AN EMPIRICAL EXPLORATION OF AESTHETIC DISTANCE THROUGH MIMETIC INTERFACE DESIGN IN VIDEOGAMES

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This thesis is submitted in partial fulfilment of the requirements of the degree of Doctor of Philosophy issued by the University of Portsmouth.
DECLARATION

Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

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**ABSTRACT**

Aesthetic distance is determined by the frame of reference created by the use of technical devices around an artwork, to differentiate it psychologically from reality, so it may be critically observed. Traditionally a term concerning literature, theatre, and visual art, it is proposed that aesthetic distance should also apply to videogames. A player’s sense of aesthetic distance is an emergent phenomenon, arising from both the stylistic qualities of the game itself, and the attitudes of the player. Due to improvements in sensor technology, mimetic interfaces of all types, from gestural controls such as *Xbox Kinect* to head-mounted displays such as the *Oculus Rift*, are becoming more commercially prevalent; these have also been the subject of scrutiny for ‘moral’ issues they may raise for narrowing the distance between the player and the game. This is particularly important with regard to “morally significant” videogames, featuring a narrative concerning emotional or dramatic consequences for human characters.

Two between-subjects studies altering interface mimesis examined whether this affected a player’s sense of aesthetic distance from morally significant games. Firstly, a popular commercially available videogame was used, featuring unjustified violence. Through a factor analysis of participants’ varying experiences of aesthetic distance, 10 factors were identified, including an attitude of “it’s just a game”. Following this, a second study was performed, for which a 3D first-person game was developed. This simulated rock climbing with a non-player-character climbing partner; this forced a situation in which the player had to take a ‘morally significant’ action, determining whether their partner’s life should be sacrificed, or whether ‘they’ (the player’s character) should also die.

Aesthetic distance was empirically found to be mediated by interface mimesis, when supported by physical embodiment. The time taken for players to make their decision was also increased as interface mimesis was enhanced, and they reported altered feelings of aesthetic measures, such as how engaged vs. detached they felt, how far they identified with their player character, feelings of plausibility, and feelings of tension. They also reported differences in whether they focused on feelings rather than thoughts, and whether knowing that the game is fiction made a difference to their feelings. Trait empathy contributed to how guilty players felt as their embodiment increased.

Thus, aesthetic distance in games is not a straightforward picture: qualitative data found that players experienced feelings of *double awareness*, this attitude of “it’s just a game”, even as their sense of embodiment in the game decreased their aesthetic distance. Thus, it is proposed that, any heightened involvement through enhancing interface mimesis still occurs within the nuanced context of Walton’s theory of “mimesis as make-believe” in representational art. This is consistent with, and extends, the theory that videogames happen within a ‘magic circle’ of play. Thus, it is suggested that a player’s sense of double awareness, together with their heightened emotional involvement, may allow for a *physically embodied* paradigm of procedural rhetoric, particularly when tackling themes that are morally significant, or socio-political. This is termed *embodied critical play*. 
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Selected Invited & Professional Talks

- Game Developer’s Conference 2012-2014: Micro talks
- Game Developer’s Conference 2015: Design Lecture, March 2015
- Global Game Jam, Keynote Speaker, January 2015
- BAFTA Cymru Games Awards, Keynote Speaker, July 2014
- 5th International Conference on Computational Creativity, Invited Guest, June 2014
- DIGRA UK Launch event, June 2014
- TEDxEastEnd, January 2014
- BBC Radio 4 Four Thought, 20th June 2012
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“We are explorers. We explore our lives, day by day. And we explore the galaxy, trying to expand the boundaries of our knowledge.”

Commander Benjamin Sisko, Star Trek: Deep Space Nine
Graffiti outside the National Gallery, London
Khandaker-Kokoris. Photographed May 2014
1 INTRODUCTION TO VIDEOGAMES AND AESTHETIC DISTANCE

"Once you are liberated, you are forced to ask who you are."

—Jean Baudrillard

1.1 BACKGROUND AND RESEARCH CONTEXT

Games have emerged from the intersection of our technological capabilities and our sense of playfulness. This has manifested from the days of the earliest discovered dice games, made from knucklebones of hooved animals, through to videogames: the analogue knobs of Tennis for Two (1958), to the current generation of consoles: Xbox One and PlayStation 4 (2013).

Indeed, recent innovations have focused on the technology of controllers and interfaces that increasingly engage our bodies through our kinaesthetic and/or haptic senses. These have become commercially more prevalent, supplementing, although not replacing, the familiar gamepads and mouse-and-keyboard variations of classic control mechanisms.

Despite earlier failed attempts in the late eighties and early nineties with devices such as the Sega Activator (1993) and Nintendo Power Glove (1989), more recently, peripherals such as the Microsoft Kinect (2010, 2013) have regained wider cultural interest thanks to improved technological fidelity. Such mimetic interfaces, through which “the physical activity the player performs mimics the game activity on the screen” (Juul, 2009), have received praise for introducing games to a wider demographic audience who are unfamiliar with the particular literacy previously required by classic game controllers (Jenson & de Castell, 2008).

Furthermore, improvements in technology have also meant a resurgence of interest in head-mounted display (HMD) interfaces, such as the Oculus Rift (2013) and Sony’s Project Morpheus (2014). These map a player’s head movement to their in-game ability to look around an environment offering a stereoscopic 3D perspective with a wide field of view and thus, it is asserted, are a necessary component when aspiring towards interface mimesis. These interfaces seek to maximise the player’s sense of being there in a three-dimensional (3D) game world, often referred to colloquially as immersion, or in the virtual reality literature as spatial presence (Section 1.3.3.1). Indeed, this notion has recently seen particular resurgence in popularity, and media interest, following the Facebook acquisition of the Oculus Rift (Parkin, 2014) and the announcement of Microsoft’s forthcoming HoloLens (2015), amongst many other consumer devices.

It is timely, then, to further explore the ideas driving forward this cultural resurgence of interest in interfaces, which seem to aspire towards something that “takes over all our attention, our whole perceptual apparatus” (Murray, 1997), an idea that Salen and Zimmerman (2003) suggest is held in esteem by many players, developers and academics (such as Murray) as the “Holy Grail” to be achieved for games. That is, as videogame technology continues to evolve, including, but not lim-
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...ited to, the input mechanisms, graphical fidelity and other factors enhancing the verisimilitude of game experiences, there exists a widely held view amongst these groups that the ultimate goal of videogames is to end up with an all-encompassing, technologically immersive experience (Streams, 2013) akin to the Star Trek “Holodeck” (1987). Indeed, Dovey & Kennedy (2006) note that many accounts of games not only “begin and end with technological capability” (p. 52), but also, are seen through the lens of technological determinism; an aspiration towards “naturalistic realism” (p. 53). Thus, as stated by game scholar Jesper Juul, “the history of [videogames] is really a history of continually making [videogames] attractive in new ways” (Juul, 2003).

Bolter & Grusin (2000) define this paradigm as striving towards transparent immediacy, which dictates that the medium should disappear, and “leave us in the presence of the thing represented”. Such a paradigm can be seen in the evolution of videogame control technologies, from classic controllers to gestural control mechanisms, such as the Wii Remote, and stereoscopic 3D headsets that seek to “deny the presence of the medium and the act of mediation” (p 11). Bolter & Grusin thus place videogames in a historical tradition of visual media, which aims to achieve this transparent immediacy along with the increase in ‘realism’ within painting, in photography, in film, and in virtual reality (Section 2.2.3).

However, this paradigm, with respect to videogames is one that Salen and Zimmerman (2003) suggest is an “immersive fallacy”:

“The immersive fallacy is the idea that the pleasure of a media experience lies in its ability to sensually transport the participant into an illusory, simulated reality. According to the immersive fallacy, this reality is so complete that ideally the frame falls away so that the player truly believes that he or she is part of an imaginary world” (Salen & Zimmerman, 2003).

Here, Salen & Zimmerman use ‘immersive’ synonymously with an experience that elicits being there, or spatial presence. Therefore, their identification of such an immersive fallacy criticises the widespread prioritization of enhancing spatial presence, which can be seen to manifest itself in the countless commercial games that promise ever-increasing photo-realism.

However, Salen and Zimmerman further point out, the “danger” of this idea is the way that it “misrepresents how play functions... and game design can suffer as a result”. In other words, the immersive fallacy refers to the idea that the more ‘realistic’ a game, the allegedly ‘better’ it is, and that such an idea, according to Salen and Zimmerman, is mistaken.

There exists empirical work to lend support to Salen and Zimmerman’s suspicions. A study by Dow (2008) implemented an “augmented reality” (AR) version of Façade (2005) (an interactive drama about being a guest at the home of a couple in a strained relationship), to investigate whether players felt more involved in the narrative in this ‘immersive’ version of the game, versus the ‘tradition-
al’ version played using a mouse and keyboard. It was found that playing with the AR headset increased the player’s sense of spatial presence, or being there, in the game world. However, when players were expected to play the role of a character, and thus feel involved in the story, they expressed a need for the experience to be more “mediated”. That is, players felt the need for more obvious cues to show what specific actions they can perform, by, for instance, providing a non-realistic user interface, amongst other things. Therefore, the transparent immediacy (Bolter & Grusin, 2000) elicited here acted against the players’ expectations for the game.

Despite this, the prioritization of spatial presence and perceptual immersion (Section 1.3.3.1) can be observed in the way in which improvements in novel game interfaces and other human-computer interaction technologies continue. Biocca (1997) identified this socio-cultural trend as progressive embodiment, defining it as “the steadily advancing immersion and coupling of the body to advanced communication interfaces” (p. 14). He further stated, “The psychological effects or goals of progressive embodiment can be expressed as various forms of what is called [spatial] presence.”

It is thus asserted that progressive embodiment is exemplified, within videogame control mechanisms, through increasingly mimetic interfaces (or interface mimesis being the conceptual term, Section 1.3.3.5). The paradigm of progressive embodiment is identified as a socio-technological trend, which, within videogame interfaces brings with it not only design challenges, but, also, conceptual challenges regarding our relationship with videogames, and raises questions about how we engage with them as interface mimesis is altered. Thus, such a question warrants further exploration; one aspect in which this should be explored is the way in which a player’s cognitive and emotional involvement may change.

Indeed, virtual art theorist Grau (2003) suggests, “when actually immersed in a high-resolution, 360 illusion space, it is only with great difficulty that an observer can maintain any distance from the work or objectify it. It is well-nigh impossible to perceive it as an autonomous aesthetic object… [thus] the dissolution of the interface is a political issue” (p. 202-203).

The political ramifications of the ‘dissolution of the interface’ became apparent during the controversy regarding Manhunt 2 (2009) for the Nintendo Wii, in which the prevalence of motion sensing control mechanisms in recent years raised journalistic – and, indeed, political – concern about the implications of such interfaces for videogames featuring morally significant content (Section 1.4), particularly violent content. In Manhunt 2, rejected for classification by the BBFC (“Manhunt 2 | British Board of Film Classification,” n.d.), it was claimed that the game “constantly encourages visceral killing with exceptionally little alleviation or distancing.” It was the first game since 1997 to be thusly rejected. As noted in Khandaker (2011) (Appendix A), the use of the word ‘distancing’ is significant here, referring to the ‘closeness’ of not only the technical mapping between the actions on screen and the physical actions performed, but also to the subsequent subjective feeling this potentially supports.
Additionally, four United States senators at that time also wrote a letter to the Entertainment Software Rating Board (ESRB) to suggest it reconsider its ratings system in light of *Manhunt 2*. Notably, their concerns specifically addressed the fact that the game was available for the Nintendo Wii. The senators wrote:

"[The Wii] system permits children to act out each of the many graphic torture scenes and murders in *Manhunt 2* rather than simply manipulating a game pad. This led one clinical psychologist to state that the realistic motions used with the Wii mean that ‘You're basically teaching a child the behavioural sequencing of killing.’ …we do believe that the ESRB should take the Wii-remote controller, and future advances in game controllers, which create more realistic gaming environments, into consideration" ("Hillary and Manhunt 2 - ABC News,” n.d.).

These responses are exemplary of the “moral panic” voiced through the “common media argument… that games lead to violent behaviour and desensitization in the face of violence” (Sicart 2009). However, the problems with the assertion by the US senators are manifold. Firstly, *Manhunt 2*, as evidenced by the subsequent court appeal by publishers Rockstar (“Manhunt 2 | British Board of Film Classification,” n.d.), was intended for a mature, adult audience (who are the focus of this current research). Thus, at least semantically, the “teaching a child the behavioural sequencing of killing” is not the responsibility of Rockstar. While ethical responsibility is outside the scope of this research question (Section1.2), it is addressed by Khandaker (2011) (Appendix A). More interestingly though, subsequent research suggests that unjustified virtual violence in videogames actually lead to increased feelings of guilt in empathetic players (Hartmann, Toz, & Brandon, 2010) and even increased moral sensitivity (Grizzard, Tamborini, Lewis, Wang, & Prabhu, 2014).

Regardless of the evidence, videogames “are now what cinema and rock and roll once were: the bulls-eye of morality” (Sicart, 2009). Of course, such “moral panic” regarding new technology is not new; Janet Murray, in her seminal text about computer-based storytelling, *Hamlet on the Holodeck* (1997), describes the cultural history of such adverse reactions and the “fear with which we have greeted every new powerful representational technology” (1997, p. 21). For example, Huxley’s *Brave New World* (1932) described a dystopian vision of the future, triggered by the advent of cinema, in which audiences could enjoy ‘feelies’; movies which pervade our bodily senses, and feature realistic, somatic representations of “arresting helicopter views, lots of sex, and characters who are constantly bursting into song” (Murray, 1997, p. 20). Murray states that “for Huxley and Bradbury, the more persuasive the medium, the more dangerous it is... as soon as we open ourselves to these illusory environments, we surrender our reason and join with the undifferentiated masses, slavishly wiring ourselves into the stimulation machine at the cost of our very humanity” (1997, p. 21).
Dovey & Kennedy (2006) note the tensions at work when “immersion is clearly offered as a fundamental aspect of gameplay experience and pleasure”, as it is simultaneously presented as “the most problematic experience within that experience”. They note, however, that:

“…the same tensions have existed in relation to earlier cultural and media forms, including, but not limited to, literature, cinema, and television. Each offers the promise of immersion, yet each is provocative of particular kinds of anxiety around readers/viewers/users/players who are too immersed” (Dovey & Kennedy, 2006, p. 9).

Though Sicart and Murray assert that videogames may simply be the latest form of media to be subject to the moral scrutiny faced by every new medium, in this case, it is seemingly the mimetic nature of the motion-sensing Wii Remote controller that raised ethical questions about *Manhunt 2*. Thus, it results from the way in which the game provides a close mapping between a player’s physical movement and the violent action on screen. It thus raises the question whether the nature of the controversy surrounding the game would have been different, had it been developed solely for a non-mimetic controller, and whether, as suggested by some scholars, the interactivity of videogames sets it apart from previous cultural forms (Dovey & Kennedy, 2006; Kline, Dyer-Witheford, & De Peuter, 2003; Mateas, 2004; Penny, 2004).

1.2 Initial Research Question

In addressing concerns related to those above, Dovey & Kennedy (2006) question the ‘problem’ of immersion, drawing a line between immersion and traditional concepts of spectatorship. They characterize players’ interactions with videogames as adhering to the former, rather than latter, model of participation. Such participation is denoted by their focus on the “pleasures and fears associated with the exploration of virtual worlds”, in which “the aesthetics of narrative give way to those of architecture” (p. 8). They do of course acknowledge that while interaction with books, movies, paintings, and other media are also participatory, they instead suggest, “immersion in a game world is of a different order” to our interactions with other such media. It is thus crucial to explore the way in which videogames exhibit such a difference. In order to do this, what videogames are must be defined.

A thorough discussion of the definition of videogames, both in general, and the specific subset of videogames referred to in forming the research question, can be found in Section 1.3.2; however, an inclusive definition, consistent with the discussion above (Section 1.1), is offered by Costikyan (2002), who states that games are “a form of art in which [players] make decisions in order to manage resources through game tokens in the pursuit of a goal” (Costikyan, 2002). Thus, this definition notes explicitly the reliance on manipulating “tokens”, necessitating interactivity, but interestingly contextualizing this artefact as an expression of art. Thus, if it is asserted that videogames are
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a form of art (Gee, 2006; Jenkins, 2002; Murphy, 2010; Pearce, 2006; Tavinor, 2011), then it is proposed that they should also be subject to inquiry as aesthetic objects; and as such, should allow for modes of enquiry that have been established for such objects.

This is an often-overlooked subject: the ethical, aesthetic and indeed, political impact of videogame interfaces, especially in light of increasing innovations in perceptually immersive technology (Section 1.3.3.1). However, consideration of video games as aesthetic objects offers a position from which to further extend the concept to consider the controller as an important formal property of games, being “one of the fundamental conditions that govern our interactions with videogame virtual environments” (Gregersen & Grodal, 2009).

Questions about controllers and the nature of interactivity in videogames are particularly salient in light of the discussion of Manhunt 2 in the media and political spheres, which questioned the lack of ‘distancing’ between the in-game representation and the player’s actions. This appears to be support by Grau (2003), who claims that “it is only with great difficulty that an observer can maintain any distance [emphasis added] from the work or objectify it” when immersed in an all-encompassing virtual environment, with which the player may interact naturally. That is, where the interactions are mimetic. However, empirical research has not been conducted, explicitly framing the question of mimetic interaction with videogames and its effect on the cognitive and emotional experience of the player, through the lens of their sense of distance from the experience, a concept that is well established when considering other aesthetic objects.

Thus, the initial research question is:

Does interface mimesis affect a player’s experience of distance from a videogame?

Of course, in answering the research question, these concepts need to be further defined. The analysis required in addressing the research question covers multiple bodies of work, from game design scholarship to media psychology, from philosophy of art, and moral philosophy, to literary and aesthetic theory. However, both across and within these disciplines, there exist many overlapping terms and constructs, which, for clarity, will need to be consolidated.

It also should be noted that for many philosophical, psychological and design concepts, some exploratory definitions do not aspire to the scientific accuracy of more established, well-trodden psychological constructs (such as spatial presence), but instead are used for their conceptual utility. However, where appropriate, empirically validated constructs will have to be identified, as well as the ways in which concepts are operationalized and reduced.

However, as Zimmerman (2004) declares, “I give definitions not in order to explain phenomenon, but in order to understand them” (p. 156). Therefore, in order to understand the way in which interface mimesis may affect a player’s experience of distance from a videogame, the research ques-
tion must first be further defined. Having asserted that videogames are a form of art, subject to inquiry as aesthetic object, what this means should first be defined, such that it may be understood.

1.3 REFINING THE RESEARCH QUESTION

1.3.1 Defining Aesthetics and Distance in Videogames

Aesthetics, broadly, concerns what is *valuable* about an art object, or more recently, *any* object (Section 2.4.4.2), and the related examination of the traits and properties that make it so. It is often stated by authors working within the field of aesthetics that it is a “confused one” (Walton, 2007), perhaps due to its complex history, where aesthetics denoted different meanings at different times. However, it is arguable that this shift in meaning reflects the way in which ideas of what is valuable about art have changed and been reimagined over time.

Traditionally, the concerns of aesthetics were with ideals such as truth and beauty, originating with the classical Greek philosophers in their studies of aesthetic experiences and the philosophy of art. These concerns with beauty were also continued by British Enlightenment philosophers in the 18th century, who popularised the word ‘aesthetic’, rooted in the Greek word *aesthesis* for perception or sensation. Thus, British Enlightenment philosophers including Shaftesbury (1711), Hutcheson (1725) and Hume (1757) used the term to refer to theories about judgements of beauty or ugliness. The term evolved with Alexander Baumgarten’s *Aesthetica* in 1750 (Freeland, 2001; Gregor, 1983), who emphasised the sensory, rather than intellectual, nature of such judgments (Meskin & Plato, 2014).

Stokes (2009) notes that some philosophers distinguish ‘aesthetics’ from ‘philosophy of art’; while the former refers to issues of beauty, value, and experiences, ‘philosophy of art’ is sometimes used to refer to “general philosophical issues” concerning artworks; often, these issues are metaphysical and epistemological. However, these are often also used interchangeably in the literature. Furthermore, Pratt (1961) suggests that “the subject falls in no man’s land” in terms of disciplinary boundaries. Indeed, over half a century later, the field is now also the remit of videogame scholars and theorists.

Niedenthal (2009) clarifies that the confusion between uses of the word ‘aesthetic’ is compounded with regard to games, in which the term is largely used to refer to “the visual and aural dramatic elements of your game.” He further suggests that “shared meanings of the term” are revealed by game scholarly texts not specifically about game aesthetics, such as the seminal *Rules of Play* by Salen & Zimmerman (2003) in which they “refer offhandedly to ‘aesthetic trappings’” (p. 11). Niedenthal suggests that “the word ‘trappings’ carries with it associations of décor, a thin veneer of ‘eye candy’ that may attract attention and provide fleeting motivation, but otherwise serves as a less important part of the experience of playing… a game.” Looking to inclusive definitions of ‘aesthet-
ic’, Niedenthal (citing Kelly, 1999), stated that “the practice of aesthetics consists of ‘critical reflection on art, culture and nature’ (p. ix)”.

However, while a game’s “aesthetic” is indeed sometimes used as a synonym for “style”, it is suggested that Niedenthal’s assertion of games scholars’ ‘shared meanings’ of aesthetics within games arises instead due to what is popularly considered to be valuable about games: their “visual and aural dramatic elements”. Indeed, Kirkpatrick (2009) states that “the scholarly literature on videogames has tended to understand their aesthetics primarily in terms of how the games look. This follows the conventional or popular use of the term aesthetic, associating it with visual appearances and with the principles of attractiveness that apply to visual phenomenon.” Thus, rather than carrying disparate meanings, aesthetics in popular discussions of games have traditionally tended to foreground what is thought of as visually beautiful, rather than a broader exploration of what makes games valuable. A notable exception is the use of ‘game aesthetics’ to refer to “virtual sensation” (Swink, 2009), for example in ensuring that movement, such as jumping in a 2D platforming game, “feels good” in terms of moment-to-moment interaction. This is a paradigm particularly popular amongst independent game designers, whose reduced development budgets and team sizes has often meant less focus on expensive graphical elements, and instead, foregrounding the value of such virtual sensation, through adjusting measures such as response times and frame rates.

Niedenthal identifies three “main clusters of meaning around the term ‘game aesthetics’”, as deduced from keyword searches on game studies and game design papers:

1. Game aesthetics refers to the sensory phenomena that the player encounters in the game (visual, aural, haptic, and embodied).

2. Game aesthetics refers to those aspects of digital games that are shared with other art forms (and thus provides a means of generalizing about art).

3. Game aesthetics is an expression of the game experienced as pleasure, emotion, sociability, form-giving, etc. (with reference to ‘the aesthetic experience’).”

(Niedenthal, 2009)

While Niedenthal concedes that these categories are not exclusive, he suggests that this survey of the popular understanding of “game aesthetics” mirrors the development of aesthetic discourse at large, as noted by Pratt (1961).

