Jeff* for example, I feel the urge to run as I feel immersed and present in the moment. However, one can only walk in the game, which can defeat the urgency created in the moment.¹⁵

¹⁵ This can be seen in my playthrough, such as Video 7 for example, when escaping from Jeff.

Similarly, when dropping down into holes or to lower levels, Valve slows the player's 'fall speed' to not discomfort them. Again, this disrupts my immersion as the player, since I expect to drop down holes or ledges realistically, instead of slow-falling down. These comfort decisions should be features that are toggled in the game's options to accommodate for both novice and experienced players. Valve already has these kinds of options in the game, such as the preference to physically climb up ladders using the appropriate arm movements (which is more immersive) or teleporting up after a brief moment (to avoid any sense of vertigo novice players may feel).

As such, accounting for the experiences that disrupt the player's sense of immersion during gameplay further helps to understand the phenomenon. These experiences may be factors that reside outside the game, which researchers should further consider when analysing the nature of immersion. Alternatively, they can be game design decisions that inadvertently backfire, which could be addressed by game designers.

7.10 Conclusion

Accounting for the experience of immersion in a medium as multifarious and involving as video games can be overwhelming, more so in VR. As determined throughout the study, there are many elements and strategies to consider when analysing the nature of one's immersive experiences in media. As a relatively new medium, video games amalgamate several aspects from multiple media and position the player at the centre of the experience. VR intensifies the experience by bringing more of the player's physicality 'into' the game world, eliciting a higher and more frequent sense of presence.

Although Ermi and Mäyrä's (2005) SCI model and Calleja's (2011) Player Involvement Model make for useful frameworks that contribute towards the understanding of how video games immerse players, they are limited and require updating, specifically as our understanding of, and the strategies that contribute towards immersion, have expanded. As discussed in Chapter Three, the three dimensions (sensory, challenge-based, and imaginative immersion) of the SCI model are derived from the accounts of children's experiences playing video games. Although these dimensions have also

been reflected in literature on immersion in some form, as previously seen in Chapters Two and Three, they – very broadly – reflect only a portion of the player’s immersive experience. The Player Involvement Model, on the other hand, necessarily expands upon the dimensions that account for immersion, incorporating more of the player’s experience. Nonetheless, the model does not account for emerging media such as VR, and further still, leaves room for revision and further development of each dimension, to account for the strategies I reviewed in this study.

The Player’s Immersive Experience (PIE) model was developed by revising these two previous models and from the insights discussed throughout the study. It more profoundly frames the player’s immersive experience in (VR) video games through eight dimensions that better reflect the relevant discussions throughout the study. The application of the model to *Half-Life: Alyx* (2020) in this chapter both highlights how players can experience immersion in emerging VR video games as well as demonstrates how the model allows researchers (and potentially game designers) to better account for and understand the respective strategies that immerse the player during gameplay.

Having applied this method to *Half-Life: Alyx* (2020) and studying my playthrough experience, it is evident that immersion and presence are experienced at multiple levels throughout the game, which this method enabled me to explore and analyse. The exploration of *Half-Life: Alyx* (2020) here is not to suggest that it is a perfect example of a (VR) video game or immersive experience. Instead, it is used here as a case study to demonstrate how the multifaceted elements in emerging (VR) video games should be considered and approached qualitatively and through my new (revised) model, to analyse the nature of the researcher/player’s immersive experience in the game.

The significance of the findings afforded by the PIE model is twofold: firstly, for game designers and producers of video games, research that implements the model will potentially provide useful insights into the immersive experience of the player. A thorough, phenomenal account – framed through the eight dimensions established in the PIE model – can afford an enriched understanding of how a researcher/player engages, interprets, and recounts the immersive experience of a given game. The

eight dimensions or immersive strategies assist in describing the multifaceted systems and structures that make up a (VR) video game. Understanding the researcher/player's phenomenal account of the gameplay experience in this way can enable the creation of better, more immersive (VR) video games and VR experiences in general.