Kirkpatrick (2009) also notes that classical aesthetic theory was concerned with the idea of form structuring experience, and notes that aesthetic experience occurs when we find that something is pleasing to use by virtue of its form. Thus, traditionally, such aesthetic experience was largely about beauty, as was the case for Kant (1724-1804). For Kant, judgements about objects and their beauty
are made not because they satisfy our desires, since such aesthetic judgements are ‘disinterested’ but because understanding their form engages ‘free play’ of our understanding and imagination. Thus, for Kant, beauty is not a property of objects but instead a relation between their form and the way our cognitive faculties work (Rohlf, 2010).

This interplay between the form of an object and our subjective attitudes is an early indication of the concept of aesthetic distance, developed later by Bullough (1912), which is determined by an interaction between the evocative qualities of a stimulus situation (an artistic object) and the disposition of the viewer (Cupchik, 2002; Grau, 2000; Hanfling, 2003; Michalis, 1959), or their “aesthetic attitude” (Bullough, 1912). Originally termed psychical distance by Bullough, it is sometimes also addressed in the literature to refer to purely the ‘evocative qualitative of a stimulus situation’, as designed by the creator. That is, “the frame of reference that an artist creates by the use of technical devices in and around the work of art to differentiate it psychologically from reality” (Deza & Deza, 2009).

Thus, aesthetic distance refines the colloquial phrasing of ‘distance’, as used in the initial research question (Section 1.2). Thus, the research question becomes: Does interface mimesis affect aesthetic distance when playing a videogame?

Aesthetic distance refers to the relationship between a person and an “aesthetic object”, i.e. an artwork. Similarly, Stamatopoulou (2004) refers to aesthetic distance in fictional art (such as literature, theatre, and film) as “the psychological mechanism of distancing that changes our relation to the characters and renders them seemingly fictitious while at the same time we sympathise… with the characters”. Thus, a player’s aesthetic distance from a game can be thought of as an emergent phenomenon, arising from both the stylistic qualities of the game itself, and the attitudes of the player.

Framed this way, aesthetic distance from a game is the degree of separation required in order for the player to be able to appreciate and critically evaluate a game as art, as opposed to accepting it as a real experience. Such a concept is relevant to the concerns as presented earlier by Grau (2003) and by such epiphenomenal observations as the media controversy over Manhunt 2 in 2009 (Section 1.1).

Regarding this effect, Bullough (1912) notes, “Distance is decreased to the extent that subject matter reminds us of our everyday lives” (p. 168), whereas “salient stylistic qualities remove the work from the everyday world” and thus increase distance (p. 169).

*Distance ... is obtained by separating the object and its appeal from one's own self, by putting it out of gear with practical needs and ends. Thereby the 'contemplation' of the object becomes alone possible. But it does not mean that*
the relation between the self and the object is broken to the extent of becoming 'impersonal.' (Bullough, 1912)

The concept of aesthetic distance created between the viewer and the art stimulus, mediated by technical means, has long been a talking point in theories of philosophy of art since Plato, although only more explicitly since Kant. Originating with notions of “disinterestedness” (Ogden, 2011) (Section 2.2.1), in the latter half of the twentieth century, the concept of aesthetic distance has begun to be studied empirically in media ranging from visual artworks (Cupchik, Vartanian, Crawley, & Mikulis, 2009) to literature (Cupchik, Oatley, & Vorderer, 1998; Koopman, Hilscher, & Cupchik, 2011; Mar, Oatley, Djikic, & Mullin, 2011), to character-driven drama in all its various guises including, but not limited to screen-based media and theatre (Zillmann, 1995).

Interestingly, videogames and theatre have often been compared, with the latter serving as a useful analogous model for the former. For example, Robson & Meskin (2012) analogize that individual theatrical performances are a useful model for understanding individual playthroughs of videogames; while in some productions of Othello, the lead actor in the eponymous role will define “what is true in that performance” – for example, he may be tall, and wear an earring (Robson & Meskin, 2012). This truth then holds for that particular production of Othello, but not for the general play of Othello. Similarly, in videogames, some truths only exist within an individual playing of the game: for example, in an individual play through of Deadly Premonition (2010), Agent Francis York Morgan may be unshaven and wear a ‘Cherry Blossom’ suit throughout, though ultimately, the overarching story of the player characters’ experiences in Greenvale remains the same. Indeed, Pinchbeck (2006) posits that “there is an alternative history of virtual reality, based upon ritual and theatre, rather than cinema and technology, still waiting to be drafted.” However, this idea, too, has its discontents, of course. Games with procedural content, or those that rely heavily on social simulation of non-player-characters, such as Façade (2005) or Redshirt (2013), can perhaps be likened to improvisational theatre rather than scripted theatre (The ways in which games can be conceived and defined are further explored in Section 1.3.2).

Further to this, Pinchbeck (2006) considers through analysis of the limitations of first person shooters, that these games are analogous to 20th century theatre, which was concerned primarily with “immersion as a driving aspiration”. Indeed, avant-garde theatre practitioners of this period exhibited a “developing ‘hatred of the masses’… as well as a desire to conquer these masses, to subjugate them to their creative will, to dictate to them the conditions of art reception” (Groys, 2011). Groys further asserts that these avant-garde practitioners sought to “eliminate, or, better yet, to transcend the aesthetic distance separating the spectator from the work of art” (p. 103).

For German playwright Bertolt Brecht, issues of distancing were explicitly political; he sought to re-empower the masses by re-establishing this aesthetic distance. In Brecht’s view, the techniques purposefully employed in his “epic theatre” forces an audience to “think about what they see so that
they leave the theatre roused to take action and change the world”, rather than being “lulled into acceptance” of what they see. Sheppard (1987) states “Brecht was concerned with the effects of his plays on the audience.” But, rather than relying on an inherently virtuous audience, Brecht wants an audience to reflect morally on their experience because of the aesthetic distance created through his techniques. This was termed the Verfremdungseffekt – often translated in English as the ‘alienation effect’ (Brecht & Willett, 1978) ‘estrangement effect’, or ‘distancing effect’ (Note: as the English translation of the word is a matter of controversy, the convention of many scholars will instead be used, leaving it untranslated, or shortened to V-effekt in some cases). Brecht used techniques in his “epic theatre” in order to “alienate” the play, and ‘distance’ the spectators, reminding them that they were experiencing a representation, rather than reality (Frasca, 2000), thus creating a sense of distance from the content.

Dovey & Kennedy (2006) also note the criticism by Frasca (2001a) of “dominant versions of immersion” being rooted in Aristotelian models of narrative and drama. Indeed, the nascent game studies literature heavily relies upon Aristotelian models of narrative and drama, and how this relates to the structure of interactive narrative, especially videogames. Frasca is quoted in Dovey & Kennedy (2006, p. 9):

“One of the biggest problems of Aristotelian poetics, as explained by such theorists as Bertolt Brecht, is that spectators get immersed in the stories and lose their critical distance from what is happening on the stage or screen... this effect is seen as narcotic only by authors whose intentions go further than simple entertainment and want to trigger critical thinking in their audience, for educational, social and/or political reasons” (Frasca, 2001a).

In beginning this discussion, the concepts of aesthetic distance, psychical distance and critical distance, all refer to the “relative closeness that a person feels toward an aesthetic artefact or event as a consequence of interacting with it” (Cupchik, 2002), as a result of both the stylistic techniques used in the art work, and the attitude of the person interacting with it (though a more nuanced conception of these terms versus critical distance is established in Section 2.2.2). This concept is underpinned by the position that our understanding of art has an effect upon morality (Section 2.5.1). Thus, within such a framework, moral response (Section 1.3.4.2) is posited as an epiphenomenal result of altering aesthetic distance.

While the term disinterestedness is also closely related to this psychological and philosophical construct, there is some nuance here, for while the first four refer largely to the “interaction between the evocative qualities of a stimulus situation and the disposition of the [player]” (Cupchik, 2002), as mediated by the “use of technical devices” (“aesthetic distance,” n.d.), the latter term disinter-estedness, refers to the player-centred phenomenon created by aesthetic distance (i.e. the player’s
sense of aesthetic distance, or the extent to which they feel distanced), rather than referring to the relationship created between the player and the object by these ‘use of technical devices’. On the other end of the spectrum, Brecht’s *Verfremdungseffekt* is a related but solely-object-centred phenomenon, referring specifically to the techniques used to create such distance.

While concepts of aesthetic and critical distance have received some attention in the field of immersive art and virtual reality artworks (Joseph, Hugain-lacire, & Ziegler, 2012; Nechvatal, 2009; Stenner, 2007), it is also of interest to the research question (Section 1.2) to determine whether this concept also contextualises the experience of playing videogames, as mediated by their (increasingly mimetic) control mechanisms. Applied to videogames, altering aesthetic distance similarly may give rise to altered moral responses (and thus, has ethical implications, as explored in Appendix A) when seen in the context of increasingly physical control mechanisms; it also opens up many opportunities for meaningful design.

Thus, the research question (Section 1.2) explores whether and how the concept of aesthetic distance can be applied to videogames, particularly as mediated through enhanced interface mimesis. Furthermore, any exploration of a player’s experience of aesthetic distance must be considered in the context of their moral responses (Section 1.4) and hence a refined research question must reflect that (Section 1.5).

Following Bullough (1912), the physical means of interaction and control within a videogame, and hence the physicality and implementation of this control mechanism, falls under the remit of the “salient stylistic qualities” that “remove the work from the everyday world” (Cupchik, 2002). These form the “technical devices in and around the work of art to differentiate it psychologically from reality” and allow for such moral consideration (Deza & Deza, 2009) and thus, these “evocative qualities”, in conjunction with “the disposition of the [player]” (Cupchik, 2002; Grau, 2000) (their aesthetic attitude), informs the sense of aesthetic distance from the game being played.

However, in order to do this, a definition of videogames must first be established.

1.3.2 Defining Videogames

A large body of videogame scholarship has concerned, broadly, the way that videogames create meaning (Bogost, 2006; Frasca, 2007, 2011; Weise, 2003; Zimmerman, 2006). While the research question also continues in this tradition, it is also concerned, more specifically, with how players deal with the meanings that arise in them through play. As stated by Consalvo (2009b):

“What if, rather than relying on structuralist definitions of what is a game, we view a game as a contextual, dynamic activity, which players must engage with for meaning to be made. Furthermore, it is only through that engagement that the game is made to mean.”
Indeed, the act of *defining* videogames has, in the field of game studies and criticism, been recently addressed as a political issue (Anthropy, 2012; Kelly, 2013; Koster, 2014). Designers such as Anthropy (2012) have advocated that the term ‘videogame’ and its commonly accepted definitions can be an exclusionary term, used to dismiss personal and unconventional works; works which have been predominantly created by women and minorities. Such a movement echoes the modern history of art, dismantling elitist boundaries and moving towards a more democratic vision of the licence to create works (explored in Section 2.4.4.2).

Acknowledging this political divide, and calling for a “new formalism” in games, veteran game designer Raph Koster states:

“The debates about “what is a game” happened between multiple overlapping circles that have very little to do with one another: who sits on awards panels, and what is taught in universities, and whether feedback is narrative, and whether all kinds of people are able to make games in the culture as it now sits….‘Games’ is never going to fall into one bucket or critical lens; but we can build bridges and connections between buckets using these analyses, and in the end that is a far more intersectional approach, because it recognizes identity as well as commonalities. We enrich ourselves and our mutual understanding not by claiming pre-eminence of one circle, but by learning to move between them” (Koster, 2014).

Following the approach defined by Koster, videogames, as a medium, are conceptualised here using a broad view, and are seen as a continuation not only of traditional, non-digital games, but also within the broader context of art history. They are framed as a continuation and blending of traditions of literature, theatre, interactive art, software and many other artistic media, seen through the lens of a “flat ontology”, as suggested by Bogost (2009).

While it is posited that games do contain systems of rules, they are also simultaneously held as narrative objects. That is, whether or not a game is explicitly designed to tell a particular story or stories, its structure and order does, through interaction, by naturally being revealed to the player over time. Even through abstract means, the stories within all games are generated temporally, through play. This is therefore an inclusive definition, true of both *Tetris* (1984), which is a story about efficiently stacking tetrominoes so that you are not overcome by them, and *Destiny* (2014), which is about space wizards.

Thus, when analysing games, clarity about the kinds of games that are being considered, in terms of narrative form and content. However, this could identify a subsection of interest, rather than all-encompassing definitions of videogames, which are all, by definition, multi-layered continuations of artistic and technological media, both hardware and software.
Thus, in terms of form, the research question (Section 1.2) must focus on first-person videogames, featuring a three-dimensional, spatially navigable environment, in which the role of a particular avatar or character is assumed. Although, discussion of third-person games (also featuring a 3D spatially navigable environment) is also relevant here (Section 1.4). In both cases, these games involve single-player navigation of a 3D world through means of an avatar. This is an underpinning condition of the research question (Section 1.2), as interface mimesis seeks to create experiences that are increasingly ‘realistic’.

Furthermore, it concerns videogames of this type that feature mimetic interfaces, mapping a player’s real life body to this in-game avatar; however, the ways in which this mapping may occur is variable, and is suggested as an important formal quality of videogames. That is, as a ‘salient stylistic quality’ of the medium of videogames, through which aesthetic distance may be mediated.

1.3.3 Defining Interfaces as ‘Salient Stylistic Qualities’ of Videogames

Kirkpatrick (2008) notes the ‘paradoxical’ position occupied by the hardware interface (controller) in game studies, stating, “Although it is central to gameplay experience – it marks physically the difference between play with a game and merely watching a screen – it goes largely unreflected on by gamers and in gaming literature.” He further reflects, “…the controller is not just hardware nor is it software and it is also not straightforwardly a transmitter of player intentions in the game. It is the most concentrated intersection of these, the key elements in gaming” (p. 130).

Additionally, Sommerseth (2009) argues that “an emerging understanding of the aesthetics of videogame play must begin with an understanding of its basis in embodied sensations.” Sommerseth concedes that this is not an entirely new phenomenon, as cinema, for example, also relies on multi-sensory engagement for the viewer. However, she argues, “The cinema object nevertheless remains separate from the viewer, whereas the game player is physically involved with the game in a more direct sense. Immersion in videogames, and in VR, comes from technology acting upon the body and sensorial input.”

There exists a question of whether the increasing physicality of mimetic interfaces brings games back into the tangible, physical realms of non-digital games. It should be considered, as Sicart (2009) does, whether the questions asked here about videogames apply also to non-digital games. However, Sicart argues, “There are some specific ontological properties of computer games that raise unique ethical challenges”; the most obvious of these is the additional of computational power, giving rise to potentially more complex interactions with the rules of a game system. Crucially, there is also rigidity to these interactions: although the dynamics of non-digital games are outside of the scope of the research question, it may be conceded that board games are often mediated as they are being played, informed by the players’ social norms, experiences, and mutual sense of what is appropriate. This is contrary to computer games, as Sicart notes, which are “designed expe-
riences in virtual environments with rules and properties that, in general, cannot be adapted or corrected by their users” (p. 15).

While Dovey & Kennedy (2006) note that “a technologically determined account of games should be recontextualised by their economic and cultural drivers”, they concede the importance of the controller with respect to games regardless, as it “remains the case that technologies also do have a determining effect upon the games that are made available to us... specific technologies have specific capabilities and... these capabilities are deeply embedded within the discursive formation of the computer game” (p. 51).

The importance of the interface is further underscored by Grau, (2003, p. 198), who states:

“It is at the interface, which must be used by the active observer according to the rules of the particular illusion world, that the structures of the simulation designed for communication meet up with human senses.”

Considering Bullough’s (1912) definition of distancing as being affected by “salient stylistic qualities”, which “remove the work from the everyday world” (Section 1.3.1), it is important to establish how the videogame interface (in particular, the controller, or input mechanism) can be considered such a salient stylistic quality of the ‘form’ of a videogame. Thus, in turn, it is suggested that variations in the input mechanism can provide a significant change to the form, and hence, may affect the player experience.

One aspect of this experience most commonly referred to is a player’s sense of being there in a game world, most often colloquially referred to as immersion.

1.3.3.1 Spatial Presence vs Immersion

While presence is conventionally used within the literature to describe the subjective sense of ‘being there’ in a virtual environment, (Jenison, 1998; McMahan, 2003; Slater & Usoh, 1994), as the research question focuses on control mechanisms and interfaces, the concept of being able to act within a game is instead prioritised. Jenison’s (1998) extended definition of presence as being-in-the-world and as being tied to one’s successfully supported action within a virtual world comes closer to this remit, though agency (defined in Section 1.3.3.4) forms a component of the model of spatial presence by Vorderer et al. (2004).

Indeed, across the game studies and virtual reality literature, there are many competing and often-overlapping definitions related to our sense of place and physicality within games. Thus, where appropriate, the term spatial presence will be used to refer to the concept of “the subjective experience of being in a place or environment, even when one is physically situated in another place or environment” (Youngblut, 2007). However, exceptions are made to this theoretical reduction where a particular definition is to be highlighted for a specific purpose.
Furthermore, the model of spatial presence as suggested by Vorderer et al. (2004) is used here, which is a construct consisting of discernible subcomponents of possible actions (to be equated with agency, Section 1.3.3.4), and self-location.

Often, the terms “(spatial) presence” and “immersion” are also conflated within the game studies literature; Dubbelman (2013) provides a review of these terms, noting that “for some scholars, immersion, like presence, describes the mediated perception of being there… for other scholars, immersion denotes, amongst other things, one’s emotional investment in the fate of story characters” (p. 14)

For Janet Murray in seminal game studies text *Hamlet on the Holodeck* (1997), immersion falls akin to the former definition, suggesting:

“The experience of being transported to an elaborately simulated place is pleasurable in itself, regardless of the fantasy content. Immersion is a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air that takes over all our attention our whole perceptual apparatus” (Murray, 1997, p. 98).

Murray’s seminal early definition of immersion here is the concept referred to in the virtual reality literature as *presence*, and this term was later also adopted within game studies (Dubbelman, 2013). These competing candidates for the same concept have proliferated throughout the literature, further bolstered by the widespread use of the word immersion in marketing to refer to this concept (as well as referring to improvements in graphics, sound, and many other factors.) Indeed, Salen and Zimmerman’s (2003) proposal of the “immersive fallacy” depends largely upon the equivalence of *immersion* with *spatial presence*.

While at first glance, immersion appears to be a rather vague term whose meaning is already encompassed by other terms, the idea of immersion should not be completely disregarded when thinking about games. The concept is perhaps more useful and more easily understood by deconstructing its uses in the literature into the disparate categories of *diegetic immersion, situated immersion* and *perceptual immersion*. Diegetic immersion is “immersion in the act of playing a game” (Pace, 2008); whereas situated immersion is immersion not only in the act of playing a game, but also in the experience of actually being in the game world (Taylor, 2002); in other words, situated immersion is spatial presence (Pace, 2008).

Further to this, perceptual immersion (or being *perceptually immersed*), refers to the object-centric (as opposed to player-centric) phenomenon of using interfaces designed to couple sensors and dis-
play devices to the body. In other words, progressive embodiment, therefore, concerns the player’s steadily increasing *perceptual immersion* with technology, towards increasing mimesis.

It should be noted that diegetic immersion is not exclusive to digital games, but is a core feature of non-digital games too. Frank Lantz (2011) in his *Game Developer’s Conference 2011* design talk entitled “Life and Death and Middle Pair: Go, Poker and the Sublime”, argued that this kind of ‘filling up’ of our attention is a property of games of all mediums. Indeed, this focus on *attention*, rather than the oft-misused term ‘immersion’, is also advocated by game designer Richard LeMarchand (2012); this use of the term can also be equated to diegetic immersion, as LeMarchand claims that at the heart of *agency* is “what the player is choosing to pay attention to”, and thus is governed by executive (voluntary) attention. Indeed, Dovey and Kennedy (2006) also state that, “the immersion of the computer game player is less the submersion in virtual reality as the quality of intense concentration produced by… mastering control systems, figuring out the gameplay, puzzle solving, enemy slaying, and strategic planning” (p. 8).

This clarification of the different usages of ‘*immersion*’ describe why playing *Threes* (2014) on a small iPhone screen may be just as reportedly ‘immersive’ as a high-resolution, first person shooter such as *Call of Duty: Advanced Warfare* (2014) played in a CAVE system; both may be ‘immersive’, but elicit this in different ways, though these meanings are often conflated colloquially. Thus, whilst situated immersion may not necessarily always be elicited in videogames, the concept of acting *in* the game world becomes ever more relevant when this concerns interfaces which afford a stronger sense of cybernetic interaction with a virtual object, enabling players to experience virtual objects as they would ‘in the real world’.

1.3.3.2 Defining Embodiment & the Physicality of Videogames

Our everyday human experience is shaped by our very physicality and our presence in the world; we recognize the world through our ability to physically act within it (Slater & Usoh, 1994). Increasingly, philosophers, psychologists, scientists, and even interaction designers alike have eschewed the prevalent historical belief in the Cartesian dualism of mind and body (Ash, 2013) (that a body cannot think, and the mind does not exist in physical space) and conceded instead that bodily perceptions are the “ultimate foundation of our knowledge about ourselves and the world” (Slater & Usoh, 1994). Indeed, Damasio (1994) contends that “the body contributes more than life support; it also contributes a *content* that is part and parcel of the workings of the normal mind” (p. 226). This operates from birth, with Klemmer, Hartmann, and Takayama (2006) noting that, “direct physical interaction with the world is a key constituting factor of cognitive development during childhood”.

Physicality, therefore, is an important component of the human experience. We are *embodied* beings. Indeed, the concept of embodiment is rooted in the phenomenological philosophies, which are concerned with lived experience, and has its roots in the work of philosophers such as Husserl,
Heidegger, and Merleau-Ponty. Merleau-Ponty describes the task of phenomenology as ‘unveiling the pre-theoretical layer’ of human experience (Critchley, 2001, p. 112). That is, it is the study of how we each ‘experience’. Thus, all of our interactions, with everything in the world, have always been physical and this of course includes videogames.

Gregersen & Grodal (2009), in their review of *Embodiment and Interfaces* point out that while our sense of physical embodiment in the world “ultimately determines the extent of our potential experiences, our experience of ourselves cannot be reduced to the actual, physical body”, instead describing our sense of embodiment as “flexible”. This suggestion refers to the phenomenon of our sense of embodiment extending to other objects, such as when driving a vehicle, or even, extending to other people. It is known, for example, from studies using functional magnetic resonance imaging (fMRI) that the neurons are fired both when performing an action, and when watching someone else performing the same action. Gregersen & Glodal (2009) describe this sense of flexible embodiment as also including “the virtual worlds and synthetic environments presented by many videogames” (p. 69). Indeed, Swink (2009) similarly describes this concept and how it occurs within videogame play:

“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. Game designer Jonathan Blow calls this ‘proxied embodiment’ – identity extends to some kind of proxy, inhabiting it and making it part of one’s own body. ‘My guy’ becomes ‘me’” (p. 28).

Swink notes that this transfer of identity, is, however, “capricious”, stating that “It can flow outward, encompassing something we’re controlling and a moment later be withdrawn”. Indeed, the example of playing a game such as *Half-Life* (1998) is given, in which a player can feel a sense of personal ownership and pride at effortlessly defeating a room full of enemies and then, only moments later, blame the player character if something goes wrong. Swink explains that for game designers, this acts as a useful phenomenon that “mitigates the frustration that comes from challenging the player.”

This theoretical suggestion by game designers Swink and Blow is in accordance with the definition of embodiment, specific to virtual environments, as given by Biocca (1997): that embodiment is “thinking through our technologically extended bodies” (p. 16). For philosopher Andy Clark, this idea is a cornerstone of his theory of embodied cognition; our bodies are “negotiable”. Thus, the ways in which our bodies may be ‘technologically extended’ could, according to Clark’s *extended mind thesis* (EMT), be anything from pens, to cars, to videogames, as EMT refers to the way in which we think through objects with which we interact in our physical environment, known as “active externalism” (Clark & Chalmers, 2008).
This idea of extending ourselves through objects, and specifically, through technological objects, is also presented by cultural theorists Steven Shaviro (2003) and Marshall McLuhan (1964). Shaviro notes, “Each time we extend ourselves technologically, some part of the real gives way to the virtual. This is why every cultural innovation is attended by an ambivalent sense of loss” (Shaviro, 2003).

This encapsulates the paradigm of progressive embodiment, as defined by Biocca (1997), that the idea of an ever-increasing coupling between ourselves and ‘advanced communication interfaces’, becoming progressively embodied, with parts of ourselves giving way to the virtual. For Shaviro, and for Marshall McLuhan (1964), this is a part of being human, as “every technology is an extension of ourselves”, although “in each instance of technological change... we misrecognize the very extensions that we have created and see them as forces alien to ourselves” (Shaviro, 2003, p. 104).

Shaviro contextualises this idea of technological extension to that of being a cyborg, stating, “I become a cyborg when some part of my actual body is taken over by the virtual. My sensory apparatuses, and my organs, are always being replaced or extended by technological devices. This process is coextensive with the whole of human culture” (2003, p. 103). More specifically, he notes that the distinction lies particularly in the use of “electromechanical devices” (2003, p. 104).

Moreover, Poole (2000), suggests “the videogame is not simply a cerebral or visual experience; just as importantly it is a physical involvement—the tactile success or otherwise of the human-machine interface” (2000, p. 73), and describes this relationship between a player and game as a “cybernetic thing.” However, Westecott (2008) acknowledges that the classic controller presents a sense of abstraction between the physical actions of pressing the button and the visual happenings on-screen, thus it is tempting to equate the classic controller with a sense of Cartesian dualism; that the physical and the mental are separate.

However, Dovey & Kennedy (2006) note the way that McLuhanite anxieties as discussed above are also present in the game studies literature, due to the implications for identity within virtual environments; they cite (Kline et al., 2003):

“...building cyborg identities of human/machine identity as gaming pleasure drives successively more sophisticated levels of virtual experience, involving new expectations about verisimilitude and complexity of interaction” (p. 55).

Of course, such concerns are not prevalent only in the study of increasing interface mimesis. Even with a classic controller, there is still a sense of spatial compliance; moving an avatar left, for example, also generally involves pressing the thumb stick or directional pad to the left side. Thus, the space of play, including the body, has always been implicated in the game experience to some degree; in this way, it is posited that even the classic controller is not excused from the definition of
anesthetic distance as given by Bullough (1912), as it does not break the “relation between the self and the object... to the extent of becoming impersonal.”

This idea of embodiment is central, therefore, to a player’s interaction with games; as things they interact with through physical objects (controllers), players extend themselves into games when they play them, and, as noted by game designers such as Blow and Swink, this sense of embodiment is not only inherently capricious but designers often rely upon this (Swink, 2009).

In order to narrow the scope of videogames that are to be addressed by the research question (Section 1.2), it is prudent to understand the nature of embodiment within the videogames to be focused upon here. Since it is suggested that aesthetic distance gives rise to a player’s emotional and cognitive responses to a game, the extent to which the player’s sense of embodiment is extended to that game is crucial.

1.3.3.2.1 Participative and Physical Embodiment

There exists some degree of disconnect between the virtual reality, game studies, and post-cognitivist literature regarding the use of embodiment and ‘embodied’ experience. Kaptelinin & Nardi (2006) contend that “embodied phenomena are the ones that we encounter directly rather than abstractly” and that “experience in virtual games does not seem to have clear ‘direct’ relationships to embodied experience.”

However, contrary to this, Ferrari (2010) cites Dourish’s assertion that “Embodiment... denotes not physical reality, but participative status”, which is in line with the definition of embodiment as “thinking through our technologically extended bodies” (Biocca, 1997). Ferrari suggests that in divorcing the concept of embodiment from that of physicality, “it doesn’t lead to the false conclusion that the Wii is a more “embodied” experience than non-motion-controlled games — and he does not anchor it to the idea of identification between a real human body and a virtual human body” (p. 36). Ferrari, as an example, also suggests how “something like the wind in Flower [(2009)] is an embodied experience, despite its loose control method and lack of an in-game body.”

While Dourish’s (and thus Ferrari’s) definition of embodiment is ostensibly compatible with that of Biocca’s general definition, it becomes problematic when reviewing the virtual reality literature as a whole. It is also problematic in terms of Biocca’s (1997) definition of progressive embodiment, as these both denote the coupling of the body with technical devices, in order to yield a sense of body ownership. In this way, in both the games and virtual reality literature, the word embodiment is often used interchangeably with terms such as ‘identification’ and ‘body ownership’ (that is, feeling like a virtual body is one’s own), and, in order to understand the nature of the videogames to be addressed by the research question (Section 1.2), these are to be differentiated.

As an example of this ambiguous use of the term: Poole (2000) suggests that third person games can in fact act to grant a stronger sense of embodiment than first person games. Games which “at-
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tempt to situate us in an otherworldly space” (i.e. those that seek to elicit spatial immersion), such as first-person games, grant a sense of “curious disembodiment” in his words. Here, Poole refers to the way in which first person games often present to a player their avatar’s hands holding a rifle, but fails to render any legs or feet if a player were to look down. Thus, these gaps in avatar representation are argued to be disruptive to the player’s sense of embodiment. Indeed, Poole appears to use the word ‘embodiment’ here to denote ‘having a believable body’, thus, this assertion relates more closely to issues of body ownership rather than participative status in the world.

Thus, resolving the disconnects between these aforementioned theoretical conceptions of embodiment is important as the definition used within this research programme must be appropriately refined. However, this is actually relatively straightforward as Longo & Schu (2008) assert, through empirical analysis in the field of cognitive neuroscience, that body ownership (defined in Section 1.3.3.3) and agency (defined in Section 1.3.3.4) are two dissociable components of the construct of embodiment.

Figure 1-1: A Model for Participative and Physical Embodiment In Videogames

Thus, having a strong sense of agency within a game, of being able to act and influence states in the environment, without feeling a strong sense ownership over some represented virtual body, can still grant a sense of (participative) embodiment. (The terms body ownership and agency are further explored in Sections 1.3.3.3 and Section 1.3.3.4 respectively). Such a model is further supported by Kilteni, Groten, & Slater (2012), who define Sense of Embodiment as consisting of three subcomponents: body ownership, agency, and self-location (which is part of spatial presence, Section 1.3.3.1). Therefore, this kind of embodiment, concerning theories of body ownership, agency, and self-location (Figure 1.1) is termed physical embodiment (or simply, embodiment, or Sense of Embodiment).

Secondly, it is proposed that the term ‘embodiment’ is not only separated into this physical embodiment, but also participative embodiment (Figure 1-1), which is thinking through one’s technologically enhanced body, and is a concept underpinned by agency (Section 1.3.3.4).
Physical and participative embodiment are not necessarily disparate constructs, and may of course interact – as noted previously, the act of playing videogames is always physical, as we are coupled with the interface and act through it, even with a classic controller. Thus, physical embodiment necessarily also encompasses participative embodiment, and it may not be possible to be physically embodied without also having a sense of participant embodiment, although the inverse is possible (Figure 1.1).

Thus, it can be noted that, there are of course games in which a sense of body ownership or self-location are not necessarily required, but which do elicit a sense of agency—being able to act within the game. For example, real-time strategy games, such as *StarCraft* (2010), which are famously ‘engaging’ (i.e. prone to absorbing attention) (Section 1.3.3.1), though do not elicit nor require a sense of body ownership in the same way as a first person shooter might. Furthermore, the example of *Flower* (2009) as given previously satisfies this sense of agency for a player, without necessarily granting the player a sense of body ownership, yet the player still feels a sense of participative embodiment.

Furthermore, taking the example of the classic Nintendo Wii game *Boom Blox* (2008), although the player is disembodied in the sense of lacking any kind of avatar representation (thus lacking body ownership), the Wii Remote and its mapped interactions evoke a sense of agency by being able to manipulate objects at hand naturally, by either using the grab tool (and being able to manoeuvre blocks as expected), or throwing the ball. Thus, through this agency, the player experiences a sense of embodiment that is both participative and physical. The physical embodiment is elicited through a sense of kinaesthetic and tactile agency via the particular designed mapping between the Wii Remote and the game.

Therefore, games in which a player is physically embodiment (or, simply embodied) are those that elicit (or seek to elicit) a sense of physical embodiment through virtual body ownership, agency, and self-location, and it is of interest to this research programme the ways in which these concepts, when enhanced through interface mimesis, contribute to a player’s sense of aesthetic distance.

Therefore, the research question (Section 1.2) becomes: Does interface mimesis affect aesthetic distance when playing a physically embodied videogame?

However, these factors contributing to physical embodiment must be further defined.

1.3.3.3 *Progressively Embodied Towards Virtual Body Ownership*

The research question (Section 1.2), through its concern with increasingly mimetic interfaces in games, is contextualised in the socio-technological paradigm of progressive embodiment, the steadily increasing “coupling of sensors and display devices to the body” (Biocca, 1997, p. 14). Within the context of these established definitions for the research question, it is thus proposed that
progressive embodiment refers to the paradigm of increasing *physical* embodiment, granted by enhancing interface mimesis (though this definition is modified in Section 4.11.2).

Biocca further states, “The psychological effects or goals of progressive embodiment can be expressed as various forms of what is called [spatial] presence” (Section 1.3.3.1). In addition to this, it is also proposed that, within the context of first-and-third-person-perspective 3D videogames, interactive artworks and virtual environments, progressive embodiment can be framed as an increasing move towards the concept of a player also having a *virtual body*. Thus, a further psychological effect, or goal, of progressive embodiment, is suggested to be *virtual body ownership* (referred to in the literature as simply ‘body ownership’ or ‘having a virtual body’, but concatenated here for ease and clarity).

In the virtual reality literature, Slater and Usoh (1994) describe their nascent experimental work, in which participants were given a virtual body (through use of a head-mounted display and some basic positional tracking), though in the pilot, their virtual left arm remained fixed. They describe “strange effects” such as how one participant, on noticing her fixed virtual left arm, began to move her real left arm very rapidly in a manner indicating panic” (p. 8). Furthermore, the ‘rubber hand illusion’ experiment by Botvinick & Cohen (1998) placed a fake rubber hand alongside the participant’s own on a table, while an occluding screen prevented them from seeing their real left arm and hand. Both the real left hand and the rubber left hand were stimulated synchronously, after which the participant typically misidentified the rubber hand as their own.

Twenty years later, through use of contemporary, technologically improved head-mounted displays and whole-body-tracking suits, this exploration of virtual bodies has matured. Slater & Vives (2014b) describe the concept, and that of *body ownership*, thus:

“... a person’s whole body can be ‘replaced’ by a virtual body in IVR [*immersive virtual reality]* so when they look down towards their own body, they would see the virtual body instead. Additionally when they look towards a virtual mirror, they would see this virtual body reflected back. This is already a very powerful cue to the brain to feel this virtual body as their own since throughout life whenever we look down towards our body - or in a mirror - of course we see our own body” (p. 3).

It is proposed that body ownership is engaged when physical embodiment exists in conjunction with a represented avatar of a virtual body (or part of a virtual body, such as hands). The concept of virtual body ownership is therefore a subjective construct, referring to the extent to which players feel like a virtual body is their own, or that they are looking at their own body (or part of their body) when they look at the avatar of a virtual body (or part of a virtual body) (Longo & Schu, 2008, p. 986).
However, as suggested in the model for embodiment in videogames (Figure 1-1), another concept contributing to embodiment, both participative and physical, is that of being able to *act* in the world, known as *agency*.

1.3.3.4 *Agency*

Agency is central to games. Working with the aforementioned definition of a game as given by Costikyan as “a form of art in which [players] make decisions in order to manage resources through game tokens in the pursuit of a goal” (2002), this idea of “making decisions” and “managing resources” refers to the ability to influence game states. Indeed, a commonly used definition of agency referred to regarding media works is stated by Murray (1997) as “the satisfying power to take meaningful action and see the results of our decisions and choices”. However, Wardrip-Fruin et al. (2009) conceptualise agency as “a phenomenon, involving both the game and the player, that occurs when the actions players desire are among those they can take as supported by an underlying computational model”. They stress that agency is not simply “being able to do anything” within a system, but instead is characterised by interacting with a system that “suggests possibilities through the representation of a fictional world and the presentation of a set of materials for action.” Thus, it is an experience that must be consciously designed for, “balancing the dramatic probabilities of the world with the actions it supports.” This makes agency a salient stylistic quality of videogames.

This is illustrated by Dow’s (2008) investigation of players’ level of involvement with the narrative in an augmented reality (AR) version of *Façade* (2005) versus the ‘traditional’ version played on PC using mouse and keyboard. While their sense of ‘being there’ in the game world was increased in the AR version, they also expressed a need for the experience to be more “mediated”; that is, players felt the need for more obvious cues to show what specific actions they can perform, by, for instance, providing a non-realistic user interface, amongst other things. Thus, the AR version of the game did not support the player’s agency, as defined by Wardrip-Fruin et al. (2009), as they were unsure of what actions they were able to perform which would be supported by the game. This difference between ‘being there’ and agency is akin to the difference between participative embodiment and agency as summarised by Gregersen and Grodal (2009). Thus, this definition of agency is an important part of the game-playing experience, defined also by the interaction between the control mechanism and the game, and thus, as Wardrip-Fruin et al. (2009) suggest, it is governed by design decisions.

Gregersen & Grodal, (2009) cite philosopher Shaun Gallagher’s distinction between the concepts of agency and “body ownership”. They note that while we are interacting with our normal environment, the ideas of our sense of agency and our sense of body ownership are “fused and operate pre-reflexively: We experience ourselves as instigating agents and we feel that the acting body is our own.” Therefore, under normal circumstances in the everyday, our ability to act and effect our environment is related to our sense of being in our bodies. However, if someone is doing some-
thing to us, and we are “patients”, then we are not the one in ownership of the action, such as when someone is pushing us. Therefore, Gregersen and Grodal state:

“In relation to agency, the question of self-efficacy is central: We may very well have an acute sense of body ownership and still have a distinct non-agentive feel if we believe that we lack the ability to influence states around us” (2009, p. 66).

Therefore, while a player’s sense of agency is a subjective feeling of being able to act in the world, this is an experience that can be designed, ensuring the underlying computational model supports the actions that a player may wish to take. A crucial part of this designed system is therefore, in considering the research question (Section 1.2), the designed interface (or controller) mimesis.

1.3.3.5 INTERFACE AND CONTROLLER MIMESIS

In considering how distance is created in videogames, as per the research question (Section 1.2), Gregersen and Grodal (2009) assert that one of the “fundamental conditions that govern our interactions with video game virtual environments is that our actions are mapped onto the game system by various technological means [i.e. the controller], since we cannot physically manipulate the virtual entities directly” (p. 69). However, Myers (2009) defines interaction with a videogame by means of a controller as “[playing] with those representations of objects arbitrarily assigned to various controller buttons and sequences” (p. 52). Of course, such as assignment of controller buttons are of course not simply arbitrary but are the result of design decisions, which in turn have been influenced by the history of videogame hardware.

Cummings (2007) offers an in-depth analysis of such a history, noting the ways in which the evolution of game controller technology has informed the design of games and conversely: the ways in which games have in turn influenced controller design, beginning with one of the early videogames, *Spacewar!* (1962). This was played on a PDP-1 (Programmed Data Processor-1) computer intended for data processing at a university. As such, the only controls available were the front-panel test switches, simple toggle switches, at the front of the console. The original design featured five switches in total, mapping to five different possible in-game actions for the player’s spaceship: left rotation, right rotation, thrust, fire torpedoes, and hyperspace. However, these controls were found to wear out very quickly and, if the game were played two-player, then one player’s view would be obstructed. Therefore, many sites that installed *Spacewar!* (given this was played at universities, who had access to a PDP-1 computer) built custom control boxes instead (Graetz, 1981). It should also be noted, as an aside, that while Cummings posits the history of videogame control mechanisms as beginning with *SpaceWar!*, there is an alternate conception of the history of videogame control mechanisms, suggested by Dewdney & Ride (2006), beginning with the history of non-digital board and card games. However, in either case, it is most salient to note that the ways
in which interfaces are used to interact with a game is a design decision, and an integral part of the design of a game.

Indeed, Salen & Zimmerman (2003) underscore the importance of the physical control mechanism as being part of the ‘complete picture’ of a game design, stating broadly, “A game designer needs to understand how to harness the technology into a designed system that results in meaningful play.” The controller is one of the crucial parts of this alluded to ‘technology’, as games selectively target and activate the auditory, visual, somatosensory and proprioceptive systems in various intentionally designed ways. Indeed, as purported by Gregersen & Grodal (2009), “the extent to which an embodied sense of agency, ownership and personal efficacy is fostered within a player’s experience is very much a question of overall design, including interface design”. Thus, in conjunction with other designed properties of a game, the extent to which a player’s bodily proprioceptive systems are engaged, and how, determine the degree of physical embodiment (Section 1.3.3.1).

One example of these “designed properties of a game” includes the close mapping between action within a game and the action performed by the player via the controller. The initial research question referred to this broadly as interface mimesis (Section 1.2). It should be noted that the term ‘interface’ is used here, rather than ‘controller’, as the former is a broader umbrella term encompassing both input and output mechanisms (thus, haptic and tactical feedback may also be considered), whereas the latter refers only to input; where specificity is appropriate, controller mimesis will instead be used.

The ‘closeness’ of this mapping is variable, as is the nature of the mapping. This is a design decision, which varies from game to game (Swink, 2009). This concept of ‘closeness’ in interaction refers to how far an action on the controller relates to, or mimics, real-world action. For example, whilst using the drum peripheral to play Rock Band (2007) exhibits very close mapping to playing real drums (i.e. the action of drumming in Rock Band is the same as the action of drumming in real life), using a NES gamepad to play Street Fighter (1987) does not closely map to real fighting (i.e. pressing buttons is not the same as real life kicking or really performing a Dragon Punch).

It should be noted that mimetic closeness refers to the designed properties of a game and its physical interface, and to what extent its interactions map to the equivalent interaction outside of a videogame. Despite the similarities between the terms, this designed closeness (or interface mimesis) does not refer directly to the psychological effect of ‘distancing’ as experienced by someone who may interact with such a game; instead, ‘distancing’ is proposed as an emergent psychological property resulting from interface mimesis, or indeed, a lack thereof (Section 1.2).

Penny (2004) notes that “Between the full force-feedback VR suit fantasy of the early 1990s (or even the direct neural jack) and the “choose-your-own-adventure” book lies a vast range of technologies of simulation in which bodily action is more or less metaphorized.” As discussed in 1.2.1, players efferent interactions with games are of course already physical; however, as Penny (2004)
suggests, the range of real-life mimesis, exists along a spectrum. This is characterised by Jenson & de Castell (2008) as “Simulation to Imitation” and also defined in Khandaker (2011), as a spectrum of abstraction-to-simulation, though for clarity, this is now instead characterised as a spectrum of abstraction-to-mimesis. It should be noted, however, that Dovey & Kennedy (2006) present ideas of simulation, contrasting this with mimetic representation and noting the tensions between these concepts; such a conflict is, however, revisited and resolved through critical review (Section 2.4).

Thus, the research question (Section 1.2) focuses on what is termed *mimetic interfaces* -- or, *interface mimesis*, being the conceptual term. This can also be considered a superset of *mimetic controllers* and *controller mimesis* respectively, where these latter terms refer specifically to input devices and the former refers to devices for input and output; a mimetic *interface* can, for example, include stereoscopic 3D displays.

Mimetic interfaces have been previously defined by Juul (2009) as interfaces where “the physical activity the player performs mimics the game activity on the screen”, encompassing game control interfaces which are kinaesthetic or gestural (those which allow for movement or gestures respectively, such as the Nintendo Wii, Microsoft’s Kinect, and Sony’s PlayStation Move) and also interfaces which closely resemble their real-life counterparts in appearance and/or their use, such as the *Rock Band* or *Guitar Hero* series.

However, it is proposed that this term be extended to define interfaces that are conceptually mimetic of real-world interactions in any way. Thus, mimetic interfaces includes head-mounted display (HMD) interfaces such as the Oculus Rift (2013) and Sony’s Project Morpheus (2014), which map a player’s head movement to their in-game ability to look around an stereoscopic 3D perspective environment with a wide field of view.

These mimetic interfaces mirror real interactions, and as such, these interactions should be obvious and natural for players.

1.3.3.6 **Perceived Controller Naturalness**

As explored further within the studies (Chapters 3 and 4), *perceived controller naturalness* (or *controller naturalness, or natural mapping*) is conceptually different from interface mimesis. While the latter is a *designed* feature of the game-and-controller, *perceived controller naturalness* refers to the player’s subjective sense of how far the interactivity is perceived to be “predictable, logical, or in line with expectations” (Skalski, Tamborini, Shelton, Buncher, & Lindmark, 2011). Perceived controller naturalness has been found to affect spatial presence (McGloin, Farrar, & Krcmar, 2011; Skalski et al., 2011; Tamborini & Skalski, 2006), and furthermore, Skalski et al. (2011) found significant positive relationship between videogame skill and feelings of spatial presence. The authors posited that players with lower skill levels might struggle to move through an environment, or complete certain tasks using the controller at hand. Both of these studies also found that increased spatial presence also had a positive relationship with enjoyment.
Skalski et al. (2011) conceptualise ‘naturalness’ as “a psychological state dependent on both technology and individual differences.” They note that while this “leaves open the possibility that some users may be conditioned through repeated use over time to find certain interfaces highly natural, like keyboards and gamepads”, they assert that “there should still be variation in perceived naturalness depending on the extent to which an interface is ‘mapped’ to real-life or in-game actions” (Section 1.3.3.5).

Within the study by McGloin & Farrar (2011), participants were asked to play the tennis game *Top Spin 3* (2008) in one of two conditions: either the PlayStation 3 version using the Sixaxis gamepad, or the Wii version, using the Wii Remote and Nunchuck. The latter was posited as a “natural mapping motion capturing controller”, which “mimics body movement in real life”, providing a “mental model for past real experiences.” The actions performed in the tennis game using the Wii Remote and Nunchuck are thus more closely mapped (Section 1.3.3.5) to the way in which tennis is played with a racket in real life, than when compared to the PlayStation 3 gamepad. The concept of mental models is one proposed by Skalski et al. (2011), referring to “cognitive representations of situations in real or imagined worlds”. Tamborini & Skalski (2006) posit that “more naturally-mapped” controllers in videogames “should allow players to quickly access mental models of real-world behaviour… thereby providing more accurate and available information about how to interact with the game,” even where the player does not already have previous experience with that controller.