Secondly, analysing the nature of a player's immersive experience in (VR) video games enables a deeper philosophical understanding of *how* and *why* (VR) video games serve players' desires to leave their actual lived realities and escape into other worlds. This has been a desire of human beings since at least antiquity (as established in Chapter Two). Virtuality and virtual environments are becoming increasingly prevalent in our everyday lives, as we spend more time engaged with screens each day. Since the video gaming industry has become the largest in the entertainment sector (Read 2022:[sp] & Entertainment Software Association 2022), as established in Chapter One, it has become increasingly pertinent to understand how and why they have become so prevalent, and a significant part of popular culture. Studying *immersion* in video games, in particular, involves exploring the multifaceted elements and systems comprised in contemporary games, which the PIE model helps to frame. Furthermore, since immersion is regarded as a foundational pillar of any video gaming experience (Brown & Cairns 2004:1; Gard 2010:[sp]; Dansky 2021:17), it makes for a useful avenue to research video games. Since the experience of immersion is sought after by designers and players of video games, a better understanding of immersion in video games can potentially lead to a deeper understanding of players themselves.

However, one may question what is at stake in such increasingly immersive situations or where such immersion in emerging technologies could lead. This again echoes the contention between the two polarising camps surrounding technologies such as VR, as discussed in Chapter One. On the one hand, the 'utopians', 'instrumentalists', or 'evangelists' embrace the interactive and spatial affordances of VR and foresee its potential as a life-altering technology, while the 'dystopians', 'determinists' or 'sceptics' caution against the potential for such technology to drastically alter the lived experience (Bender & Broderick 2021:197; Du Toit & Swer 2021:22; Ihde 2012:132-133).

Although increasingly convincing immersive experiences that induce credible and more sustained feelings of presence – such as those described throughout this chapter – are fun or exciting to experience, the implications of these experiences lean towards the dystopian view of immersive technologies, as people could opt to spend more time in increasingly convincing virtual worlds than in the physical one. Fear of creating or contributing to such problematic engagement should not detract (VR) video game developers from striving to create increasingly immersive experiences. On the contrary, as entertainment media that provide players with momentary opportunities to live out their fantasies, (VR) video games, and the immersive experiences they can induce, can give us a better understanding of ourselves. As highlighted above, I am terrified of needles and do not feel comfortable around physical firearms, nor would I attempt the feats that I perform in digital worlds. However, in the virtual game world, within the given context I am placed in, I can *embody* a being who can do these things. I can enjoy the *experience* of ‘playing the part’ of Alyx in ‘her world’, but I do not *actually* want to ‘be her’ or ‘be there’. I can explore and ‘live out’ what it would be *like* elsewhere, ‘as another’, while being in the comfort (and safety) of my own lived space. Understanding the immersive strategies that bring me (as the player) ‘as close as possible’ to these experiences helps me better understand how I am transported there, and what it takes to ‘keep me there’.

From a phenomenological perspective, although human beings are anchored in and tethered to their bodies and the world, VR video games potentially offer the strongest SoE to fulfill the desire to ‘escape’ into other worlds. As discussed in Chapter Five, Klevjer (2012:28) argues that the sensation of ‘full’ digital embodiment ‘as’ a character/avatar in (VR) video games embraces the occurrence of the body-subject being occupied and (re)anchored in the events in the virtual world, while the body-object is temporarily replaced by the digital “marionette”, rendering our physical body “irrelevant in its objective dimension, as an object among other objects, in Merleau-Ponty’s terminology ...”. The findings discussed throughout this chapter both demonstrate (and confirm) how VR strengthens and sustains this SoE in video games, as I experience the game as “a composite of flesh and technology ...” (Klevjer 2012:34).