1.3.3.7 THE PERSUASIVE INTERFACE

Thus, mental models (as described in the previous section) can develop through past experiences, whether these experiences are direct or mediated (Skalski, 2011, p. 226); this means that a player understands the nature of the interaction with a videogame either through the extent to which the controller successfully maps real-world interactions which they’ve had previous experience with, or through having played a similar game using similar mappings before. This latter effect explains the positive correlation between videogame skill and spatial presence as found in McGloin & Farrar (2011).

An example of this is most overtly evident in mimetic music games such as *Guitar Hero* (2005) and *Rock Band* (2007). Tanenbaum and Bizzochi (2009) refer to the way in which the interface of Rock Band “leverages the player’s sense of bodily perception, and incorporates it within the play experience in a meaningful way”. The use of the tilt sensor, for example, to go into ‘overdrive’ mode when the “guitar neck is rocked upwards”. This engages the player in the game from a bodily perspective, as they end up striking a “stereotypical guitar pose, assuming the postures of hundreds of lead guitar players throughout the ages”; arguably, because they have a mental model of how they believe guitars are played, either through direct experience, or from observing guitarists. In this way, the interface, and the way in which it encourages interaction by the player, is also significant in the game narrative itself. Sicart notes, “the player can actually manipulate the game [Guitar He-
ro] with a standard controller, but the game is only understood in its full actuality when played with the guitar when the player lives through the whole body and machine experience” (p. 82).

The nature of the controller therefore shapes the player’s mental model of the game, thus also affecting the choices made by the player. Kortum (2008) discusses the early arcade game *Steel Talons* (1991) game, a helicopter-flying simulation, in which the seat integrated “what can best be described as a knocker”; when players took enemy fire, the seat was activated, causing a physical sensation which made the experience both “effective and compelling”. Although the information presented to the player by doing this was essentially no different to the on-screen alerts which appear in many other games (i.e. “you’re taking fire!”), the information was delivered through the player’s physical embodiment in that game, offering a stronger sense of mimesis. Such mimesis, it is suggested, serves to remind the player of their embodiment in the real world, and, as such, influence their subsequent behaviour by informing them of what they may do in that situation in real life.

To support this, Kortum (2009) notes though that when using the seat, players were more reluctant to simply ‘play through’ the warnings, as the haptic feedback created a sense of immediacy for players; he suggests that the physicality of the feedback created a more ‘evocative’ response, reminiscent more of the ‘fight-or-flight’ response seen in the real world. Whilst this example is being framed here simply as a clever purposeful design choice, it is suggested that this example also illustrates the way that the nature of the interface may also shape the choices the player makes in the game. Although this example is an oversimplification, (there are several other factors to consider here, such as the relative difficulty of each action and the play-styles of the players themselves) it seeks to illustrate the way in which design choices with respect to the control mechanism have the potential to affect player behaviour.

There is some support for these theories though, through the work of McGloin, Farrar, & Krcmar (2013). They assert that the player’s mental models (Section 1.3.3.6), are utilised in the process of ‘model matching’, i.e. matching their own mental model with what the game allows them to do, which results in greater spatial presence. (It is proposed here that this definition of model matching is the same as the definition of agency as defined earlier (Section 1.3.3.4), where an underlying computational model supports the actions a player wants to perform).

By performing a study in which players were tasked with playing a boxing game using various types of controller-and-mapping configurations, including boxing gloves, they asserted that the mimetic controller “activate[s] the mental model for that situation. Thus, a particular aspect of the media stimulus can act as a prime for the mental model; the match is close due to the physical similarity in the situations.” The authors then apply this framework to explaining increased aggression when using boxing glove controllers in a boxing game. Similar findings are described by Kim &
Sundar (2013), whose study involved use of a gun replica controller vs. a mouse, and found that the former increased spatial presence, as well as levels of aggression.

Although the ethical responsibility of designers is outside the scope of the research question, Khan-daker (2011) (Appendix A) suggests there are ethical implications of increasing interface mimesis, as this may influence a player’s actions towards certain moral choices over others. The choice of control mechanism itself thus potentially has persuasive powers, and is an issue for consideration by a game designer. This can of course be employed as a design tool in itself; as stated by Sicart (2008), “design is power.”

Indeed, Bogost asserts in *Persuasive Games* (2007), that ‘Videogames have a unique persuasive power’, as they provide a systemic view of the world which can promote a certain mental model (Bogost, 2007). He defines procedural rhetoric as ‘the art of persuasion through rule-based representations and interactions’, and ‘the act of using processes persuasively’. Given that the nature of the controller affects player decisions, this discussion could be further extended to include the control interface. Furthermore, Penny (2004) states that the “persuasiveness of interactivity” is in the fact that “bodily behaviour is intertwined with the formation of representations.”

### 1.3.3.8 Towards Enhancing Interface Mimesis

Videogame controllers, or interfaces, are thus suggested to be important ‘salient stylistic qualities’ of videogames, mediating the player’s interactions with it through the sense of agency, body ownership, and embodiment. As noted by Kirkpatrick (2008), “holding a controller is never a disinterested activity, though no player would ever say that the controller is the ‘interesting’ part of gameplay” (p. 136). This idea of ‘disinterest’ refers to a result of aesthetic distance, if not a term that is directly synonymous with it (Section 2.2.1).

However, the way in which games create meaning for players is not through an abundance of technologically delivered sensory information that aspires to reality, but as Salen and Zimmerman suggest, via a mechanism of “double-consciousness”; that is, “something separate from, but connected to the real world”. A player’s relationship with the game is not as straightforward as one of “direct identification”; instead it is a “multi-layered experience”, which Westecott (2009) has likened to a relationship between a puppeteer and puppet. The fun of a game is therefore, knowing on some level that you are playing a game. Furthermore, as stated by Kirkpatrick (2009, p. 102), “it is controllers that allow us to experience form in gameplay.”

Thus, progressive embodiment within videogames is denoted by moving towards a greater fidelity of mimetic interfaces, and away from the abstraction afforded by classic control mechanisms. This strengthens the prosthetic cyborgian relationship between a player and a game: in other words, as controllers get closer and closer to mapping a player’s real-life, physical body, into a game, more and more parts of our experience are replaced with this prosthetic relationship (Khandaker, 2011). Therefore, it is proposed that the experience no longer has as many mediating factors (e.g. abstrac-
tion from classic controllers) to help “differentiate it psychologically from reality” (Khandaker, 2011, p. 155), thus narrowing aesthetic distance.

Poole states, “in general, cybernetic developments [that is, innovations in controller technology] will always increase the possibilities of closer and more pleasurable interaction with a videogame”. However, he also goes onto question how far this suggestion remains relevant as interfaces further evolve, in a statement echoing the concerns raised by Salen & Zimmerman (2003) regarding the immersive fallacy: “Will [total immersion], then become the dominant means of videogame control? Perhaps; but if so, the spirit of Heidegger will rise again to warn that such cybernetic hegemony will necessarily narrow the field of possibilities” (Poole, 2000).

As noted in Khandaker (2011) (Appendix A), Poole (2000) theorizes that the ‘distant mapping’ of the classic controller enforces a sense of alienation (Section 2.2.3) from the game world, which he terms as “cybernetic dissonance”. Though Poole does not address the concept of aesthetic distance, this alienation appears to refer to an increased sense of aesthetic distance, as Poole’s concept regards “salient stylistic qualities” (the nature of the controller mapping, an intentionally designed formal quality of the game) which “remove the work from the everyday world”. It is argued, then, that the lack of interface mimesis, offered by the classic controller, abstract the player away from what they are experiencing, enforcing an increased sense of aesthetic distance required for a player to be aware of their actions.

When a real life physical action is performed, such as hitting an object with a stick, this translates into “easily felt force dynamics” (Gregersen & Grodal, 2009, p. 76); the enactor will feel the effect on their muscle tension, as well as the dynamics of posture and touch. However, crucial sensory inputs such as these are missing when using an interface such as the Sony Eye, or Microsoft Kinect, to hit a virtual representation of the same object in a virtual space. This discussion of interfaces and their dissociation of sensory experience are addressed by Gregersen & Grodal; they suggest that even though the Wii Remote, for example, has some advantage over Microsoft Kinect in that it is gestural and tactile, as opposed to just tactile, there are still shortfalls in physical feedback.

Therefore, the player encounters a disjoint between their own physical action and the action that occurs in the game. This yields an “incongruent motor realism” – which essentially translates to “what you feel and what you see do not add up”. The sense of ownership of the real body is high in such a scenario because body schema processes are activated, as opposed to when than when simply pressing a button on a classic controller, yet there is no visceral feedback to accompany this (Gregersen & Grodal, 2009).

It is possible to characterize the paradigm of progressive embodiment, through enhancing interface mimesis, as a move towards ‘filling the gaps’ in this incongruence. Indeed, empirical research has shown multi-modal interfaces are potentially instrumental in reducing the problems associated with incongruent motor realism (Barthelmes & Oviatt, 2009; Cohen et al., 1989). Gregersen & Grodal
note that if a device such as the Wii Remote were, for example, augmented with a force feedback device, then during a tennis serve in Wii Sports, this could be activated, allowing for a greater sense of motor congruence than is currently elicited. There is thus a closer mapping between the player’s expectations, and the actual feedback granted by the game system, granting a greater sense of real-world validity to the system, important if interfaces are to be designed which are ‘truly mimetic’

Indeed, Gregersen & Grodal note the possibility of a “less is more” strategy being more useful in creating a sense of spatial presence and virtual body ownership; they note that less motor activation (i.e. omitting gestural controls altogether) means less incongruence in cases such as Wii Tennis, which, currently exists as a game of timing, rather than a game of physical force, as in real-world tennis.

![Figure 1-2: A Suggested Model of Increasing Interface Mimesis vs. Spatial Presence](image)

Due to this sense of incongruence, it is proposed that moving along the spectrum of progressive embodiment through enhancing interface mimesis may not necessarily increase spatial presence along a linear spectrum, but instead, the proposed model may be akin to that of Mori’s (1970) uncanny valley. However, as with Mori’s model, the exact shape and extent of the ‘valley’ is unknown (Figure 1-2).

Regardless of the potential nature of the spectrum of progressive embodiment (and the effect of enhancing interface mimesis on spatial presence), the effect of this on distance is important. Grau (2003) notes:

“The more intensely a participant is involved, interactively and emotionally, in a virtual reality, the less the computer-generated world ap-
pears as a construction: Rather, it is construed as personal experience” (p. 200).

Therefore, this construction of a physically embodied game as personal experience highlights the question of player subjectivity. As such, their aesthetic attitude must be further explored.

1.3.4 Defining Aesthetic Attitude: “The Disposition of the [Player]”

As discussed previously, Brecht, in his ‘epic theatre’ (Section 1.3.1), relied upon devices to specifically distance the viewer from what they were watching on stage, rather than relying on the viewer as a virtuous being, who is able to think critically about what they were experiencing without mediation.

If, however, players are instead considered as “virtuous beings that make game play choices informed by their practical wisdom, guided by the presence (or absence) of a number of player-specific virtues” (Zagal, Schrier, & Sicart, 2009), virtuous players are inherently able to cognitively distance themselves from a game experience, in order to step back and critically reflect upon their actions.

Certainly, Bogost (2009a), in discussing Manhunt 2 claims, “the game’s coupling of gestures to violent acts makes them more, not less repugnant by implicating the player in their commitment”. He asserts, “In Manhunt 2, we are meant to feel the power of Daniel Lamb’s psychopathy alongside our own disgust at it. It is a game that helps us see how thin the line can be between madness and reason by making us perform abuse.” Of course, such an assertion relies upon the idea of a virtuous player. Whilst an increased sense of interface mimesis may strengthen the rhetoric of a game seeking to highlight the reprehensible nature of violent action, it simultaneously creates a problematic sense of close identification for those who are not able to cognitively distance themselves. However, the extent to which this is true for all players may also vary, and will be explored (Section 2.5.1).

Therefore, the research question (Section 1.2) may be modified: Does interface mimesis affect aesthetic distance when playing a physically embodied videogame? Furthermore, is this experience of aesthetic distance affected by a player’s aesthetic attitude?

Indeed, Grau (2003) reminds us that “in virtual environments, a fragile, core element of art comes under threat: the observer’s act of distancing that is a prerequisite for any critical reflection.” It is argued that a core constituent of this “disposition of the [player]” (Cupchik, 2002; Grau, 2000) is, for some players, the extent to which they are a virtuous player, capable of making appropriate judgements about an art object. The nature of these judgements must, however, be defined.

1.3.4.1 Defining Aesthetic Experience and Judgements
Miller (1998) characterizes aesthetic appreciation as “the enjoyment of a process of responding to an object that is not directed at learning but that is sufficiently like learning” and states that “this learninglike process might have elements of passive reception, surprise, exploration, imaginative construction, discovery, the achievement of coherence, or the perception of underlying normality.”

However, Leder, Belke, Oeberst, and Augustin (2004), in their development of “a model of aesthetic appreciation and aesthetic judgements”, note that there exist two ‘relatively independent’ output constructs in a viewer assessing and processing an art object. It should be noted that they refer to their top-level category as both “aesthetic appreciation” and “aesthetic experience”; that is, for Leder et al. (2004), aesthetic appreciation and experience are one. Similarly, for Marković (2012), the top-level category is also aesthetic experience, “a special state of mind that is qualitatively different from the everyday experience”. Thus, aesthetic experience is used here in place of aesthetic appreciation.

**Figure 1-3: A Model of Aesthetic Experience (Leder et al, 2004)**

In the model of aesthetic experience proposed by Leder et al. (2004) (Figure 1-3) The two constructs pertinent to a viewer assessing and processing an art object are firstly, aesthetic emotion, which “depends on the subjective success of the information processing and is often described as pleasure or happiness, but can also be negative in case of unsatisfactory processing” (p. 502): this refers broadly to whether or not the viewer ‘liked’ the art in question. Marković (2012) defines this instead as aesthetic preference, the “liking and the judgement of beauty”, an experience which is rooted in every day experience.

The second, aesthetic judgement is a cognitive process involving evaluation of the art object. Following this model, aesthetic emotion and aesthetic judgement can each be characterised as two
separate subcategories under the umbrella of aesthetic experience (and appreciation), according to Leder et al (2004). These subcategories follow the distinction by Leahey (1994) between pleasure-based (aesthetic preference) and cognitive-based (aesthetic judgement) modes of reception of art, noting that ‘naive persons’ refer to a direct emotional mode of reception, while ‘experts’ are engaged in a cognitive mode of reception. This cognitive engagement may, furthermore, concern either form or content.

For example, if an inexperienced viewer regards an artwork that she thinks is stylistically ugly (i.e. she does not have an aesthetic preference for it), she may make a negative aesthetic judgement of the painting as being bad overall, despite the depicted content. On the other hand, if an experienced viewer regards an artwork that she thinks is stylistically ugly, she may make a positive aesthetic judgement nevertheless due to reasoned cognitive engagement with the content, acknowledging that this is simply a bad example of that particular artist’s work, and still enjoy the experience of looking at the artwork.

In addition, for Marković (2012), aesthetic fascination with an object of appraisal is related to levels of arousal (that is, interest for the object) and concerns instances in which the “mental activity are particularly intense (high concentration), more extensive (wide range of attention and mental activities), and longer-lasting (maintenance of vigilance)”.

Furthermore, Lundy, Schenkel, Akrie, & Walker (2010) establish the importance of aesthetic interest, consisting of desire for aesthetics (“the overall motivation to seek out beautiful stimuli (including both art and nonart stimuli)”), as well as aesthetic sensitivity (“one’s tendency to know the relevant variables that go into determining the quality of artistic works”), aesthetic fluency (“the development over time of one’s sensitivity in terms of knowledge base and sophistication in one or more areas of art”), and aesthetic judgement (defined here as ‘good taste’, which obviously differs from the definition used herein). Thus, for the purposes of addressing the research question, aesthetic attitude and aesthetic interest will be conceptually synonymous, though the former term will be used where possible.

Thus, aesthetic experiences (also known as aesthetic appreciation) are complex conceptual phenomenon. However, clear definitions must be established, due to the importance of a player’s aesthetic attitude, for the research question (Section 1.2). Therefore, aesthetic judgement is used to refer the cognitive and reasoned engagement with an art object, aesthetic preference refers to the everyday ‘liking or disliking’ of the object; the top-level category for all of these modes of reception is aesthetic experience.

Of these modes of reception, aesthetic judgement is of primary interest. Indeed, for Groys (2011), aesthetic judgement is a political issue, defining the term as “a spectator’s means of control over the artist” (p. 106); therefore, this highlights the importance of a spectators, or indeed, a player’s
subjectivity, argued here to be a crucial component in defining their aesthetic distance from a game.

However, where the subject matter of a game, or artwork concerns content that is framed around moral considerations, this warrants further definition of not only aesthetic judgements, but also, of moral judgements.

### 1.3.4.2 Connecting Aesthetic Judgements and Moral Judgements

Aesthetic distance pushes players away from an experience, allowing contemplation of an object. For games, this is typically framed around moral considerations, as in the example of the media concerns concerning *Manhunt 2*.

Miller (1998) draws a comparison between aesthetic judgments and moral judgements, insofar as they both make rationally defensible claims to truths about the moral rightness of actions or the aesthetic value of works of art, which may go beyond merely affirming how things are for the judge, though they are not necessarily universal truths. Indeed, Schnall, Haidt, Clore, & Jordan (2008) note how the social intuitionist model of moral judgement builds on the work of the philosopher Hume (1711-1776), and suggests that “moral judgement is generally a result of quick gut feelings, much like aesthetic judgement” (p. 1097). However, aesthetic judgements stand separate in that they do not “aim at truth or practical attainments” (Miller, 1998), nor do they necessarily show interest in moral outcomes.

*Moral judgement*, then, is separate from, but closely related to aesthetic judgement, in that they both have an intellectual component, which is aimed at assessing an object, or an action. Indeed Ogden (2011) makes explicit the connection between aesthetic and moral judgements, and furthermore, states that they are affected by aesthetic distance. Through a review of aesthetic distance in the 18th century, and the way that distance is treated in science, poetry, and essays in that period, an investigation by Ogden showed that “… our perception of distance involves complex factors, some of them well suited to psychological and moral analogies. In some instances the relationship became more integral than in analogy, for perception through distance came to be considered as a stage in the process that leads to moral or aesthetic judgment” (p. 64).

Thus, Raney and Bryant (2002) define moral judgement as a cognitive process and also link it to the alternative terms *moral evaluation* or *moral deliberation*; this latter process is informed by empathy, and other personal traits. Furthermore, Miller states, “any intelligent person engaged in forming moral judgement must engage in moral deliberation.” Therefore, moral judgement, evaluation, and deliberation are all terms that are combined here under the inclusive umbrella of *moral judgement*.
An example of the ways in which moral and aesthetic judgements are separate, but connected, are evident in an artwork such as Spanish Romantic artist Francisco Goya’s piece, *Saturn Devouring His Son* (1819-1823), depicting a gruesome vision of the Roman titan Saturn, with a limbless and bloodied torso (Figure 1-4). The painting was never intended for public display by Goya, and was instead painted on a wall of his own home, as an expression of his personal struggles during this period. Thus, when regarding *Saturn Devouring His Son*, an inexperienced viewer may dislike the disturbing imagery, and therefore dislike the aesthetic experience of looking at the painting. Whereas, an experienced viewer, would engage cognitively with both the content and the stylistic qualities of the painting, taking into account the masterful nature of Goya’s skill in painting such a piece. Their overall aesthetic judgement of the painting however, may be strongly influenced not only by technical skill but also by their moral evaluation: an experience of discomfort at the subject matter depicted, i.e. cannibalism, and thus, perhaps empathy for Goya’s emotional state at the time of painting. This is an example of the ways in which moral and aesthetic judgements are connected; both kinds of judgement informed by aesthetic distance; that is, the formal properties of the work (that it is a painting, transferred to canvas, for which the brush strokes are visible, and depicting a horrific act) combined with the disposition of the viewer. If the subject matter of Goya’s painting had been recreated as short film, for example, it would elicit an altered (an arguably more pronounced) moral judgment from a viewer.

Figure 1-4: *Saturn Devouring His Son by Goya (1819-1823)*
Another example of this may be the critically acclaimed television show "Breaking Bad" (2008-2013) which depicts a story in which the protagonist is simultaneously the antagonist, and the story, along with admiration of the formal properties through which the story is told (the cinematography, the scriptwriting, and so on), presents a narrative which is often the topic of moral judgement. Indeed, Carroll (1998) suggests that, “We are naturally inclined” to speak of certain kinds of art in moral evaluative terms, and that furthermore, the moral judgements that people can make are variable, in that the judgement of one person may not match the judgement of another:

“It is my contention that there are many kinds of art, genres, if you will, that naturally elicit moral responses, that prompt us to talk about them in terms of moral considerations, and that even warrant moral evaluation.”

However, this common observation runs contrary, as Carroll details, to many ideas that exist in the philosophy of art. These ideas include autonomism (Carroll, 1998, p. 27): a notion that presupposes that art and morality exist in separate domains, and so a moral judgement cannot be made of an artwork. On the other end of the spectrum, the philosophies of utopianism and Platonism (p. 27) posit that all art has a moral value, though this may be universally morally good or morally bad respectively (Carroll, 1998). He dismisses the autonomist view that art and morality exist in separate dimensions; while some artworks, he concedes, do not lend themselves to moral discussion, others do, thus negating the ‘common denominator argument’ put forth by autonomists that since not all artworks possess a moral dimension, this means no art may ever. Carroll notes that while pure orchestral music or some abstract paintings do not elicit moral discourse, other works are explicitly created with a moral dimension in mind, for example, in terms of literature, "Lord of the Flies" (1954) and "To Kill a Mockingbird" (1960) are “obvious, virtually incontestable examples of morally significant art” according to Carroll.

Carroll terms this conception of the relation of narrative art to morality the Clarificationist view, which is positing that artworks can deepen our moral understanding by encouraging us to apply our moral knowledge and emotions to specific cases. For example, Carroll highlights the way in which a given narrative may require for the audience – in this case, a player – to “reorganise the hierarchical orderings of our moral categories and premises, or to reinterpret [them] in the light of new paradigm instances and hard cases.” That is, narrative art, according to Carroll, affords the observer, or player, to clarify and interrogate his or her own moral understanding of the world.

Insofar as both aesthetic judgement and moral judgement concern cognitive evaluations made by a person interacting with an art object, these terms are often used here in related contexts; in answering the research question, aesthetic judgments and moral judgements are conceived of as correlants, referring to the player-centred emergent phenomena arising from aesthetic distance:
“When the observer’s reflection becomes introspective, and he considers the process of observation itself, then the effects of distance may lead to moral or aesthetic reflection…” (Ogden, 2011, p. 64)

Therefore, in exploring the experience of a player’s aesthetic distance from a game, it is proposed that aesthetic and moral judgements are indicative of this distance. Indeed, for Bishop (2004), moral judgement (as well as political and ethical judgements) has taken the place of aesthetic judgement in contemporary art discourse.