As immersive technologies such as VR are adopted and become increasingly more

widespread – which has been insinuated by the recent directions of major social media and technology companies such as Meta and, more recently, Apple, both of whom foresee these technologies as eventually replacing smartphones – a better understanding of what immersion is, and how these technologies induce and affect it, becomes increasingly urgent.¹⁶

¹⁶ Also noteworthy regarding increasingly immersive experiences in VR and video games is the underlying capitalist ideology that major social media, technology and video game companies are fuelled by. Although video games serve players as an entertainment media, they are still created to generate revenue for the video game companies, which, as established, have become a lucrative industry – predicted to be worth \$321 billion by 2026 (Read 2022:[sp]). While increasingly immersive experiences in video games benefit players' desires to fulfil their fantasies in virtual worlds, they also benefit game development companies as a means of increasing and sustaining player engagement in their video games for monetary gains.

CHAPTER EIGHT

CONCLUSION

8.1 Summary of chapters

In the introduction, Chapter One, I established the relevance and need for this study, highlighting the scarcity of studies on VR video games, particularly in media studies. Furthermore, I noted that while immersion has been analysed extensively across a range of disciplines (including video games), it is still a concept that evades a coherent meaning and consistent application with regards to video games. While the debate between ludology (the study of games and play) and narratology (the study of narrative storytelling) in early video game studies has long since dissolved, I sustained the significance to acknowledge the importance of both ‘schools’, particularly as they both contribute to the player’s immersive experience. I also emphasised that very few (if any) studies *qualitatively* analyse the nature of immersion as it pertains to video games, even less so when looking at VR video games. Chapter One concluded by establishing my primary research aim – to develop a new autoethnographic method that allows me – the researcher – to explore the nature of immersion as it is experienced qualitatively, and further apply it to the pertinent video game *Half-Life: Alyx* (2020).

Chapter Two is a necessary contextualisation of immersion in image-making experiences. The chapter began by defining the concepts of virtual reality (VR), immersion, and presence, respectively. VR refers to the system (including the HMD, controllers, gloves, et cetera) that blocks out the user’s senses to their physical world and presents them with a virtual world where they have the necessary agency to feel present. Immersion and presence are interrelated terms and are often used synonymously, but as established throughout the study, they refer to specific experiences. Presence is the feeling of ‘being in’ a mediated environment, and immersion is the systems and strategies used to ‘transport’ the user there. One can feel immersed by a system through the narrative or challenge at hand, but may not feel present ‘there’.

After establishing the concepts of VR, immersion, and presence, I contextualised how

immersive strategies have been used and adapted in image-making experiences. I started by looking at examples from the Renaissance period, in which interest in, and technology for immersion grew. Grau's (2003) extensive study, *Virtual Art: From Illusion to Immersion*, was closely referenced for this section. Early immersive strategies included large artworks surrounding viewers hermetically, with no borders or interfaces to blur the lines between depicted and real worlds. Viewers were also drawn to artworks using *faux terrain* – 3-D extensions that grow out of the image – further merging the two worlds. All of these strategies culminated in the panorama, a “purpose-built structure(s) that contains a large 360-degree painting, creating an illusion of standing in the middle of a place and/or event” (Briggs & Velas [sa]). I then discussed immersion in film, the medium that was partly to blame for the declining interest in the panorama in the late eighteen-hundreds and, in a sense, a precursor to video games. I explored how 3-D has adapted from being the gimmicky spectacle as criticised in the 1950s and the early 1980s, to becoming a more subtle immersive strategy that does not disrupt immersion and distract from the narrative, a dichotomy later echoed in video game theory.

A recurring theme that surfaces from examining the development of immersive strategies in media was the hype generated by a new illusionistic medium, which was then met with a declining interest as the novelty of the experiences faded over longer or continuous exposure. This became evident in the ‘rise and fall’ of the panorama and early 3-D as well as early VR in the late 1960s and 1980s-1990s. I explored how film affects and immerses viewers through methods that do not explicitly rely on illusionistic approaches, but rather through modes of somatic engagement, such as haptic visuality, to create a ‘relationship’ between viewer and film. Thus, film is viewed not as a *passive* experience, but rather an *active*, bodily experience. Chapter Two concludes with a discussion of how films have adopted video games’ immersive strategies, such as the popular POV perspective in FPS games and longer-styled shots that emulate perspectives in third-person games. What became evident throughout Chapter Two is how humans have been fascinated with ‘entering’ mediated worlds since antiquity and how immersive strategies have been adopted across the evolving media landscape to adapt to increasingly ‘tolerant’ audiences.

In Chapter Three, I looked at immersion in video games more specifically. The chapter

began with an outline of the ludological elements and the systems game developers create to immerse players. I then moved on to less ludic elements, beginning with a discussion on empathy and the immersive capacity video games have in creating strong, believable characters to which players can relate. Thereafter, I discussed ‘game attributes’ that game developers have less ‘control’ over, such as game feel and game affect. This was necessary as how it *feels* to play the game, in the way that it responds to the player’s expectations and performance, as well as how the game *moves* the player at an affectual level, plays a large part in the immersive experience of the game.

I then reviewed Nilsson *et al*’s (2016:110) taxonomy of immersion in video games, in which they distinguish four general views of immersion as: *a property of the system, a perceptual response, a response to narratives, and a response to challenges*. Since video games are multifaceted, and immersion is a multi-dimensional concept, I looked towards two pertinent models of immersion as they pertain to video games, namely Ermi and Mäyrä’s (2005:7) sensory, challenge-based, and imaginative immersion (SCI) model, and Calleja’s (2011:36-37) Player Involvement Model, that both encompass many of the views upheld by Nilsson *et al* (2016:110). The SCI model notably establishes that immersion in video games is experienced at multiple levels, often simultaneously, and that by categorising its dimensions and understanding in this way, lessen its often-ambiguous delineations and solicitations of the experience of immersion. The Player Involvement Model expands on this, positing six dimensions of what Calleja refers to as ‘involvement’, which are experienced unconsciously and work in relation to each other. These dimensions are further considered at “two temporal phases of engagement”: *macro*-involvement, which includes the player’s involvement outside of gameplay, and *micro*-involvement, which considers the dimensions during the gameplay experience (Calleja 2011:4).

Although the two models make for useful frameworks that contribute towards the understanding of how video games immerse players, I argued how they do not account for emerging media such as VR and, further still, leave room for revision and more development to account for the strategies I reviewed in this study. As such, I established a need to construct a new model – which was set as the aim of Chapter Six. Chapter Three concluded by considering these immersive strategies in VR and

how the (new) medium strives to extend and sustain them.

Since Chapter Three addressed the ludological elements of video games that affect immersion, in Chapter Four, I investigated towards the narratological elements, particularly world-building and narrative immersive strategies. I began the chapter by establishing world-building more generally. As the creation of rich, imaginative worlds, world-building involves expanding worlds beyond their initial mediation, allowing for the establishment of fanbases and transmedia spinoffs. A rich world involves establishing an expanded universe in which multiple stories can be told. I highlighted, for example, how the *Star Wars* franchise has spawned a cultural phenomenon that spans decades of fan-made short stories and films, video games, fan art, comics, and wikis. Imaginative worlds should leave the reader or player wanting more, eager to return to the world for a re-reading or re-playing so that they may have more profound and newer immersive perceptions of the narrative or the world surrounding it.

I then moved the discussion to world-building in video games specifically, which has become an “umbrella term” in the industry, referring to “everything from level design to visual aesthetic” (Sierra 2021:30). I discussed the ludological impact of world-building in video games, particularly the aspects of time and exploration in linear and non-linear video games. I then turned towards the narratological impact of world-building, by exploring the world-building strategy of ‘micronarratives’ means to create scenarios that make the game worlds feel less scripted and more like worlds that are authentic and lived in. I specifically explored Sierra’s (2021:51) three micronarratives, namely: *static micronarratives*, which are events or small discoveries that the player has little control over or intervention with; *dynamic micronarratives*, which do allow for the player to interact with and potentially alter; and lastly, *emergent micronarratives*, arguably the most immersive of the three, which arise from player interaction with the game to attain individual playthrough encounters and experiences. It is established that world-building and narrative refer to various aspects of game design, some of which overlap and affect the other. Narrative is typically a linear process and experience, while world-building is expansive. Both elements, however, play a vital interactive role in the player’s experience of immersion.