“…today, political, moral, and ethical judgments have come to fill the vacuum of aesthetic judgment in a way that was unthinkable forty years ago. This is partly because postmodernism has attacked the very notion of aesthetic judgment, and partly because contemporary art solicits the viewer’s literal interaction in ever more elaborate ways” (Bishop, 2004, p. 77).

The ways in which artworks affect the way an observer thinks about the world, and how the moral and aesthetic judgements they make about morally significant content within such art changes along with altering aesthetic distance informs the refinement and definition of the research question. For the purposes of this, moral and aesthetic judgements are considered together, and are of interest in exploring the player’s relationship with a videogame, through increasingly mimetic interfaces; although it is refined later through critical review (Chapter 2) concerning non-videogames artworks.

Therefore, the research question (Section 1.2) becomes: Does interface mimesis affect aesthetic distance when playing a physically embodied videogame, as assessed through a player’s moral and aesthetic judgements? Furthermore, is this experience of aesthetic distance affected by a player’s aesthetic attitude?

However, this still requires consideration of the types of judgement made and so will be refined later through critical review (Chapter 2) concerning non-videogames artworks. Moreover, in order for a player to make moral judgements about a videogame, it must therefore necessarily be a game, which features content that is, in some way, morally significant. This concept must therefore be further defined.

1.4 EXPLORING 3D Avatar-Driven Single-Player Games with a Morally Significant Human Narrative

In addition to scoping the discussion around videogames as defined earlier (Section 1.3.2), it is proposed that due to the operationalization of aesthetic distance through a player’s “emotional and related cognitive processes” through moral and aesthetic judgements (Section 1.3.4.2), the scope of
this research should focus on morally significant videogames, which would elicit such moral responses.

Film theorist Noel Carroll (1998) defines art which lends itself to moral assessment and ethical discourse as being all “human narratives”, or anthropomorphised narratives. He suggests, “Artworks that are narratives of human affairs are generally the kind of thing it makes sense both to talk about in ethical terms and to assess morally.” Therefore, a morally significant videogame should, as a first step, address such a human narrative.

Furthermore, these morally significant videogames should, according to the definitions by Carroll, be discernible as “the kinds of artworks where ethical discourse and moral assessment are intelligible.” Carroll contends that:

“With much art, we are naturally inclined to speak of it in moral terms. Especially when considering things like novels, short stories, epic poems, plays and movies, we seem to fall effortlessly into talking about them in terms of ethical significance – in terms of whether or which characters are virtuous or vicious, and about whether the work itself is moral or immoral, and perhaps whether it is sexist or racist” (1998, p. 128).

According to Carol, these moral judgements can be variable, meaning that an observer does not make the same moral assessment of all artwork they encounter; their aesthetic attitude is important (Section 1.3.4.2). Furthermore, Carroll notes that often, our own moral understandings are called into question by rare examples or edge cases of a particular moral situation, and thus, this requires “moral judgement”, something that is “ideally exercised and refined through our encounters with narrative artworks”, which requires the player to question their own moral rules.

He suggests that “artworks that are narratives of human affairs are generally the kind of thing it makes sense both to talk about in ethical terms and to discuss morally” (1998, p. 138). This is because, he contends, “narratives make all sorts of presuppositions, and is the task of the reader, viewer, or listener, to fill these in. It is of the nature of narratives to be essentially incomplete.” Thus, Carroll suggests that in order for these gaps of knowledge to be filled in by the audience, they must share a common set of beliefs with the creator; namely, a “shared cognitive and emotive stock”, which includes shared moral knowledge. Using examples of a movie such as Schindler’s List (1993), Carroll constructs the argument for audiences sharing a set of beliefs about right and wrong, for example, admiration for the character of Schindler. This is, thus, an appeal to normative virtue ethics as described previously, a concern with what is considered the appropriate response for a culturally agreed ‘virtuous’ person, or what is generally culturally-accepted to be an appropriate moral judgement. For example, Carroll states that “it is difficult to imagine participants in Western culture who could mistake Iago for noble or Darth Vader for generous” (p. 152).
Therefore, while this may appear to leave a definition of morally significant that is problematically subjective, it is proposed that a very specific definition be applied here, in the interests of thematic reductionism. Therefore, applied to games that fall within the purview of the research question, it is proposed that the definition of ‘morally significant’ narrative be specifically applied to single-player videogames featuring a human narrative, where the player assumes the role of a playable anthropomorphic avatar, and has agency over decisions which have consequences for depicted human non-player characters (NPCs).

Furthermore, as there are undoubtedly cases where it is unclear whether a game is considered to be ‘morally significant’, it is proposed that a virtue ethics framework be applied (Khandaker, 2011) (Appendix A) to this work, meaning that what is morally significant is what a ‘virtuous person’ or rather, a *virtuous player*, would find to be morally significant. That is, situations that are, in real life, widely considered to be morally significant.

Therefore, where “videogames” are referred to within, this is to denote only this specific subset of videogames as defined above.

Thus, the research question must focus on first-and-third person videogames, featuring a three dimensional, spatially navigable environment, in which the role of a particular avatar or character is assumed. These are games that seek to elicit *physical embodiment* (or *Sense of Embodiment*) (Section 1.3.3.2.1) in the player, comprising of body ownership (Section 1.3.3.3), agency (Section 1.3.3.4), and self-location (Section 1.3.3.1), termed here as *physically embodied* videogames. Furthermore, this must feature a *morally significant* single-player narrative, in terms of both content (the story being presented to the player), and form (the actions the player is asked to perform). Furthermore, both the content and form is deemed morally significant, in terms of the players dealings with, and consequences for, NPCs. It should be noted that multiplayer games, featuring other, real players, are outside the scope of this research programme. This focus, therefore, is on not only embodied videogames but also, more specifically, on embodied morally significant videogames. Thus, the research question can now be further defined.

### 1.5 Expanded Research Question

This definition of terms relevant to interfaces established the interface as a key formal component of a videogame; thus, through establishing the controller as a “salient stylistic [quality]” (Cupchik, 2002) of a videogame (Section 1.3.3), the aesthetic distance between a game and the player is to be explored, along with their “disposition” (Cupchik, 2002; Grau, 2000).

However, as aesthetic distance defines a player’s cognitive and emotional responses to a game, the research question is applied specifically to morally significant videogames, such that any altered cognitive and emotional responses can be examined through the player’s moral and aesthetic judgements.
Therefore, the refined research question is:

**Does interface mimesis affect aesthetic distance when playing a physically embodied, morally significant videogame, as assessed through a player’s moral and aesthetic judgements? Furthermore, is this experience of aesthetic distance affected by a player’s aesthetic attitude?**

This research is driven by the timeliness of asking questions that relate to the socio-technological trend of progressive embodiment and the effect that the corresponding increase in mimesis has on the player. This is contextualised in Penny’s (2004) call for a range of studies to consider the implications of interactive technologies, terming this the “aesthetics of interactivity”. This comprises of two “mirroring aspects”: the “machine-centric” and the “user-centric”, which concerns the behaviour and experience of players. It is within this latter tradition that this research falls; Penny states that the nature of interaction within videogames “renders conventional critiques of representation inadequate, and calls for the theoretical and aesthetic study of embodied interaction.” Moreover, Joseph et al. (2012) describes the aesthetics of interactivity as “a philosophy of perception and validation of interactivity as a form of art”. In other words, the aesthetics of interactivity concerns itself with what is *valuable* about interactivity.

Having established the research question, the means by which this inquiry should be best performed should next be defined, taking into account the nascence of empirical studies into aesthetic issues in videogames.

### 1.6 Methodology: Constructivist Realism

As asserted by Rorty (1999), “the purpose of inquiry is to achieve agreement amongst human beings about what to do, to bring about consensus on the ends to be achieved and the means used to achieve those ends”. Indeed, Frank Biocca, begins *The Cyborg’s Dilemma: Embodiment in Virtual Environments* (1997) with an anecdote about Marshall McLuhan:

> “As a young student sitting in the back of the room of a lecture hall, I remember Marshall McLuhan arguing that the most important part of science is not theory, methods, or instrumentation, but asking the right question” (Biocca, 1997).

This research is performed within this framework of a pragmatic worldview, due to a focus on the outcomes of the research; the actions, situations, and consequences of inquiry. Therefore, instead of a methodology-oriented approach, the important aspect of research is the problem being studied and the questions asked about this problem. This approach is appropriate because “the concept is ‘immature’ due to a conspicuous lack of theory and previous research” (Morse, 1991).

In addition to asking the right questions of course, it also raises the issue of the methods through which to *answer* the right question. In practice, the pragmatic approach to inquiry adopted here
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involves using multiple methods of data collection to best answer the research question, and emphasises the importance of conducting research that best addresses the research problem. Such a mixed-methods approach is one in which claims to knowledge are based on “pragmatic grounds”, and employs “strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problems” (Cresswell, 2003).

Therefore, while qualitative analysis may help to provide insight into this under-explored area of research, the research question (Section 1.5) explicitly concerns a causal link. Thus, empirical research is most appropriate here.

Empirical research has been conducted into art perception (Augustin & Wagemans, 2012; Hagtvedt, Hagtvedt, & Patrick, 2008), media psychology (Busselle & Bilandzic, 2009; Hoeckner, Wyatt, Decety, & Nusbaum, 2011), and, indeed the experience of playing videogames (Hartmann et al., 2010; McGloin et al., 2013), and thus, this research continues in such a tradition.

At first, the notion of using empirical means to investigate phenomenon concerning the aesthetic in nature may seem counterintuitive, as opposed to using speculative, theoretical means; after all, it involves unobservable, often-nuanced experiential phenomenon occurring within consciousness. However, the empirical study of art (now known as empirical aesthetics or experimental aesthetics) is in fact closely related to one of the oldest branches of psychology as an institutional science, starting with Gustav Theodor Fechner and his Vorschule der Ästhetik (1876). Of course, as Augustin & Wagemans (2012) point out, “calling empirical aesthetics a traditional field in psychology does not describe the situation adequately, either.” While they concede it is a “relatively ‘exotic’ field within psychology”, they point out the work of influential twentieth century scholars of empirical and experimental aesthetics, such as the Gestaltist psychologists and Rudolf Arnheim (1974), and also Daniel E Berlyne, with his New Experimental Aesthetics (Berlyne 1974), who continued the work set up by Fechner (1876) (Whitfield & de Destefani, 2011). Contemporary work in empirical aesthetics also have a close relationship with some work being done in the domain of media psychology; a focus on trait empathy and moral judgment in media depictions of violence is found in Raney & Bryant (2002), looking at the relationship between psychological factors related to moral judgment and enjoyment of crime drama.

Indeed, Cupchik (1986) provides a critical review of key works and history in the realm of studies of aesthetics. He summarises the central conflicts extant in the literature, highlighting a divide between empirical aesthetics and speculative aesthetics. Of course, as he argues, both approaches are a step removed from the natural world; Cupchik provides a reminder that “the viewing public engage in their respective activities as part of the fabric of social and cultural life. They do not need scholars in order to participate in the artistic world.” Thus, Cupchik conceptualises both the empiricist and the speculative aesthetician as trying to “reach into that world” and categorise it. He notes
that this ‘reaching in’ is “part of the academic process that involves taking an overall perspective, searching for resemblances among individual events and ‘grouping’ them within abstract concepts”.

Here, Cupchik challenges the nature of knowledge, reminding that scientific theories are constructs, which change over time to more closely, resemble ‘reality’. Thus, it “is therefore essential for experimental aestheticians to reflect on how they analyse the lived-world and create theories”, he asserts. Cupchik also notes that precision is gained, at the loss of subtlety, so researchers are thus challenged to acknowledge the ways in which they are ‘reducing’ or ‘transforming’ the phenomenon of the lived, ‘natural’ world. This may be through *thematic reductionism* (intrinsically aesthetic experiences being explained in terms of more general psychological processes), *theoretical reductionism* (which implies accounting for processes at one level of explanation in terms of processes at a more fundamental level), and *methodological reductionism* (the treatment of qualitative processes in a quantitative manner). Cupchik terms this ontology constructivist realism, encompassing both positivist and constructivist approaches to the social sciences.

Such a pragmatic approach is thus undertaken here due to the nascence of the topic; therefore this contributes to the tradition of experimental and psychological aesthetics work done by Cupchik in the realm of literature, exploring topics such as the reader’s emotional responses to reading short stories by author James Joyce (Cupchik et al., 1998), to reader’s responses to literary depictions of rape (Koopman et al., 2011). In both of these cases, the concept of ‘aesthetic distance’ is explored as it is this that mediates the readers’ experiences with the respective texts.

Reconsidering the “questions being asked” within the thesis, in accordance with the remit of pragmatism as described above, it should also be noted that these questions also intersect with research in media psychology, of which player research in game studies is a subset. This is in line with the assertions made by Penny regarding the “aesthetics of interactivity” as being concerned with player behaviours and experience. Studies such as Hartmann, Toz, & Brandon (2010) into unjustified virtual violence and empathy in players, Dow, Mehta, Harmon, MacIntyre, & Mateas (2007) on engagement and presence in an increasingly ‘embodied’ game environment, and also, research by Nacke & Drachen (2011) on a framework for player experience in games, for example, also form part of the tradition in which this research takes place.

Thus, this research therefore exists partly at the intersection of two traditions; firstly, that of empirical game science and secondly that of empirical aesthetics, all encompassed by a pragmatist approach. Through means of critical review (Chapter 2) the concepts will be further explored (akin to speculative aesthetics) prior to carrying out empirical studies (Chapter 3 and 4), so that it may be established the ways in which the data about the phenomenon of the natural world is being ‘reduced’ and ‘transformed’. However, as it crosses discipline boundaries and methodological approaches addressing the research has implications for knowledge in many different areas.
1.7 Contributions to Knowledge

Though synthesising concepts from philosophy of art, media psychology, game studies, interaction design, and more, exploring the research question ultimately intends to contribute to game design theory, written from the perspective of a practicing game designer-and-engineer. Through an empirical approach, it seeks to illuminate, pragmatically, what happens as players are progressively embodied in the play of ‘morally significant’ games. Ultimately, this is a work on how games, as artistic media, create meaning in the minds of players through both form, and through the player’s own contribution to the experience. By exploring the boundaries of aesthetic distance, and how it applies to games, this tells us more about what games are to players and how they function, allowing developers to take advantage of this knowledge in order to more meaningfully design games.

Established here is the importance of aesthetic distance to videogames, and an exploration of how this distance is a necessary component for critical and moral engagement with a game experience, thus exploring the idea criticised by the term the ‘immersive fallacy’: that all-encompassing full technical immersion is not necessarily the desired goal for videogames. It achieves this through thorough critical review of the literature, and through a series of empirical studies. A focused work on aesthetic distance, from a rigid empirical approach, has not been applied to videogames in the context of their increasingly physical control mechanisms.

Thus, in addressing the research question (Section 1.5) the contributions to knowledge (Section 5.2) are summarized as follows:

1.7.1 Contributions to Theory and Empirical Findings

This work contributes, empirically, and through theory, to the understanding of aesthetic distance (Section 1.3.1), as it applies to videogames, through the lens of altering interface mimesis (Section 1.3.3.5). Although the concept of aesthetic distance in videogames has been the object of theoretical inquiry, this has not previously been explored empirically or indeed through the lens of increasing interface mimesis. Thus, this research firstly contributes to the knowledge of aesthetic distance as it was empirically shown to be applicable to videogames, therefore establishing these alongside other artistic media, as aesthetic objects.

A theoretical model for aesthetic distance in games (Section 2.7) was synthesised from the literature using Brechtian (1978) and Bulloughian (1912) concepts of distance (Section 1.3.1), presenting aesthetic distance as an emergent phenomenon, mediated through the interaction between the formal properties of a game (in this case, the interface mimesis) and a player’s attitudes.

Through empirical means, aesthetic distance was shown to be mediated by interface mimesis; this was measured through the fact that players reported altered subjective feelings of aesthetic measures such as time taken to perform a morally significant action (Section 4.9.3.2). Furthermore, the quantitative data regarding altered aesthetic distance was supported, and triangulated by qualitative data.
(Section 4.9.6), thus tentatively suggesting how this may be experienced by players and offer future areas to consider for the concept of aesthetic distance in videogames.

However, the work further contributes to an understanding of aesthetic distance in games, showing that this is not a straightforward picture, but shows that the player’s states, of being distanced versus empathetic, are linked via a mechanism of double awareness (Section 2.4.2) and as such, players are simultaneously looking through and looking at a medium. Thus, specifically with respect to videogames, this is simulation fever (Bogost, 2006), contributing to the two extreme states of aesthetic distance as being linked by the meaning-making tension that exists between identifying closely with a simulation and being critical and distanced from it. To further support this theory, it was found through qualitative exploration that players indeed experience double awareness while playing a morally significant game (Section 4.12); experiencing a conflict, or oscillation, between ignoring the interface (or game), and being aware of it, and expressing feelings of duality about their experience. Therefore, this contributes to the establishment of double awareness and simulation fever by empirically supporting these concepts.

Thus, this research programme contributes to our theoretical understanding by proposing that, even though a player of a morally significant game experiences reduced aesthetic distance when using a mimetic interface that maximises Sense of Embodiment, their heightened emotional involvement still occurs within the context of Waltonian make-believe, a theory of our participation in representational art as being fictional (Section 2.4.4.1). Thus, even when reporting increased empathy with the characters in the game (Section 4.11.4), or displaying a higher tendency to act ‘virtuously’ when presented with a morally significant game scenario (Section 4.11.3), there is still a double awareness that they are interacting with a videogame. This is consistent with the literature suggesting that videogames happen within a ‘magic circle’ (Section 4.2.2), and contributes to the theoretical understanding by establishing the magic circle as a games-specific instance of Walton’s theory of mimesis, as make-believe in representational art.

Therefore, the findings within this research programme provide empirical support to existing theories about our engagement with videogames as being informed by the double-consciousness (Salen & Zimmerman, 2003) of play. However, it also extends such theories (Section 4.12.1) suggesting that aesthetic distance is still a concept that exists within the magic circle. Therefore, the nature of the player’s experience of aesthetic distance within the magic circle is variable, leading to various levels of identification, yet crucially, within the Waltonian framework, it can be understood that these varying levels of emotional engagement remain fictional.

Through qualitative study, it is suggested that the player’s disposition is defined in large part by a player’s ludic-aesthetic attitude. This is a newly defined term, referring to the extent to which a player believes that they are interacting with “just a game”. This, together with the formal, stylistic qualities of the game, give rise to the aesthetic distance experienced between the player and the
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This research also contributed to the theoretical and empirical work by suggesting that the ‘disposition of the player’ is also determined by Trait Empathy (Section 4.11) along with increasing Sense of Embodiment. This contributed to how guilty a player felt performing a morally significant action (Section 4.9.3.2a)(1), (Section 4.9.3.21)a)(1)(b), though Trait Empathy did not contribute to any other quantitative aesthetic measures, thus further research is required (Section 5.4).

Furthermore, playing a morally significant game, players appeared to contextualise their actions in terms of “it’s just a game”; this did not change when this morally significant game concerned either violent or non-violent scenarios. However, through the interview data, it is proposed that the effect of the ludic-aesthetic attitude in players was further pronounced in terms of violent games (more players tended to identify themselves as playing “just a game” with a violent game), but further empirical data is required for this. However, there is some suggestion for this in the literature (Section 3.1, 4.2.3), with findings that players engaging in games that are more violent may think more about the consequences of their actions, thus indicating the prosocial potential of violence (Grizzard et al., 2014; Hartmann & Vorderer, 2009), particularly where players are more empathetic (‘the disposition of the player’) (Hartmann et al., 2010). Therefore, the qualitative studies’ results contribute to the contextualisation of the ludic-aesthetic attitude when framed in a violent (Chapter 3) and non-violent (Chapter 4) context.

Aesthetic distance was decreased not simply through increasing interface mimesis, as expected from the literature review (Section 2.3.1), but only where this increased interface mimesis was successfully and congruously naturally mapped, eliciting a player’s Sense of Embodiment (Kilteni et al., 2012). Therefore, interface mimesis (when successfully naturally mapped, eliciting a player’s Sense of Embodiment through spatial presence, agency, and body ownership) affects aesthetic distance from a videogame (Section 4.11.2).

Thus, simply increasing interface mimesis through perceptual immersion does not result in the expected experiential effects associated with the socio-technological trend of progressive embodiment (i.e. increased spatial location) because some increases in mimesis may feel incongruous for a player (Section 4.11.2, 4.9.3.1). Therefore, additionally, it is proposed that the visual model of increasing interface mimesis against spatial presence may represent this concept (Figure 1-2). The model may be understood as being akin to that of Mori’s (1970) uncanny valley, but would require future work to explore further.

This work contributes to Biocca’s (1997) understanding of the paradigm of progressive embodiment, suggesting it does not refer simply to enhancing interface mimesis through perceptual immersion, but instead should be focused on increasing Sense of Embodiment, which is a concept denoting self-location, agency, and body ownership, as defined by Kilteni, Groten, & Slater (2012). Furthermore, the research contributes to an understanding of this concept of Sense of Embodiment as also being underpinned by perceived controller naturalness. This may undermine the naturalness of a
mimetic interface in favour of alternatives that are inherently simpler to use, or are simpler to use due to prior exposure, or due to matching a player’s existing mental model (Section 1.3.3.6, 4.11.2). Indeed, this research programme thus supports how interface mimesis is not simply about increasing bodily verisimilitude, but instead, is effective when a player’s mental models of how to interact with a system are matched, as suggested by McGloin (2011).

Exploring the boundaries of aesthetic distance can tell us more about what games are to players and how they function, which has implications for game design practice. The established idea of the immersive fallacy (Salen & Zimmerman, 2003) criticized the notion that the pleasure of a game lies in maximizing spatial presence and diegetic immersion, offering a reality which is “so complete that ideally the frame falls away so that the player truly believes that he or she is part of an imaginary world” (p. 451). Indeed, the results of this research programme lend support to Salen & Zimmerman’s position that this is not the case. It was found that the frame does not fall away completely but, instead, the increasing Sense Of Embodiment imbues the player with an uncomfortable sense of double awareness (simulation fever) when performing a morally significant action. However, it is suggested, the extent to which this is the case is a matter of a player’s aesthetic attitude. Further work is required to examine the contribution of player’s aesthetic attitude (Figure 5.4).

Thus, this work contributes to a re-examination of the claim by Hartmann et al. (2010) that the player perceives morally significant videogames as akin to real life, and does not adopt an attitude of “it’s just a game”; it is instead proposed that both of these are true at once. This is the inherent ambiguity of play. Thus, the work also contributes to the refutation of the idea, as exemplified by Norgard (2011, p. 10), that the player-avatar relationship is one of simple direct identification, rather than make-believe. While it is true that the relationship may not be one of direct role-play either (as exemplified by the non-binary nature of a player’s identification, as found here through the player studies), it is nevertheless one of fictional participation, in the tradition of not only representational art, but also the history of play.