The second half of Chapter Four shifted towards narrative as an immersive strategy.

I began by contextualising narrative in storytelling more generally. Ryan (2001:120,140) breaks down narrative immersion into three categories, namely: *spatial* immersion, used here synonymously with presence, referring to the extent to which the narrative brings one *into* the scene; *temporal* immersion, referring to the feeling or anticipation of wanting to know the conclusion of narrative beats in a story; and *emotional* immersion, referring to immersive experiences caused by emotional responses one may have towards characters and events in a narrative. While Ryan (2001) is primarily concerned with immersion in literature and written narrative, her findings prove useful when considering more interactive media such as (VR) video games.

I then turned towards narrative in video games, more specifically. I established the types of narratives one can experience in video games before establishing a more inclusive definition of video game narrative. The two types of narrative experience of importance here are “embedded narrative” (Salen & Zimmerman 2004:26:7) or what Chandler (2007:102) refers to “logocentric design”, which refers to the linear, intended story experience as designed by the game developers; and “emergent narrative” (Salen & Zimmerman 2004:26:7) or what Chandler (2007:108) refers to as “mythocentric design”, which refer to game narratives that allow the player to author more of their own story experience through the gaming experience. Thus, video game narrative is defined as the player’s experience throughout the game world, including their encounter with the story, interaction with, and exploration of the game. I then looked at how game narrative serves as a (non-ludic) strategy for the immersive experience of the game. More specifically, game narrative gives meaning to the player’s actions through the game world. Dansky (2021:6 emphasis added) writes how “[o]n the most basic level, narrative strings together the events of the game, providing a framework and what can alternately be called a *justification*, a *reason*, or an *excuse* for the gameplay encounters.” Chapter Four concluded by shifting the discussion of narrative to VR. I highlighted how VR presents new challenges to storytelling, as the ‘newfound’ agency afforded by the medium makes it challenging to direct users’ attention towards desired story beats. I noted compromises made to directing attention by analysing four prevalent VR films before arguing how video games (using a scene from *Half-Life: Alyx* (2020)) are addressing these challenges.

In preparing to develop a new qualitative method for analysing the nature of immersion in (VR) video games, in Chapter Five, I analysed how the sense of embodiment is experienced in (VR) video games, through the lens of phenomenology. The concept of embodiment has surfaced frequently throughout the study, as it is often attributed to the feeling of presence, specifically in VR literature. Comprehending the 'relationship' between the player holding the control device and the controllable avatar interacting in the virtual world is essential to understanding immersion and presence. Merleau-Ponty's centrality of the body proved useful in this regard, as phenomenological insights helped shape a better understanding of digital embodiment in video games as the sensation of *being both* player and character. Furthermore, phenomenological description helped shape the foundation of my new research method for immersion.

In Chapter Six, I developed my new research method to analyse the nature of immersion in (VR) video games. I argued for the necessity for the researcher to play the game in question, and games in general themselves. Autoethnography, particularly cyber or digital autoethnography, allows for the researcher's direct engagement with and experience of the video game. An autoethnographic method further permits the researcher to spend more time with the game, *immersing* him or herself within it, allowing for a deeper understanding and analysis of the nature of immersion. I then argued that the researcher's recorded, phenomenal account, which emphasises the researcher's *experience*, in this case, of immersion in the (VR) video game, privileges the subjective experience of the 'researcher-critic'. Furthermore, the tools of reflexivity and situatedness allow and remind the researcher to acknowledge the dual role of both player and observant researcher, while staying true to the embodied experience within the context of the game world.

Lastly, as I had established in Chapter Three, there was a need for a new model to frame the relevant immersive strategies and elements of video games, that would be used here as means of direction for the researcher. As such, I developed a new (revised) model, which I call the *Player's Immersive Experience* (PIM) model, drawing from Ermi and Mäyrä's (2005) SCI and Calleja's (2011) player involvement model, to establish new immersive dimensions not accounted for in these models. By employing insights discussed throughout the study, I also revised and expanded upon the

dimensions accounted for in the above two models, as well as account for the advent of immersive media such as VR. The eight revised dimensions in my new model are: *sensory immersive strategies, bodily immersive strategies, game feel, affective and empathetic immersive strategies, world-building immersive strategies, narrative immersive strategies, ludological immersive strategies, social immersive strategies,* and *immersion disruption*. I briefly explained the need for each dimension, and highlighted what strategies constitute them. Chapter Six concluded with a description of my methodology as applied to the pertinent VR game *Half-Life: Alyx* (2020), which further demonstrated the extent of the new model, as well as highlighted the need for a revised model that accounts for (more of) the immersive strategies as experienced in (VR) video games.

Having developed my new autoethnographic research method and established the PIE model through which to study immersion qualitatively in (VR) video games, in Chapter Seven, I applied it to *Half-Life: Alyx* (2020). Through this application and analyses, I demonstrated how my new method allows for a more rigorous analysis and description of immersion *as it is experienced*. The analysis of the *Half-Life: Alyx* (2020) was categorised by the eight dimensions established in my new model of immersion. Through each dimension, I explained the immersive strategies that the new model accounts for, and through phenomenological description of the gameplay, I demonstrated how these immersive strategies could be experienced and analysed. Using *Half-Life: Alyx* (2020) as a case study, this chapter highlighted how players could experience immersion in emerging VR video games, as well as demonstrated how the model allows researchers (and potentially game designers) to better account for and understand the respective strategies and elements that immerse the player during gameplay. It also highlighted how immersion and presence are experienced at multiple levels throughout (VR) video games, which the relevant (revised) dimensions of my new model enabled me to account for and describe at length.

8.2 Contribution of study

This study broadly contributes to the phenomena of immersion and presence in media studies, with a focus on video games. Although immersion has already been studied and framed in the context of video games – with pertinent models such as the SCI

model and Player Involvement Model, for example – I have further elaborated on the enduring debates on immersion and presence in video game literature. As revealed throughout the study, these interrelated terms of immersion and presence are often (incorrectly) used synonymously when referring to mediated experiences and play a prominent role in the gameplay experience. Furthermore, the study contributes to the discussions surrounding the ongoing development of immersive strategies in (VR) video games. As a novel medium, few studies have looked at VR video games, particularly to analyse the player’s experience of immersion, and as established in Chapter One, only around 5% of XR-related research derives from the social sciences (Girginova *et al* 2023:[sp]), a gap that this study now helps to fill.

Most significantly, I identified that immersion in video games is usually analysed quantitatively, with very few studies providing qualitative findings of immersion in video games, more so when considering video games in VR. To address this gap, this study provides a new autoethnographic method for the qualitative analysis of the nature of immersion in (VR) video games, through the application of the Player’s Immersive Experience (PIE) model as a framework. The PIE model more profoundly frames the player’s immersive experience in (VR) video games through eight dimensions that better reflect the multidimensional experience of immersion, as established throughout the study. This method allows the researcher to play and analyse the game in question at length, which, as established, is necessary, considering the complex and lengthy nature of video games and the multidimensionality of the concept of immersion. Through their own phenomenal experience – engaging as a ‘local’ video gamer – this method permits the researcher/player to account for the various immersive strategies relevant to the dimensions of my new model to analyse the nature of their immersive experience more rigorously. A more profound understanding of the immersive experience is twofold: it firstly allows video game designers to create better and more immersive (VR) video games; secondly, and perhaps more significantly, understanding how and why we become so immersed in (VR) video games allows us to better understand ourselves.