1.7.1.1 TOWARDS A PHILOSOPHY OF EMBODIED CRITICAL PLAY

Therefore, this research contributes to a nuanced conception of a player’s relationship with a morally significant game through aesthetic distance, framing the experience as occurring through the lens of Waltonian fictionality. This is a fictionality that does not trivialise the experience, but instead allows the space for a player to experience the double awareness of simulation fever, which is the meaning-making process by which they learn and grow. Therefore, embodied critical play is suggested as a design goal supports previous conceptions of the aesthetics of interactivity (Bogost, 2009a; Penny, 2004) (5.2.2). Although the research was initiated in the context of possible antisocial attitudes and the ethical issues arising thereof, the implications of this research are equally applicable to pro-social games such as Project Syria (2014), an Oculus Rift HMD game about experiencing life in Aleppo, and navigating the streets as a mortar shell explodes. Thus, the research also has contributions to the field of games design and development.
1.7.2 Contributions to Game Development Practice

The significant contribution to the practice of game design and development is an understanding of how players think about their experience in the light of increasing interface mimesis, showing aesthetic distance to be reduced for players, but still remaining through the lens of double awareness, or Waltonian make-believe; that is, the magic circle of games. With the revival of interest in virtual reality technology for games in the mid-2010s, this is extremely salient. It is proposed that these ideas may, therefore, be considered by game designers when developing games that aspire towards morally significant gameplay, in order to create an experience which may be more compelling, more convincing, and serve to further confront the player with their own embodied actions. It is in this way that designers may use the double awareness, the simulation fever between a player and the game through which meaning is created. This was proposed as a theory of embodied critical play, which is a design goal proposed from the findings from this research programme. In order for embodied critical play to be supported, a morally significant or socio-political videogame must elicit a strong sense of embodiment. Therefore, it must support feelings of body ownership, agency, self-location and, it is proposed, perceived controller naturalness. This interface mimesis does not need to be defined by matching an avatar’s movements with a player’s gestural actions, as there are cases, such as Call of Duty 4: Modern Warfare, in which the interface is mimetic because it so closely resembles real life, even when played using a ‘classic’ controller. Indeed, in designing for embodied critical play, where it is appropriate due to the design goals of a game, the mimetic interface may instead be a 360-degree treadmill and head-mounted display. It is the goal of the game creator, it is proposed, to design for such embodied critical play depending on the interactions in the game for which mimesis would be effective to create a morally significant experience, or express socio-political ideas. In such scenarios, aspiring towards embodied critical play may be effective in communicating a game’s message. Such a conception is not permissive of the ideas of the immersive fallacy (Salen & Zimmerman, 2003) as it is not suggested that spatial presence is what is most valuable about games, but instead, suggests that there is room within this concept for an increased sense of embodiment and effective procedural rhetoric to coexist, particularly when dealing with subject matter that is morally significant, or socio-political.

Furthermore, there are implications for designing mimetic interfaces in terms of usability; developers must be careful not to invoke a sense of incongruence. Simply increasing the modalities of interface mimesis in isolation from one another is not enough, as the experience may be one in which “what you feel and what you see do not add up”, such as in the case of the “Fixed Display and Head Tracking” condition in Study 2 (Chapter 4).

1.7.3 Contributions to Research Processes

From the contributions to knowledge as detailed (Chapter 5.2.1), it can be established that the mixed-methods, pragmatist, constructivist realist methodology (Section 1.6) is a viable one. Indeed, the quantitative data regarding altered aesthetic distance was supported, and in some instances ex-
explained, by the qualitative data, thus strengthening the concept of aesthetic distance in videogames, as well as indicating the benefits of a mixed-methods approach (Section 1.6).

This research programme also contributes to understanding of research processes by establishing the viability of using moral and aesthetic judgements in order to indicate aesthetic distance, as these measures correlated with one another.

Furthermore, due to the lack of established theory within the intersection between player experience studies, empirical aesthetics, media psychology, and play theory, this mixed-methods approach established the exploratory measures used to operationalize aesthetic distance. For example, guilt was measured both through questionnaire data and through timing how long the player took to make a morally significant decision. It was found that these measures correlated, thus establishing the viability of measuring guilt by measuring the time taken to perform a morally significant action, and, through the lens of increasing interface mimesis (supported by Sense of Embodiment), as well as establishing guilt as an indicator of aesthetic distance.

1.8 OUTLINE OF THE THESIS

It has been posited in Chapter 1 that the concept of aesthetic distance mediates a participant’s experience of an artwork, determined by both their aesthetic attitude, and through formal properties of the work, which separate it from reality. It was argued that this is also the mechanism through which a player’s engagement with a videogame works. Aesthetic distance is an emergent phenomenon arising from the aesthetic attitude of the player, and the formal properties of the game, of which the interface is an important factor. Thus, it was posited that enhancing interface mimesis may have implications for a player’s sense of aesthetic distance, and a research question was developed, and then refined, in order to explore this idea.

Chapter 2 follows this with a critical review of the literature with respect to the workings of aesthetic distance in noninteractive vs. interactive artistic media. It first explores the usage and evolution of the term throughout the Western history of the arts and the aspiration towards mimesis, and then determines the ways in which the concept is relevant in contemporary usage, particularly in the context of interactive, computational works (including both videogames and interactive art). It therefore establishes aesthetic distance as a concept relevant to the ways in which participants make aesthetic and moral judgments of art works, including videogames, and therefore a concept that is particularly salient in the context of playing morally significant videogames. Finally, the section explores, through critical review, the ways in which players identify with their avatar, other characters, and the game as a whole, as the epiphenomenal effect of potentially narrowing aesthetic distance. This is established through the context of work in the virtual reality literature regarding participants’ feelings of having a virtual body. Furthermore, a working model of aesthetic distance, as applicable to videogames is constructed.
Chapter 3 details an exploratory study (Study 1) investigating the effect of enhancing interface mimesis on players' aesthetic and moral judgements while playing a morally significant game. It was found that previous experience of controller naturalness was a better predictor of perceived controller naturalness and spatial presence than interface mimesis alone, consistent with findings in the literature regarding the successful fulfilment of mental models (McGloin, 2011). It also identifies, through factor analysis, ten factors accounting for variability in the results, the two most prevalent of which were an attitude of “It's just a game”, and feeling empathy with the victims/environment respectively, supporting the model as described in Chapter 2. Furthermore, the qualitative data yielded some suggestion of an attitude of ‘double awareness’ in the player, also consistent with this model; this issue, raised within this section, is then resolved in Chapter 4.

Chapter 4 begins with a further consideration of the contexts and attitudes with which players approach games, following the “It's just a game” attitude as found in Chapter 3. Therefore, this Section considers Waltonian make-believe (of which, it is proposed, the magic circle is a games-specific instance) as a potentially relevant concept to this study. Furthermore, a larger study (Study 2) is detailed, again investigating the effect of enhancing interface mimesis (particularly the addition of head tracking technologies) on a player's aesthetic and moral judgements while playing a morally significant game built specifically for this study. It was found that increasing interface mimesis did not result in the expected experiential effects (e.g. perceived controller naturalness, spatial presence, etc), potentially due to feelings of incongruent interaction. It was therefore found instead that increasing Sense of Embodiment (SoE) is more useful than considering increasing interface mimesis alone, when examining the effect on players' feelings of distance from the game experience.

The findings were consistent with aesthetic distance decreasing as interface mimesis was enhanced (where supported by Sense of Embodiment); this was the case for many of the operationalized variables. These included: the time taken to perform a moral action, experiencing greater imaginative and sensory immersion, experiencing greater flow, experiencing more engagement and less detachment from the game, experiencing greater empathy with the player character’s motivations, experiencing greater stylistic beauty, finding the scene to be more plausible, experiencing greater tension, focusing on feelings rather than thoughts, and finding that it made no difference knowing the game was fiction. However, this was not consistent with all of the operationalized variables – particularly with experiencing greater guilt (except where Trait Empathy was also measured). It was suggested that varying player attitudes towards playing games might account for this. The qualitative data suggested that even in the context of apparently feeling less distanced from an experience, players still maintained an attitude of ‘double awareness’, as well as an attitude of “It's just a game”, further consistent with participating in a Waltonian make-believe, or interacting within the confines of the Magic Circle of play.
Chapter 5 presents the conclusions of the research programme, and discusses the main contributions to knowledge. It frames aesthetic distance when playing a morally significant videogame as being a concept mediated by both a player’s sense of embodiment (affected by altering interface mimesis) and the Trait Empathy of a player, as well as their attitude towards games. However, this altered aesthetic distance, and subsequent feelings of closeness or distance, depending on the interface, still happens within the confines of Waltonian make-believe; which, specific to games, is what is often framed in the literature as the magic circle of play. Therefore, these findings provide empirical support to existing theories about our engagement with videogames as being informed by the double-consciousness (Salen & Zimmerman, 2003) of play. However, it also extends such theories, suggesting that aesthetic distance is still a concept that exists within the magic circle. Proposed future work is discussed, together with reflections on how these findings can help in designing games for better critical reflection, through the rhetoric of physically embodied interaction, termed as embodied critical play.

1.9 SUMMARY

This chapter introduced the motivations and context for the research: the timeliness of investigating the epiphenomenal effects of ever-improving controller and interface technologies concerning how ‘distanced’ players feel from the experience. In addition to introducing the relevant concepts and scope for this work, it was established the way in which a Bulloughian concept of aesthetic distance is applicable to videogames, with controllers acting as ‘salient stylistic qualities’ of the work. It was posited that through empirical study, this should be investigated, as well as an exploration of factors that may define “the disposition of the [player]” (Cupchik, 2002; Grau, 2000). Therefore, exploration of these issues raised the question:

Does interface mimesis affect aesthetic distance when playing a physically embodied, morally significant videogame, as assessed through a player’s moral and aesthetic judgements? Furthermore, is this experience of aesthetic distance affected by a player’s aesthetic attitude?

Such an investigation is also motivated by the socio-political anxieties associated with the ever-increasing technological fidelity of mimetic interfaces, which was exemplified by the media panic regarding Manhunt 2, but also, considering the concept of the immersive fallacy, it was posited that this idea should be further explored in order to better understand it.
2 DISTANCING THROUGH PARTICIPATION AND EMBODIMENT

“It seemed to me that what people are really doing in computer and video games is trying to get closer and closer to fusing themselves with the game... So I went that little bit further – if I want to be the game, the game will also want to be me.”

– David Cronenberg, on eXistenZ (1999)

2.1 INTRODUCTION

Having established a basis for exploring the research question, it is pertinent to further explore why distance matters; that is, how it defines the experience of a participant interacting with an art object. This will establish the ways in which aesthetic distance works to separate the art object from the everyday life of someone interacting with it. This seeks to therefore understand and support the epiphenomenal effects of aesthetic distance to be investigated through empirical study.

Through exploring the workings of distancing in the arts, it is established how aesthetic distance has historically been positioned to affect meaning. Thus, the socio-technological paradigm of progressive embodiment may also be considered both within, and as a part of the broader Western history of technologies and arts aiming at increasing mimesis, or realism. That is, akin to Bolter and Grusin’s paradigm of remediation (2000).

Furthermore, it is established how a crucial part of such a discussion regarding aesthetic distance centres on the ability of art to affect the observer, and this is a claim that will be investigated in closer detail discussing the relationship between art and morality, and thus establish how moral (and aesthetic) judgements are affected by aesthetic distance.

This helps establish, for the research question, the factors through which aesthetic distance must be measured. This is established through reviewing the history and subsequent development of the modern conception of aesthetic distance, which has its roots in the work of Bullough (1912), which referred to the arts. A review of alternate conceptions of distance is also established, such as Brecht’s Verfremdungseffekt, referring to theatre. As a corollary to this, theories from media ecology, such as discussion of interactive realism, will also explore how technological means have always shaped perception of art works (Section 2.3).

It is proposed that establishing this relationship through this review is important, to support the operationalization of aesthetic distance in videogames through evaluation of the player’s moral and aesthetic judgements of a work (Section 3.2.1); that is, the ways in which they respond to it through “emotional and related cognitive processes” (Cupchik et al., 1998).
As posited by Sheppard, “enriching our aesthetic experience goes together with developing our powers of imagination and understanding… If we develop our ability to respond to art, we shall develop our potential as human beings” (1987).

2.2 A CRITICAL HISTORY OF DISTANCING

2.2.1 From Disinterestedness to Distance in the 20th Century

Cupchik (2002) and Ogden (2011) both provide comprehensive critical reviews of the origins of Bullough’s (1912) concept of psychical distance, characterising its evolution as the result of contributions from two schools of thought in the 18th century. These are the British Empiricists (as well as Enlightenment traditions) who favoured a realist position; they emphasised the need for a proper ‘aesthetic attitude’ (Section 1.3.4) when regarding art and literature, and it is from here that the concept of disinterestedness arose through the work of Lord Anthony Ashley Cooper (1801-1885), influenced by Kant (Meskin & Plato, 2014). The British Empiricists asserted that the data we receive through our senses conveys the properties of the real world, which ran contrary to those working in the Romantic tradition, which stressed “willing suspension of disbelief” and “acts of imagination” as being crucial components of engagement with aesthetic objects, specifically referring to poetry and drama (Cupchik, 2002).

Indeed, through these opposing worldviews, “distance became a subject of scientific examination and philosophical speculation, an important dimension in painting and poetry, and a way of describing aesthetic experience” (Ogden, 2011, p. 63). Cupchik notes that these traditions were synthesised by Bullough (1912), whose work through his seminal paper “Psychical Distance as a Factor in Art and an Aesthetic Principle” is characterised by Cupchik (2002) as “a psychologically oriented integration of the Empiricist and Romantic intellectual traditions.”

From reviews of the literature by Cupchik (2002) and Groys (2011) issues of distancing are presented as a contentious but important theme within the history of art, and though Bullough’s concept of ‘psychical distance’ is most widely credited for the current use of ‘aesthetic distance’, other works of course contributed to his development of the concept. However, Cupchik concedes that Bullough’s psychological analysis of the ‘working of Distance’ acknowledges that it is “not simple, but highly complex” (Bullough, 1912, p. 89).

“[the] distanced view of things is not, and cannot be, our normal outlook… and the sudden view of things from their reverse, usually unnoticed side, comes upon as a revelation, and such revelations are precisely those of Art” (Bullough, 1912, pp. 89–90).

Bullough’s conception of distance also referred to the “antinomy of Distance”; distance is a paradoxical concept because on the one hand, we need ‘some degree of predisposition’ in order to appreciate the ‘appeal’ of a work, while also maintaining distance from it. Applied to appreciation of
drama, Cupchik notes that the aim of dramatic art is “achieving the greatest concordance or resemblance with [the viewer’s] own experience – provided that [they] succeed in keeping the Distance between the action of the play and their personal feelings.” Thus, Cupchik characterises “Bullough’s main theoretical contribution to the study of aesthetic distance” as defining the goal of art to be “maximal involvement without excessive self-absorption” – or, as termed by Bullough himself, “utmost decrease of Distance without its disappearance” p. 107).

Cupchik suggests that Bullough’s conception of distance “as a matter of degrees” was a further innovation in his seminal paper; these “matter of degrees” are a function, according to Bullough, of the nature of the art object itself, referred to and the “individual’s capacity for maintaining a greater or lesser degree”. Thus, it is from this that the idea of aesthetic distance as arising from the “salient stylistic qualities” (Section 1.3.3) and the “disposition of the viewer” (Section 1.3.4) originates. For Bullough, the “habitual measure of Distance” may vary from person to person; and any given person may experience distance differently “in the face of different objects and of different arts” – thus, Bullough referred here, to aesthetic attitude (Section 1.3.4). It is the contribution of these components to a player’s experience of distance from a morally significant 3D avatar-driven videogames (Section 1.4), that is of interest in addressing the research question (Section 1.5).

He also introduced the concept of a “Distance-limit”, which he defines as “that point at which Distance is lost and appreciation either disappears or changes its character”. Furthermore, he observes the two different conditions of “under-distancing” and “over-distancing”; the consequence of the former is that the observer finds the work “crudely naturalistic”, “harrowing”, and “repulsive in its realism”. The consequence of the latter is that the work “produces the impression of improbability, artificiality, emptiness, or absurdity.” Bullough’s conception of distance considers that “the more evocative the theme (e.g. by referring to ‘sexual matters’), and the more mundane its reference… the higher the probability of pushing the bounds of aesthetic distance and evoking every day, practical, and personal responses” (p. 95). However, he also notes that such subject matter can still achieve ‘sufficient’ distancing depending on not only “the manner of presentment or style of the work”, but also depending on the viewer’s disposition.” That is, sufficient distancing enough “to rise above its practical problematic import and to regard it simply as a dramatically and humanly interesting situation.”

Thus, the idea of formal properties, of the ‘salient stylistic qualities’ of a work, as noted by Cupchik, are important. He further states that, “the medium can affect psychical distance”; he notes the examples given by Bullough in his paper, such as in stage drama, in which the sense of distance is enhanced by “the general theatrical milieu, the shape and arrangement of the stage, the artificial lighting, the costumes, mise-en-scene and makeup, even the language, especially verse.” A corollary in sculpture may be, according to Cupchik, the lack of colour, and the use of pedestals upon which such works are placed, which separate them from our own viewing space. Through the medium of painting, distance is created through the “two-dimensionality and framing of pictures, the
fact that ‘neither their space (perspective and imaginary) nor their lighting coincides with our (actual) space or light… the reduction in scale of represented objects’, and, most importantly, the intentional structuring of the art object, or its composition. According to Bullough, the “visibly intentional arrangement…. must, by the mere fact of its presence, enforce Distance, by distinguishing the object from the confused, disjointed, and scattered form of actual experience” (p. 106). Thus, Cupchik surmises that “style… serves a dual role: a high degree of finish reduces Distance and makes a work more accessible, while salient stylistic qualities remove the work from the everyday world.”

This idea of aesthetic distance as being variable and dependent on these formal properties, which may alter the distance in one direction (toward being like “the everyday world”) or another (regarding the object as a work of art) is relevant in investigating aesthetic distance in videogames through the lens of altering interface mimesis (Section 1.5). However, the way in which altering interface mimesis may shift the player’s experience in this way should be established, through examining the way in which distance is thought to be altered by mimesis in a wider artistic context.

2.2.1.1 AESTHETIC DISTANCE IN THE CONTEXT OF MIMESIS VERSUS ANTI-REALISM
The Enlightenment tradition valued “the controlled ‘imitation of nature’” (Schneider, 1995 cited in Cupchik, 2002), in order to manipulate audience emotions by aspiring towards an experience that was mimetic of the natural world. Thus, the goal of art within the Enlightenment tradition meant an illusionist style of “recreating the natural world, governed by laws of causality” (Cupchik, 2002) such that the viewer could understand it with just “a single glance”, due to the shared sense of familiarity.

Cupchik highlights the contrast to this noted through the work of Johan Elias Schlegel (1719-1749), who believed that the difference between reality and art was not shaped by the choice of subject matter (Wilkinson, 1945, cited in Cupchik 2002) but instead, the treatment is what determines the originality and interestingness of a work.

“Each art form has a distinctive medium with which the artist works, and one cannot reject a particular medium on the ground that it does not exist in everyday life. Thus, one cannot reject verse as a medium in drama on the premise that people don’t normally speak that way, and similarly one cannot reject sculpture for not being coloured” (Cupchik, 2002, p. 159).

Thus, conceptual links with the Enlightenment tradition may be made to videogames in terms of the aspiration towards realism: the desire, within a subset of videogames, to emulate ‘everyday life’ in terms of the physics of the world, and the prioritization of graphical verisimilitude (Brightman, 2010; Heaven, 2014; Juul, 2010). Within Schlegel’s view of reality and art, such a conception of games as aspiring towards realism and spatial presence may seem limited. However, Schlegel’s
view is arguably represented in modernity by the work of those game theorists and scholars who argue for a conception of games as procedural systems, capable of inspiring meaningful and critical play through interaction with their systems (Bogost, 2007a; Frasca, 2001b; Khandaker-Kokoris, 2015a; Salen & Zimmerman, 2003).

Indeed, Schlegel was “against any conception of drama that emphasised its ability to trick the spectator through the senses and emotion into believing that the event on the stage is real” (Cupchik, 2002, p. 159). This is similar to the later work by British Romanticists such as Samuel Taylor Coleridge (1772-1834), which are surmised by Cupchik as being “against the naturalist and realist idea that the goal of stagecraft was to create an external illusion that would both deceive and engage the spectator.” Such ideas about deception and trickery and belief in the reality of what the viewer is seeing can be seen as akin to the ideas about spatial presence that are addressed by the immersive fallacy; transporting a player to a “reality [that] is so complete that ideally the frame falls away so that the player truly believes that he or she is part of an imaginary world” (Salen & Zimmerman, 2003). Indeed, Salen & Zimmerman, in Rules of Play (2003), criticise the idea advocated by Laramee (2002) that:

“All forms of entertainment strive to create suspension of disbelief, a state in which the player’s mind forgets that it is being subjected to entertainment and instead accepts what it perceives as reality” (Laramee, 2002, cited in Salen & Zimmerman, 2003)

In refuting this position, Salen & Zimmerman note how “in regard to immersion, cultural developments tend to be cyclical” (2003, p. 451), citing Ryan’s (2000) observation about how “The history of Western art has seen the rise and fall of immersive ideals.”

Indeed, this cyclical nature can be noted in the way that anti-naturalist, anti-realist positions, such as Schlegel’s, on theatre was subverted in the early twentieth century by the avant-garde movement. Despite being comprised of many groups with many ideologies, these artists and practitioners shared the common element of “crossing and erasing of the boundaries that had traditionally split and limited the effectiveness and influence of art” (Groys, 2011, p. 100). Groys notes that during this time, “artists gained the freedom to integrate any and all possible forms and processes in their work”, although they remained conscious of the barrier that still existed between art and reality, or, more appropriately, between art and its observer. There also existed a growing “hatred of the masses” during this time, amongst some practitioners of the avant-garde, and a desire to “conquer… and subjugate” these masses”, through “eliminat[ing], or, better yet, to transcend[ing] the aesthetic distance separating the spectator from the work of art” (Groys, 2011, p. 103). This was achieved by these practitioners through a variety of means, including disrupting the form of the art work by creating shocking new “radical innovations”, intended to “dismemper and destabilize” the spectator.
Indeed, the perspective of Groys (2011) on aesthetic distance in early twentieth century art and theatre is specifically written through the lens of discussing the art of totalitarian regimes. He discusses the art of the Nazi era as being rooted in avant-garde ideas of subsuming the spectator, and taking away the separation between themselves and a work of art, such that “it was thought possible to analyse, control, and manipulate the masses’ tastes” (p. 102).