Lastly, this study establishes a discourse on *Half-Life: Alyx* (2020), a game subject to very little academic debate, particularly regarding immersion. This is relevant as each iteration of a *Half-Life* (1998-2020) game has revolutionised the video gaming industry

in some way, as previously discussed. The immersive experience I describe in Chapter Seven demonstrates how *Half-Life: Alyx* (2020) ‘raises the bar’ in terms of what is possible with VR gaming, which in itself is worthy of academic attention.

8.3 Limitations of the study

The contextualisation of immersion in image making used Western art forms to focus discussion. Expanding the scope by examining immersive practices from other traditions in world art (in Eastern art, or in the art of the Islamic world, for example) may provide approaches and insights that could enrich the understanding of immersion in (VR) video gaming. Furthermore, although music and sound as an immersive strategy is discussed in the study, they are relatively overshadowed by discussions of *visual* immersive strategies. A deeper phenomenological exploration and contextualisation of the role and effect of music and sound as an immersive strategy in art – through to video games – would add further nuance to the understanding of the phenomena.

Due to the rapid development of the emerging VR industry, constantly keeping up to date with the latest technological advances has proved challenging. Since embarking on this PhD study in early 2020, the industry has seen an array of increasingly powerful VR devices, offering more convincing experiences in the virtual world. VR devices such as Meta’s Quest Pro offer standalone experiences with features that track the user’s face and eyes to bring more of the user into the VE. Apple recently entered into the XR space with the announcement of their first “spatial computer”, Apple Vision Pro (Apple 2023 [sp]). While the continuous additions to, and aggressive innovation in, the VR space is suggestive of potential growth and interest in the industry, it also means that any study that seeks to analyse the medium has the unrealistic task of keeping abreast of the rapidly changing industry. As such, due to the scope of this study – which looked to analyse the immersive experience in video games, and how the platform of VR improves or extends the experience – I was unable to account for how augmented reality (AR) or mixed reality (XR) experiences (which are now offered in newer HMDs) affect immersion.

As I discussed in Chapter Six (6.2.3), autoethnographies face the risk of criticism in

terms of authenticity and potential misconduct. Additionally, accounting for my own phenomenal (subjective) experience as the researcher exposes my 'findings' to claims that the study is contrived. As measures to safeguard against such claims, I have provided images and video 'evidence' of my playthroughs alongside my descriptive playthrough.

Furthermore, as an autoethnographic method, the researcher may struggle to acquire the necessary means (funds) to undertake such a study on his/her own. Video games are expensive, and the platforms (PC, PlayStation, or Xbox, for example) that run them even more so. Moreover, though HMDs have decreased in price, VR is still considerably expensive and is still considered a niche buy-in for many consumers. In South Africa, where there is vast inequality in terms of access to wealth, expensive products are not available to all, and may be considered elitist. Limited access to expensive video games and technology may prohibit researchers from considering this autoethnographic method, especially within the South African context. However, despite these restrictions, video games are a global medium with a growing presence in South Africa.

As established in Chapter One, the video game industry is large and diverse, thus, discussions and examples about immersion and related concepts explored throughout the study pivoted around video games I have played or that I am familiar with. This means that the games or genres I have not experienced, such as indie games, puzzle games, simulators, or platform games, were not considered, leaving room to provide new insights.¹ Moreover, I only applied (and trialed) my new autoethnographic method and model on a single video game (*Half-Life: Alyx* 2020). Further application of this new method to a more (diverse) range of video games would provide additional valuable insights, (unforeseen) limitations that could be addressed, or contrast.

Finally, throughout the study, I focused mainly on single-player immersive experiences and applied my new model to analyse *Half-Life: Alyx* (2020), which is a single-player

¹ Indie or independent video games are smaller games often created by a single developer or small studios, often with access to less resources than AAA studios. Platform games (which are often made by indie studios), are two-dimensional games that require the player make their way through each level by traversing increasingly difficult platforms, requiring quick thinking and well-timed movement.

VR title. It would be useful to consider and contrast the nature of one's immersive experience in *multiplayer* (VR) video games, specifically regarding the social structures that are essential to these games and how they affect immersion. This is specifically relevant to my exploration of social immersive strategies, as I could not explore the immersive experience of strategies and elements relative to multiplayer games.

8.4 Suggestions for further research

In addition to the limitations addressed above, which could be explored in further research, it would be useful to apply this method to video games that are playable on *both* VR and 'traditional' flatscreens, to analyse the variance of immersion between the two versions and their respective platforms. For example, a game like *The Elder Scrolls V: Skyrim* (2011) is playable on both formats and would make for a compelling study. Ironically, the *Half-Life* modding community have recently made it possible to play *Half-Life 2* (2004) and its subsequent episodes in VR, thus making it possible to compare the immersive experience on both the original flatscreen and VR version of the games.

Although the primary aim of this study was to develop a method for analysing the experience of immersion using autoethnography and phenomenology and apply the method to the VR video game *Half-Life: Alyx* as a case study, extending the application to include the experience of *other players* to compare points of convergence and divergence would be highly beneficial, and should be considered in future studies.

While Merleau-Ponty's *Phenomenology of Perception* provides foundational and critical philosophical concepts and understandings of our lived experience through a centrality of the body, and has been used as a primary philosopher to understand virtual embodied perception in video games and VR (see for example Crick 2011; Kiltani *et al* 2012; Klevjer 2012; see Farrow & Iacovides 2014), Merleau-Ponty's philosophy was predominantly aimed at understanding the way humans experience without technology. Postphenomenology considers the role technology plays in the experience and thus has been used as an avenue to understand one's VR experience (see for example Vindenes & Wasson (2021)). A greater focus on the

postphenomenological approach would provide further insights into our experience of *VR video games* and should be considered in future studies.

As highlighted above, the VR industry is developing rapidly. More qualitative research is needed to analyse the immersive impact of new technological advances in the industry. For example, exploring how new face and full-body tracking features employed by newer VR devices affect the player's sense of embodiment in VR video games would be beneficial. Furthermore, newer HMDs that offer XR features bring with them new fields of enquiry regarding immersion that are worth exploring.

Moreover, recent breakthroughs in artificial intelligence (AI), such as Chat GPT-4, point to innovations that can significantly impact immersive experiences in video games going forward. In *World of Warcraft* (2004-present), for example, the free AI-powered addon (or modification (mod)) called VoiceOver, gives 'voice' to the NPCs from the original version of the game. Instead of reading the quest text, the addon enables NPCs to voice it to the player while also "... tak[ing] account of the race and gender of the NPC ..." (Koch 2023 [sp]). Similarly, in *The Elder Scrolls V: Skyrim* (2011), modders have used Chat GPT-4 and other AI tools to give NPCs memories as well as countless ways to speak to the player (Bankhurst 2023: [sp]). Although "... the NPCs aren't quite natural as of yet and can be a bit slow...", the mod enables NPCs to behave more a life-like manner "that aren't just canned responses from a list of dialogue options" (Bankhurst 2023: [sp]). These community-led modifications to beloved video games indicate a yearning to be more strongly immersed in video game worlds and suggest where the industry could lead. The advent of increasingly powerful AI in video games has the potential to significantly affect the player's immersive experience in virtual worlds, but it also raises ethical questions surrounding the security of developer jobs. More studies are needed to analyse these kinds of advances in AI in the video gaming realm.

Lastly, additional qualitative research is needed to analyse the sense of embodiment and immersion with regard to issues such as representation, gender, race, sexuality, religion and culture, among others, particularly in *VR video games*. As briefly noted in Chapter Five, while there are studies that address these critical issues, (see, for example, Groom, Bailenson & Nass 2009; Ash 2016; Jarrell *et al* 2021), more work is

needed in the VR space, particularly in VR video games – as a new field of enquiry – which raises new questions around these themes. Addressing how a VR player responds to or is immersed (differently) by ‘being’ Alyx, a nineteen-year-old female of colour in *Half-Life: Alyx* (2020), for example, could make for an insightful study.

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