Though the Nazi era is typically associated with a return to classical art, Groys suggests these avant-garde ideas manifest themselves through the treatises of Paul Schultze-Naumburg, arguing them to be the most representative of the Nazi era. Groys mentions that in “Nordic Beauty” (Schultze-Naumburg, 1937, as cited in Groys 2011), classical artworks of different periods were reproduced through photographs of real people, attempting to define the “ideal of the Nordic Aryan”, and disregarding differences of style, era, artist, or technique (painting, sculpture, or drawing). Indeed, Groys suggests that the importance to Schultze-Naumberg was exposing racial differences, and normalizing a racial ideal; by doing so, he asserts that the spectator:

“… Lost the independent, secure, aesthetic standpoint from which he would have been able to observe and judge. He was now himself judged by these images – and possibly sentenced. Instead of being able to enjoy Greek sculpture or the paintings of Raphael or Rubens calmly, the spectator… must compare his own feet and shoulders with those he sees before him…” (Groys, 2011, p. 105).

Thus, according to Groys, this totalitarian art removes the “disinterested observation of which even Kant spoke”, and “the aesthetic judgement – a spectator’s means of control over the artist – is rendered powerless”. With regards to computational media, this idea of wholly accepting a conception of the world given by an artwork is the idea of simulation resignation, proposed by Turkle (1997), which Bogost (2006) notes is defined as “blind acceptance of the limited results of a simulation, because the system doesn’t allow any other model of the source system” (p. 107).

Therefore, given the socio-technological trend within videogames for immersion to once again be prioritised (Salen & Zimmerman, 2003) (Section 1.1) following the history of mimesis in Western art, it should be explored what this means for the idea of simulation resignation, of this “blind acceptance”, as interface mimesis increases.

Thus, such ideas of taking away the separation between an artwork and reality are further discussed concerning their applicability to videogames (Sections 2.3.1 and 2.4.3), though the idea of “blind acceptance” is one that is, in Bulloughian terms, one which is rooted in empathy as an aesthetic concept. Thus, in refining the definitions of the “aesthetic and moral judgements” which indicate aesthetic distance (as referred to by the research question, Section 1.5), it is important to examine
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such aesthetic concepts, and, in doing so, explore how the player’s experience of them may be investigated.

2.2.1.2 EMPATHY AS AN AESTHETIC CONCEPT

Baron-Cohen & Wheelwright (2004) note astonishingly, empathy was only introduced into the English vernacular at the beginning of the 20th century, though Bullough’s (1912) ideas of distance discussed this concept. It was a concept also of discussion amongst theorists of aesthetics in this period; despite the word ‘sympathy’ having a long history, the term ‘empathy’ was given by Tichener (1909) as a translation of the German word Einfühlung, itself a term from the aesthetics literature meaning “to project yourself into what you observe” (Titchener, 1909, cited in Baron-Cohen & Wheelwright, 2004). Indeed, Einfühlung itself had been introduced only in 1873 by German psychologist Robert Vischer, and was defined as “the placing of human feelings into inanimate things, plants, animals, or other humans in a specific way” (Depew, 2005).

Further to the introduction of the term Einfühlung to the German literature, another German psychologist, Theodore Lipps (1965) expanded and formalized the concept, making the point that the object of our aesthetic experience is not our own feelings, but instead, “the object of aesthetic experience is the sensuous aesthetic object itself, which we contemplate from a suitable ‘aesthetic distance’ or with the characteristically aesthetic ‘disinterest’ of which Kant spoke” (Depew, 2005).

Within this early twentieth century literature, the concept of Einfühlung [empathy] was used in the realm of talking about aesthetic experience; Depew (2005) and Stamatopoulou (2004) note that Vernon Lee (1912), who was influenced by Lipps, used the term empathy in connection with specifically aesthetic experience in her book “Beauty and Ugliness and Other Studies in Psychological Aesthetic” (Lee, 1912). For Lee, “aesthetic empathy” is “an instance of a tendency, deeply embedded in human thought processes, for the mind to merge its activities as a perceiving subject with those of the perceived object” (Stamatopoulou, 2004).

Conversely, another early 20th century British aesthetician, William Frances Hare (1907-1999), writing in the 1920s, wrote about aesthetic experience while keeping the German word Einfühlung untranslated. Depew suggests this marks the beginning of the loosening between the English term ‘empathy’ and its association with aesthetics, instead being used within the realm of the psychoanalytical, giving rise to its current association today. That is, rather than denoting a connection to an object, empathy instead concerned a connection with other living beings, especially other people. This ‘newer’ conception of empathy concerns trying to understand what the other person themselves may be feeling, which is in opposition to the original concept: understanding that the feelings experienced towards an object (whether or not it is a living being, or an art object) are one’s own feelings. Where once empathy had been about inanimate objects, and expressive works of art, empathy was now, largely, about other people; yet, underlying this, the origins of empathy appear
to be consistent; the “tendency… for the mind to merge its activities”, following Vernon Lee’s suggestion.

Another shift in contemporary thinking about empathy is that it exists in the realm of ‘feelings’ and not thought, which Keen (2006) describes as “the view that emotions and cognition describe different processes of the central nervous system”; however, she contends that “empathy itself clearly involves both feeling and thinking” (p. 213):

“I do not quarantine narrative empathy in the zone of either affect or cognition: as a process, it involves both. When texts invite readers to feel, they also stimulate readers’ thinking” (Keen, 2006, p. 213).

Bullough made the link between his own conception of distance, and of Lipps’ Einfühlung, stating, “Distance is essential to the occurrence and working of empathy” (p. 117). Cupchik thus further suggests that Bullough and Lipps “fall into the long tradition, reaching back at least to Kant, Wilhelm Schlegel and Coleridge, that stresses the active role of the observer in imaginatively constructing meaning” (p. 170).

Stamatopoulou (2004) notes that both “emotional closeness and emotional distancing appear to be important” to “where empathic identification ‘stops’ and becomes transformed to aesthetic distance”, thus positing these as a spectrum. However, she asserts, “the exact nature of [this transformation] is perhaps dependent on the motivational frame of the experience as well as on complex interactions between observer, object and situation” (p. 6).

Furthermore, in her review of the role of emotions and empathy in the aesthetic experience, Stamatopoulou (2004) notes the work by Apter (1984) on Reversal Theory as applied to the arts, which contends that rather than single dimensions of arousal (e.g. just empathy), there exist “cognitive synergies”, which is “the experience of mutually-exclusive properties in relation to the same identity” (Stamatopoulou, 2004, p. 7). Apter uses this to explain “the paradox of tragedy”; that is, why tragic art can be enjoyable to watch or otherwise engage with. Within this mode, Stamatopoulou explains that “even negative emotions can take on a special quality, which allows them to be experienced as pleasant (i.e. ‘empathy-alienation’ synergy).” Thus, within such a conception of engagement with art, while empathy and alienation are posited as opposite ends of a spectrum, they cannot exist without one another, and this mode of reception allows the observer to experience such ambiguities.

Thus, within the German tradition of aesthetics, empathy and emotions fell under their own domain, prior to the early twentieth century. The analysis of this trend by Depew (2005) notes that it was the turn of German work in aesthetics towards modernism and postmodernism that took focus away from empathy, such as the contributions of Bertolt Brecht, emphasising alienation and defamiliarization over identification.
Synthesising these ideas, the term ‘empathy’ as used here is an inclusive definition, accounting not only for identifying with people, but also, with things, in the tradition of Einfühlung. It is, therefore, synonymous with ideas of identification (further explored in Section 2.5).

The relationship with empathy is, however, a factor on which Bulloughian and Brechtian ideas of distancing differ in their conceptions; thus, it is suggested that these two positions should be examined and synthesised where possible.

2.2.1.3 Bullough’s ‘Distance’ vs Brecht’s ‘Distanz’ and ‘Verfremdung’

Thus, this section briefly compares how Brecht’s distancing relates to that of Bullough’s conception of aesthetic distance (particularly with regard to their views on empathy) so that additional insight is offered into theories of how an observer’s experience with an artwork functions. Through this examination, the factors contributing to “aesthetic and moral judgements” (Section 1.5), as required for the research question, may be defined.

According to White (2013), for Brecht, empathy was about a state of mind reached by the audience: an ending point. However, Brecht’s Verfremdung referred to a process, “the means of creating a different state of mind: a politicized critical distance.” However, White notes some simultaneous confusion by Brecht regarding these concepts, as his essay “Vergnügungstheater oder Lehrtheater?” [“Entertainment theatre or educational theatre?”] had sought to identify ‘empathy’ as the polar opposite of a critical response (White, 2013, p. 116).

Meanwhile, this absolutist conception of empathy by Brecht defies Bullough’s conception of empathy, which “should be as complete as is compatible with maintaining Distance.” As noted earlier, Bullough holds that what is desirable is the “utmost decrease of Distance without its disappearance” p. 107). Overall, White concludes that for Bullough, aesthetic distance has variability and that “Bullough’s discussion of ‘under-distance’ and ‘over-distance’ suggests that the term ought to inhabit some middle ground between extremes”, and that his “assumption that distance is not static does highlight the “constructedness” of Brecht’s theoretical approach.” Meanwhile, the contradictions amongst Brecht’s own definitions of ‘Verfremdung’ and ‘Distanz’ are noted; he states that “extreme aesthetic (or psychic) distance, not “Verfremdung,” is the opposite of Empathy, except in cases where Brecht is using his ambiguous term in its secondary sense” (White, 2013, p. 117).

Thus, it seems that Brecht’s theoretical position is not fixed, but rather, appears to have evolved throughout his work, and thus his terms are often used ambiguously. White explains: “at times, [Brecht] presents “Verfremdung” as either: “simply one more addition to theatre’s repertoire of technical devices, or as a feature of everyday experience, or as a means to a political end, depending on the readership or audience he is addressing” (White, 2013, p. 122).

He also notes Daphna Ben Chaim’s claim that “Brecht seems “unable or unwilling” to admit that all drama involves distance of some kind”. While Brecht’s absolutist views of the concepts of empathy,
identification, and complete transformation, may be rhetorically effective (as White concedes), “the process of identification is transitory and partial, confirmed to certain climactic moments; it can never extend across an entire work” (White, 2013).

White notes this as further indication to support his claim made through his essay that Brecht had “tendency to present theoretical points via models and schemata”; thus, he tended to apply theoretical reductionism to his ideas of distancing, so that it was of theoretical and rhetorical value.

Therefore, Brecht’s ideas of distancing are largely rhetorical, and do not necessarily, in practice, preclude a nuanced view of the concept, in which critical distance [will] necessarily create a critical attitude” and “if it does, whether the response necessarily excludes all other responses (such as an empathetic one)” (White, 2013).

Nevertheless Brechtian ideology and his “politics of anti-Aristotelian dramatic theatre” has come to influence the subsequent development of the aesthetics of theatre and literature, and his epic theatre “has been considered one of the most important and influential avant-garde theatres” (Basuki, 2004). Such an approach, though reductive, arguably has conceptual utility in thinking about what is happening, in terms of their critical distance, when an observer interacts with an artwork.

### 2.2.2 Aesthetic Distance as Critical Distance

In stark contrast to the way in which avant-garde theatre aimed at transporting the spectator through narrowing aesthetic distance, Brecht’s aim with his theatre was as a means to allow the spectator to instead interrogate the world, “without ever allowing the experience of his productions to enable the audience to escape into immersive passivity” (Pinchbeck, 2006).

Onderdelinden (1993) notes that Brecht hated the tradition of theatre centred on identification, and especially the work of its main exponent, Stanislavski. According to Onderdelinden, Brecht makes it “abundantly clear that he felt the Stanislavski method of ‘restlose Verwandlung’ – cited as “complete transformation” in (Tian, 2011), now commonly referred to in English as ‘method acting’ – to be technically ponderous and aesthetically repulsive, even obscene.” While other artists and theatrical practitioners of the avant-garde sought to eliminate the aesthetic distance ensured by the “superiority of the spectator”, so that their aesthetic judgement was also eliminated (Groys, 2011, p. 101), Brecht instead sought to create “a critical distancing, a jolting of the audience from the innate tendency towards passivity Brecht saw as both integral to the theatre, and actively encouraged by the naturalists and symbolists” (Pinchbeck, 2006).

Indeed, within the literature (and thus far in this research), the terms “critical distance” and “aesthetic distance” are often used interchangeably, to refer to the conceptual separation of a person from an object of some kind. For example, Francis & Fiske (1989) posits identification when watching television as a phenomenon associated with enjoyment and proximity, “at the expense of critical distance” (Tal-Or & Cohen, 2010). Here, Francis & Fiske (1989) take a Brechtian stance in their
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analysis, suggesting identification as opposed to distance. Furthermore, Farman (2010) suggests that players of Grand Theft Auto: San Andreas (2004) can create unrealistic or comedic player avatars for themselves, as a means of utilizing the Vertrengungseffekt, so “the players can more fully critique the protagonist’s actions, the social setting in which he or she is placed… and utilize this valuable critical distance to interact with social problems through the process of game play.”

Despite the often-interchangeable use in the literature, it is proposed that aesthetic distance and critical distance are separate but overlapping concepts (Figure 2-1). Critical distance has been defined as “the ability to understand and evaluate both the circumstances leading to a particular situation and the possible outcomes of various decisions” (McCann, 2008). Critical distance differs in that it can, crucially be applied to all domains of life, and this may include, but is not limited to, works of art. Meanwhile, aesthetic distance is a term that is applied only to art objects.

Furthermore, while critical distance is a person-centred phenomenon (a person is said to have critical distance from a certain object or situation in their real life), in contrast to aesthetic distance, which is a term referring to the phenomenon that emerges between the person and the art objects, as a result not only of the “salient stylistic qualities” of the art, but also “the disposition of the viewer” (Cupchik, 2002; Grau, 2000).

Therefore, while critical distance and aesthetic distance both refer to the distance through which someone may engage cognitively and critically with an object, the latter, aesthetic distance, refers specifically to thinking about an object as art, rather than as a real situation. Therefore, it is proposed that in the context of morally significant videogames, a player who appears more cognitively and emotionally engaged in a moral decision in a game is not necessarily displaying that they have critical or aesthetic distance, as they may be thinking about the situation as though it were a real life decision. Thus, a player who has low aesthetic distance from a game will experience greater identification with the game’s characters and environment.

In order to further explore these concepts central to the workings of aesthetic distance, it is proposed that these should be synthesised into a theoretical working model for applicability to videogames.
2.2.3 A Model for Aesthetic Distance in Videogames: Beginning a Model

This overview of the evolution and various historical contexts behind distancing shows how the concept has alternately been posited as opposite to, and incorporating empathy.

![Figure 2-2: A Working Model of Aesthetic Distance in Videogames (v.1)](image)

Synthesising these concepts explored thus far, a working model of aesthetic distance is proposed, such that the epiphenomenal effects of altering distance through interface mimesis may be further understood, required for addressing the research question (Section 1.5).

As a first step in moving towards this, a working model is proposed (Figure 2-2) based on integrating Bullough’s (1912) and Brecht’s (1978) conceptions of distancing.

In this model, Bullough’s conception of distance (Section 2.2.1) is used to propose the working model for videogames, an emergent phenomenon resulting from the salient stylistic qualities of a game (as explored in Section 1.3.3) and the player’s disposition. The resultant output is the subjective experience of feeling somewhere in-between feeling distanced from the game, and identifying closely with the player character and what is happening in the game.

Furthermore, in accordance with Brecht’s model of distance (his V-effekt, Section 2.2.1.3), total identification and total alienation are on opposite ends of a spectrum, in reality, the experience of observers (players, in the case of videogames) are not simply on one end of the spectrum, but instead, is connected to both states, in accordance with Bullough’s view. This is, as a first step, explained by the concept of cognitive synergy (Section 2.2.1.2), meaning that, as Stamatopoulou (2004) explains, “even negative emotions can take on a special quality, which allows them to be experienced as pleasant (i.e. ‘empathy-alienation’ synergy).” Within this idea of engagement with
art, while empathy and alienation are posited as opposite ends of a spectrum, they cannot exist without one another, and are instead linked; thus, this mode of reception allows the observer to experience such ambiguities.

The examination of the effects of aesthetic distance, eliciting alienation from the art object on one end of the spectrum, and identification with it on the other (Figure 2-2), has so far focused on the generality of these ideas in the arts, from painting to theatre. Furthermore, the issue of the cyclical history of aspiration towards mimesis in Western art was also briefly discussed. It is argued, in the vein of Salen & Zimmerman (2003) that this is an aspiration that has re-emerged in the context of videogames and computational technology in general.

Given that aesthetic distance is affected by “salient stylistic qualities” of a work (Cupchik, 2002), it is posited that the issue of techniques for mediating distance raise further questions with the technological progression of such techniques. Therefore, what this means for distance, and the way it should be examined in the context of interactivity, must be explored.

### 2.3 Aesthetic Distance Through Technological Innovation

#### 2.3.1 Towards Spatial Presence: A Historical Perspective

Having described what the concept of aesthetic distance and the origins of its definitions are, it is now prudent to further explore how issues of distancing have shaped art and media, especially through the lens of technological innovation. As mentioned (2.2.1.1), the desire to eliminate distance (that is, an aspiration towards realism and mimesis) has existed in the creation of art before the term aesthetic distance, or disinterestedness, was defined.

It is through this lens that Downes (2005) explores ideas of virtual reality and psychology in his book *Interactive Realism: The Poetics of Cyberspace*. One technical artistic development that he notes as having had an effect on wider thought is ‘Alberti’s window’. This is a system of perspective drawing developed by Leon Battista Alberti (1402-72), in which an artist positions themselves as if on the other side of a window, thus being able to draw objects and their spatial relationships accordingly. Therefore, this creates an accurate sense of perspective for the viewer.

Downes notes that, since Alberti’s window, “with the development of film, then television, then virtual reality, the viewer’s distance from the visual plane decreases; the window moves closer to the body, which reinforces its illusion of invisibility.” It can be asserted that following this conceptual thread started by Downes, the twentieth century history of aspiration towards mimesis through technological innovation began with film, therefore representing an aspiration towards mimesis throughout the history of the development of these forms. It was established that spatial presence is the general sense of being there in a virtual environment, and, with respect to a videogame, is supported by self-location and agency, and the beginnings of this aspirations towards spatial presence can thus be seen from these early artworks.
A link can be conceived between ideals of distancing as already described earlier in this section (from Enlightenment traditions, through to Bullough, and Brecht), and the ideas of increasing ‘closeness’ to mediating technological devices; As Downes states, “Alberti’s window is virtual reality *in potentia*.” Downes takes this usage of *proximity* from the usage by Turkle & Papert (1990), meaning “closeness to the object”, with reference to computational objects such as software – or, indeed, games. Turkle & Papert refer to users (in their case, specifically children), “reasoning from within [the system]” (p. 144). This is echoed, it is argued, by Turkle’s later work, which referred to *simulation resignation* (Section 2.4.3).

“In simulated environments, the transparency or opacity of the mediation system (the technological linkage between the human and the world) has important effects on the nature of our mediated experience - on our sense of proximality” (Downes, 2005, p. 72).

Downes refers to the way in which “[we have] learned to represent aspects of the world in particular ways and now accept representations at face (or interface) value” (p. 56). Indeed, he explores the ways in which technology has shaped our thinking:

“The assumption that media exert a powerful influence on our sense of identity is persistent: cinematic and electronic media have not only historically symbolized but also historically constituted a radical alteration of the forms of our culture’s previous temporal and spatial consciousness” (p. 58).

Downes notes the significance of technological innovations in the nineteenth century, and how this had “radical implications for how people perceived the world.” He cites Crary (1990) in his argument that the camera obscura shaped nineteenth century understanding of how perception worked. He also underscores the importance of the panorama and dioramas in the nineteenth century. These were “massive paintings displayed in specially constructed buildings”; the panorama illusion was created through a combination of effects, combining “realist techniques of perspective and massive scale.” Downes stressed that this popularity should not be underestimated: “there were almost as many houses showing entertainments of this kind in Victorian London as there are cinemas today” (Downes, 2005, p. 56).

“The mode of viewing these paintings involved placing the spectator in the centre of a darkened room surrounded by a scene lit from above. Sophisticated lighting effects enhanced the astonishing illusion of reality” (Downes, 2005, p. 57).

Grau (2000) also notes the importance of the panorama within the history of virtual art. Patented in 1787, Grau makes the case that herein lays the foundation of “an unrecognised history of immer-
sive images.” The panorama was popularised, gaining a mass audience throughout the nineteenth century. Grau describes it, not only as “changing terrain between art, spectacle, and political propaganda”, but also that it “marks the combination of art, science, and technology in an image medium for the 19th century and it was one of the most widespread image media in art history.” Grau notes how the “immersive” power of the image was also recognized by the church, which, as he states, used it in “pursuing its strategies of power”; for example, the 16th century illusion space at Sacro Monte, the Calvary, by Gaudenzio Ferrari, used a variety of technical feats to “create the deception of real presence”. Indeed, monks guiding around visitors would constantly have to remind them that this was not the real Jerusalem.

Similarly, Downes describes the diorama as a “multisensory experience in which motion, sound, and the environment were all crucial to the experience.” Dioramas were effectively immersive live performances, which took place in a specific location, in which “the light were varied by an elaborate system of pulleys, cords, slides, and shutters.” The goal of these was to “transport the spectator” (Downes, 2005, p. 58).

In this way, the panorama and diorama can be conceived of as a kind of theatre, and this is true also of videogames that seek to elicit a strong sense of spatial presence in the player.

“History has shown that there is permanent cross-fertilization between large-scale spaces of illusion that fully integrate the human body (360° frescoes, the panorama, Stereopticon, Cinéorama, IMAX cinemas, or the CAVEs) and small-scale images positioned immediately in front of the eyes (peepshows of the 17th century, stereoscopes, stereoscopic television, Sensorama, or HMDs)” (Grau, 2000, p. 2)

Grau (2000) similarly draws a link between such historical immersive images with current technology; positing both as strategizing for what he describes as “immersion”, and achieving this “with the maximum of media means available at the time.” They are, he describes, about ‘opening up’ the boundary between the ‘real’ and the image space, and integrating observers in the scene. Here, his use of the word “immersion” can be understood as a combination of both spatial presence and diegetic immersion (Section 1.3.3.1), as he describes the way in which such immersive images conduct viewers towards “the state of being emotionally, even ecstatically, engaged and absorbed.”

Indeed, Youngblut’s (2007) definition of spatial presence as “the subjective experience of being in a place or environment, even when one is physically situated in another place or environment” (Section 1.3.3.1), is useful thinking about concepts of distancing and technology.

Biocca refers, in his review of presence, to the definition as given by Lombard & Ditton (Lombard & Ditton, 1997), of “[spatial] presence as a user temporarily unaware he or she is looking at medium or representation”, noting that the very concept is rooted ideas of ‘transcendence’. For Lombard
& Ditton therefore, rather than simply “being [there], in a place or [virtual] environment”, spatial presence is instead “the sense of non-mediation, despite the fact that a medium is being used, an acceptance of the environment represented in the medium to a point where the user ceases to be aware of the medium” (Biocca, 1997). Biocca notes that such ideas of transcendence – and therefore, spatial presence – stretch back from modern virtual reality applications to Alberti’s 15th century work on perspective in painting.

However, Lombard & Ditton’s (1997) conception of spatial presence, or, earlier, “physical transcendence”, is what Downes frames instead as “virtuality”. Downes states this is a concept “based on the relative transparency of a technological system that allows a user to experience a communicative event and to ignore the technology mediating the experience.” Therefore, virtuality concerns the nature of the psychological experience within the technology of virtual reality. He states, “Virtuality can be understood as a person’s incorporation of, or adaptation to, a new technologically mediated situation”. Of course, while competing definitions of virtuality exist in the literature, often positing it as a synonym for virtual reality (Ma & Choi, 2007), this definition by Downes is clearer.

Thus, virtuality can be defined as a synonym for spatial presence; Grau also notes that within the scope of this experience, the distance that is required to perceive an artwork as an “autonomous object”, separate from reality, is lost:

“Inside the ‘omnipresence’ of virtuality [spatial presence], any mechanism of knowledge acquisition will be affected and influenced. In virtual environments, a fragile, core element of art comes under threat: the observer’s act of distancing that is a prerequisite for any critical reflection” (Grau, 2003, p. 202).

Grau builds his definitions around immersion (Section 1.3.3.1), which he defines as being “produced when art work and image apparatus converge, or when the message and the medium form an almost inseparable unit” where “the medium becomes invisible”, akin to Downes’ concept of virtuality or spatial presence, as allowing the user to “ignore the technology mediating the experience.” For Grau, immersion “is characterized by diminishing critical distance to what is seen and increasing emotional involvement in what is happening”, thus his definition can be seen as a combination of both spatial presence and diegetic immersion.

Therefore, the factors contributing to this way in which the “medium becomes invisible” should be further examined, such that the mimetic interface(s) pertinent for exploration of this research question (Section 1.5) should be defined.

From this discussion, it can be understood that decreasing aesthetic distance is seen as an epiphenomenal effect of increasing spatial presence through increasingly mimetic technology; in this case, videogame interfaces. Therefore, it is proposed that observing increasing spatial presence is a useful
factor indicative of whether technology is successfully altered towards narrowing distance in terms of the “salient stylistic qualities” of the medium.

However, other factors involved in the player’s experience of reduced aesthetic distance, is their own subjectivity. Therefore, with respect to videogames, a player’s experience of the success with which they can understand how to interact with an interface, and thus play the game, is also important in ensuring their sense of aesthetic distance from the work.

2.3.1.1 Naturalness and Familiarity

The invisibility of the interface, it is argued, is a function of its naturalness. “Natural mapping” or “[perceived] controller naturalness” is defined by Skalski et al. (2011) as “the extent to which users of interactive technology perceive the interactivity to be predictable, logical, or in line with expectations.”

Naturalness, or natural mapping, has been found to affect spatial presence (McGloin et al., 2011; Skalski et al., 2011; Tamborini & Skalski, 2006) (Section 1.3.3.6), and furthermore, Skalski et al. (2011) and McGloin & Krcmar (2011) found significant positive relationship between videogame skill and feelings of spatial presence.

Naturalness depends on the successful fulfilment of mental models; the concept of mental models is proposed by Skalski et al. (2011), referring to “cognitive representations of situations in real or imagined worlds”. Tamborini & Skalski (2006) posit that “more naturally-mapped” controllers in videogames “should allow players to quickly access mental models of real-world behaviour… thereby providing more accurate and available information about how to interact with the game.” It is these mental models and their successful fulfilment that give rise to spatial presence (Skalski et al., 2011).

Thus, the increasing ‘invisibility’ of the mediating technology – a player’s ability to ignore the interface – is achieved through successful natural mapping, and, therefore, increases spatial presence. Therefore, these ideas of spatial presence and naturalness are important concepts in the exploration of aesthetic distance in morally significant videogames (Section 1.5) as they determine the extent to which the game reminds players of their everyday life, such that they treat the game as being ‘real’.

Therefore, it is proposed, this narrowing aesthetic distance through enhanced spatial presence limits their ability to think critically about it as an art object as theorized by Grau (2003) and explored through natural inquiry by Stenner (2007) regarding virtual environments. It is argued that this, increasing spatial presence through naturally mapped interfaces, therefore, affects the nature of the aesthetic and moral judgements made by the player.

However, the construct of spatial presence as referred to in this research programme (Section 1.3.3.1) is a conceived by Vorderer et al. (2004) is not only being-in-the-world but also, being able to act in the world. Thus, while presence is conventionally used within the literature to describe the subjective sense of ‘being there’ in a virtual environment, (Jenison, 1998; McMahan, 2003; Slater &
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Usoh, 1994), as the research question focuses on control mechanisms and interfaces, the concept of being able to act within a game is instead prioritised. Jenison’s (1998) extended definition of presence as being-in-the-world and as being tied to one’s successfully supported action within a virtual world comes closer to this remit, though agency (defined in Section 1.3.3.4) forms a component of the model of spatial presence, and should be explored further with relation to how it affects a player’s sense of aesthetic distance.

2.4 THE PARADOXES OF AESTHETIC DISTANCE AND AGENCY

2.4.1 Introducing the Challenges of Interactivity

As also argued by Dovey & Kennedy (2006), “…the interpretative activity of traditional media (film, literature, TV) is at a different order to what we do when we materially intervene in the text to make it look and sound different – an understanding of interactivity derived from the history of human computer interface design” (p. 6).

Thus, the “aesthetics of interactivity” (Section 1.6) concerns itself with the “theoretical and aesthetic study of embodied interaction”, as defined by both Penny (2004) and Joseph et al. (2012), and it is within this context that this programme of research falls.

Working in interactive/digital art, Joseph et al. (2012) acknowledge that interactivity is “an expressive medium [that] challenges many fundamental assumptions of traditional aesthetics.” Specifically, they work within this context due to the idea that “notions of corporeal engagement and productive action [central to interactivity] are antithetical to the fundamental assumptions of contemplative distance in traditional, Kantian aesthetics” (p. 2):

“Aesthetic experience, in Kantian terms, is a contemplative, intellectual process, and a disinterested appeal to the transcendent. This traditional notion of aesthetic experience is at odds with the form and experience of interactive art as a purposeful embodied activity” (Joseph et al., 2012, p. 7).

Aesthetic experience is regarded here as an umbrella term, encapsulating aesthetic judgements and aesthetic emotion (Section 1.3.4.1), and informed by the aesthetic attitude of the person interacting with the artwork. This is following the definition by Marković (2012), that aesthetic experience is “a special state of mind that is qualitatively different from the everyday experience”. In answering the research question, aesthetic and moral judgements are of primary interest, encompassing the cognitive and moral evaluations made by a player about a videogame (Section 1.5).

Since Joseph et al (2012) and Grau (2000, 2003) address the tradition of interactive art, they do not therefore address the videogame-specific notion of agency (as introduced in Section 1.3.3.4), which is a salient concept regarding interactivity and the challenge. Agency is the ability to take action in
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a virtual environment, and have those actions be supported by the underlying computational model; when these actions are morally significant, (Section 1.4) the player is implicated within them. Therefore, the importance of understanding the aesthetics of interactivity is further underscored.

From such a perspective, the concept of being there and being able to act in a virtual environment appears to, at first, be completely removed from traditional notions of distanced, disinterested contemplation, seeming paradoxical that these concepts can coexist. Indeed, as Grau similarly states, “Aesthetic experience, which builds on concepts of spaces for thought or theories of distance, tend to be undermined by strategies of immersion” (Grau, 2000). However, he also acknowledges that immersion and distance have a relationship that is complex:

“Obviously, there is not a simple relationship of “either-or” between critical distance and immersion; the relations are multifaceted, closely intertwined, dialectical, in part contradictory, and certainly highly dependent on the disposition of the observer” (Grau, 2000, p. 3).

This contradictory nature of the relationship between spatial presence in virtual environments and distance is of interest here, particularly, as noted by Joseph et al. (2012), due to the “form and experience of interactive art as a purposeful embodied activity”, at odds with the conception of distance as a “contemplative, intellectual process”; one which is “disinterested.”

Farman (2010) addresses “the anxiety of the interfaceless interface”, particularly regarding the issue of the increasingly “immediate and immersive” interface in the case of violent videogames. He refers to Bolter & Grusin (2000), and their concept of hypermediacy; the notion, of the ‘interfaceless interface’ is one in which “there will be no recognizable electronic tools—not buttons, windows, scroll bars, or even icons as such. Instead, the user will move through the space interacting with the objects ‘naturally’, as she does in the physical world” (Bolter & Grusin, 2000, p. 23). Farman writes:

“The major issue at stake is the loss of clear boundaries between the virtual and the material in the digital age. The anxiety over violence in videogames is merely a symptom of a larger problem (which is much more difficult to legislate than placing restrictions on media): How do we inhabit an environment in which the ‘virtual’ and the ‘real’ are no longer opposites but, in fact, categories that seamlessly blend and blur together?” (2010, p. 101)

To illustrate this ‘blurring’ of the virtual and the real, he cites the way in which GPS devices are, for example, used to navigate real cities, thus pointing to the fact that now, everything is an “embodied, mixed-reality space”. After all, he notes, that the virtual is, indeed, very real to both people.
experiencing it, and to the material infrastructure that supports it. “For users of digital media—videogames, in particular—everything has become ‘the real’” (p. 99).

Because of this blurring of the ‘real’ and the ‘virtual’ (which he refers to as “the trauma of the interface”), Farman highlights the discussion around utilizing videogames as a means of bodily training. He notes the work of Penny (2004), who suggests that violent videogames may have such training qualities, citing the fact that “repetitive physical actions have been an integral part of education and socialization since preliterate times.” (2004, pp. 73–74)

“[W]e are drawn to the conclusion that what separates the first person shooter [videogame] from the high-end battle simulator is the location of one in an adolescent bedroom and the other in a military base. And having accepted that simulators are effect environments for training, we must accept that so too are the desktop shooter games” (Penny, 2004, p. 76).

While there have been many studies on media effects of violent videogames, if such claims of bodily training are accurate, this bodily training has beneficial outcomes too; indeed, a study of 33 laparoscopic surgeons found that those who played videogames were 27 percent faster at advanced surgical procedures and made 37 percent fewer errors compared to those who did not play videogames. Indeed, advanced videogame skill and experience are said to be “significant predictors of suturing capabilities, even after controlling for sex, years of medical training and number of laparoscopic surgeries performed” (Rosser et al., 2007).

Thus, videogames – particularly those with increasingly “immediate and immersive” interfaces, allowing actions indistinguishable from the ‘real’ (towards interface mimesis, as it is termed here), have ethical implications. As Penny (2004) states: “The question is: what exactly is the user being trained to do?” (p. 76).

Leaving aside this assertion, Farman also draws on Brecht’s V-effekt (which Farman translates as ‘distanciation’) as explored earlier (Section 2.2.1.3, 2.2.2), in order to illustrate the techniques which may be used to distance the player from their actions, and foster a critical distance – or, aesthetic distance. Farman suggests that Brecht broke the “interfaceless interface” of the theatre of realism with his techniques.

Indeed, for Mateas (2004), this difference lies also due to the player’s experience of agency within a game, stating, “while [spatial presence] and transformation exist in some noninteractive drama, the audience’s sense of having agency within the story is a genuinely new experience enabled by interactivity.”

Mateas (2004) offers a theory of interactive drama and games, based upon Aristotle’s dramatic theory, though “modified to address the interactivity added by player agency.” This neo-Aristotelian
theory proposed by Mateas builds from previous work by Brenda Laurel (1993) and Janet Murray (1997). Murray defines three categories: “immersion” (though her definition of this is spatial presence, and will be referred to as such hereafter), “agency”, and “transformation”. Mateas’ model accounts for the relationship between agency (deemed to be the most important of the three categories) and the other two aesthetic categories, noting, “Agency is a necessary condition for [spatial presence]” (2004, p. 26) in particular.

Indeed, Mateas reconsiders Murray’s (1997) model of inducing spatial presence via three possible strategies, which she posits as being achieved by structuring participation through an avatar, by structuring participation as a visit, or, by making the interface mechanics seamless. Mateas instead revises this, reviewing how these different strategies can ensure a balance of formal and material constraints, and instead frames such a balance as what is required for a player to first experience agency, thus allowing for spatial presence. “Providing a clean, transparent interface”, for example, “ensures that agency (and thus [spatial presence]) will not be disrupted” (Mateas, 2004, p. 27). This theory by Mateas regarding reliance on agency for spatial presence is also supported by Vorderer et al. (2004), who integrates agency as a subcomponent of spatial presence (Section 1.3.3.1).

Indeed, spatial presence is of interest here (Section 2.3.1) in exploring the effect of increasingly mimetic interfaces on a player’s experience of distance. It has been discussed that according to the model by Mateas (2004), and supported by Vorderer (2004), spatial presence is underpinned by agency. Furthermore, it has been proposed that observing increasing spatial presence is a useful factor indicative of whether technology is successfully altered towards narrowing distance in terms of the “salient stylistic qualities” of the medium.

However, a participant’s interaction with media may not, it has been suggested, be so simple that the medium disappears entirely, giving way to these feelings of spatial presence at the exclusion of all else. Instead, is suggested to operate via a mechanism of double awareness.

2.4.2 Double Awareness

Downes offers a more nuanced conception of spatial presence – differentiating it from “distal attribution to a remote location” – following a definition by Loomis (1992):

“…true presence occurs when the sensory data supports only the interpretation of being somewhere other than where the sense organs are located. Distal attribution to a remote location, by contrast, occurs when the sensory data represent both the remote location and the device or linkage connecting the observer with the remote location. This creates the double awareness we experience when looking at a picture and in using a metaphor” (Downes, 2005, p. 75).
This idea of double awareness as mentioned by Downes further complicates the concept of distancing. To explain this, Downes cites Bolter & Grusin (2000) on how writing allows for double awareness:

“In any writing technology… perception is a by-product of semiosis in which readers move back and forth between confronting the signs (reading with a critical distance) and allowing themselves to be absorbed into that imagined world (passive reading.)” (Downes, 2005, pp. 81–82)

This double awareness has conceptual links to the idea of “remediation”, which Bolter & Grusin (2000) posit as a contradictory struggle between transparent immediacy, which dictates that the medium should disappear, and “leave us in the presence of the thing represented”, and hypermediacy, which dictates that in order to achieve this immediacy, media technologies must multiply, becoming ever more prevalent in a quest towards its own transparency. They further state, “the logic of hypermediacy expresses the tension between regarding a visual space as mediated and as a ‘real’ space that lies beyond mediation” (p. 41). They note the example of a viewer confronting a collage, who “oscillates” between looking at the patches of paper and paint on the surface of the work, and looking through the depicted objects as if they occupied a real space beyond the surface. Bolter & Grusin suggest that twentieth century modern art is characterised by hypermediacy, by the struggle to make the viewer aware of the medium; that what they are looking at is art.

Indeed, Blackman (1998) describes the work of interactive artists in which the user’s expectations were therefore disrupted by introducing into the electronic art works ‘bugs’ and ‘malfunctions’, in order to ‘disturb’ the choice offered to the user; these attempt to ‘force the user to reflect upon their own preconceived expectations and desires within virtual space. This is therefore an example of hypermediacy; and, indeed, an example of the inverse effect of the link between interface naturalness and spatial presence, as described in the previous section. By specifically disrupting naturalness, the interface becomes visible, thus distancing the user.

Transparent immediacy, on the other hand, strives for the opposite, seeking to disappear – unsurprisingly, Bolter & Grusin attribute such an aspiration to videogames such as Myst (1993) and Doom (1993), and to virtual reality in general.

Remediation, then, is the oscillation between these two paradigms, and, more specifically, refers to the representation of one medium within another. This results in a tension, between the visibility of one medium, and the invisibility of another.
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Figure 2-3: Remediation: The Promise of Virtual Reality Technology, as Depicted in TV Show Murder, She Wrote (1993)

For conceptual ease, within the scope of the research question, this kind of duality, as presented by both Downes and Bolter & Gruisin, will be theoretically reduced to be termed ‘double awareness’. Therefore, **double awareness** is the conflict, or the oscillation between ignoring the medium, and being aware of it; the process of simultaneously looking through and looking at a medium.

2.4.2.1 **A Model for Aesthetic Distance in Videogames: Double Awareness**

Thus, an updated version of the working model of aesthetic distance is proposed, accounting for double awareness.

![Figure 2-4: A Working Model for Aesthetic Distance in Videogames (v. 2)](image-url)
Therefore, updating the previous model (Section 2.2.3), it is through *double awareness* that these alienated and empathetic stances are linked; that is, through the ability to be simultaneously yet paradoxically aware of the medium, but also to ignore it (Figure 2-5).

The concept of *double awareness* has links, it is proposed, with Swink’s theorized idea of a player’s “capricious” sense of embodiment when playing a game (Swink, 2009), in which a player may, at one moment, identify closely with a character and consider her as “me”, and then the next, immediately withdraw this, such that she once again becomes “my character” (Section 1.3.3.2). Furthermore, Salen & Zimmerman (2003) note the way in which this concept of *double-consciousness*, as they term it, means that a “player’s relationship to a character he or she directly controls is not a simple matter of direct identification” (p. 453).

However, such concerns about distance are not exclusively limited to instances where *spatial presence* is elicited. Instead, the very idea of *simulation* itself has implications for the way in which participants may engage with it via means of critical *alienation* vs. *unquestioning* identification, thus affecting their moral and aesthetic judgements (Section 1.5).

### 2.4.3 Problematizing Simulation and Distance

It has been discussed so far the way in which the history of Western art has undergone cyclical aspirations towards *mimesis* (Section 2.2.1.1, 2.3.1), and that this cycle has once again been typified since the beginning of the twentieth century with the advent of film, through television, through to these aspirations also defining the culture of commercial videogames (Salen & Zimmerman, 2003). However, Dovey & Kennedy (2006) state:

> “Although mimetic representation has by no means disappeared, we are moving into an era which recognizes that simulation is a more useful way of modelling complex environments with multiple interconnected causalities at work within them” (Dovey & Kennedy, 2006, p. 11).

However, it is proposed that simulation can and *does* aspire towards mimetic representation as well. From the numerous physics systems within games which aspire towards realism, to games which may present social interactions as akin to those in the real world (Khandaker-Kokoris, 2015a, 2015b). In this way, the naturalist aspirations of the Enlightenment tradition (Section 2.2.1.1) are embodied once again, creating “the controlled ‘imitation of nature’” (Schneider, 1995 cited in Cupchik, 2002), in order to manipulating audience emotions by aspiring towards an experience which was mimetic of the natural world.
Taking up the Brechtian (Section 2.2.1.3, 2.2.2) spirit of criticising such close identification, in which a participant may not critically think about what they are being presented with, such issues of distancing are also echoed in the analysis of the merits and problems of simulation by Turkle (2009). She notes how interacting with, and engaging with, a simulation requires a sense of immersion in the system, which can be problematic:

“Simulations want, even demand, immersion... Immersed in simulation, we feel exhilarated by possibility... But, immersed in simulation, we are also vulnerable. Sometimes it can be hard to remember all that lies beyond it, or even acknowledge that everything is not captured in it.... From both sides of a generational divide, there is anxiety that in simulation, something important slips away.”

Here, the kind of immersion Turkle refers to can be understood as diegetic immersion (Section 1.3.3.1); while simulations may not contain diegetic content in the way it is typically understood, as with videogames, it is instead the natural unveiling, over time, of the values (the structures and orders) the system exhibits. Indeed, Bogost (2006) states that: “a simulation is a representation of a source system via a less complex system that informs the user’s understanding of the source system in a subjective way” (p. 98), and also “a simulation is the gap between the rule-based representation of a source system and a user’s subjectivity” (p. 107).

Videogames may similarly be framed as simulations, thus, such issues of a lack of sufficient critical distance from them in order to “remember all that lies beyond it, or even acknowledge that everything is not captured in it” also applies here. Also similarly, Turkle concedes that the “paradox of simulation” is that its purpose may be “not to replace the real but to reveal it.”

“In 1984, an MIT professor of architecture said that to use simulation responsibly, practitioners must learn ‘to do’ and ‘to doubt’. He thought that students were not in a position to sufficiently doubt simulation, because the demands of acquiring technical mastery made it too hard to achieve critical distance” (Turkle, 2009).

This recognition of the way in which (in this case, architectural, rather than videogames) simulation must, by its nature, require participation – that is, doing, highlights the overlaps here with the problems of interactivity, agency, and distance. The act of doing, according to Turkle (2009), in order to maintain a sense of distance, must also include doubting. However, she notes that simulations are ‘immersive’ due to their beauty and coherence” and that they are designed to “tempt its users into a lack of fealty to the real.”
Through her analysis, Turkle calls for a better critical understanding of simulation, so that they can be understood as objects to be critiqued (and doubted), rather than seen as a proxy for the real. The interactive nature of simulation highlights the dissonance between an attitude of disinterestedness and immersion within it. As alluded to previously, such a conception of the problems of simulation are akin to Brecht’s (1978) criticism of the problems of unquestioning immersion in theatre; both Turkle and Brecht call for a participant to be able to think critically about their engagement in the medium, doubting instead of simply doing. Therefore, there are implications here for the nature of a player’s aesthetic and moral judgements (Section 1.5).

However, she notes, “Understanding comes out of simulation, out of discontents, and out of nowhere.” Indeed, Bogost argues for the ‘gaps’ in simulation (termed the simulation gap) as the basis of meaning-making in videogames, citing Will Wright’s assertion that he explicitly crafts his games such that the player has to fill in important details about the game’s complex interrelations between its systems (Pearce, 2001). Also citing Turkle’s early ruminations on simulation (Turkle, 1995, p. 71), Bogost notes that she conceives of simulation resignation as a “blind acceptance of the limited results of a simulation, because the system doesn’t allow any other model of the source system” (p. 107).

Meanwhile, at the other end of the spectrum is simulation denial, the “rejection of simulations because they offer only a simplified representation of the source system” (p. 107). Bogost calls the synthesis of these two kinds of responses, “simulation fever”, following Derrida’s concept of archive fever (Derrida, 1998). Simulation fever is, according to Bogost, “the nervous discomfort caused by the interaction of the game’s... representations of a segment of the real world and the player’s subjective understanding of that representation.” For Bogost, “the idea of simulation fever insinuates seriousness back into play and suggests that games help us expose and explore complicated human conditions, rather than offering mere interruption and diversion” (p. 136).

It is proposed that simulation fever is, therefore, akin to the concept of double awareness (Section 2.4.2). This referred to the conflict, or the oscillation between ignoring the medium, and being aware of it; the process of simultaneously looking through and looking at a medium.
2.4.3.1 A MODEL FOR AESTHETIC DISTANCE IN VIDEOGAMES: SIMULATION FEVER

Simulation fever is, however, more specifically the tension that exists between identifying closely with a simulation, and ‘accepting’ it blindly (as Bogost asserts), and being critical and distanced from it. Given the overlap in terms, and the domain-specific focus on videogames of this research question, it is proposed that these terms be concatenated. Therefore, it is proposed that simulation fever is a specific component of double awareness within videogames, relevant when considering the player’s sense of aesthetic distance (Figure 2-6).

2.4.4 Integrating Art and Interaction

A salient concern addressed thus far is the way that videogames as interactive may present a problem for maintaining appropriate aesthetic distance for critical thinking, and it has been posited that given the aspiration towards mimesis (in this case, interface mimesis) observed in the socio-technological history of videogames, this may be further exacerbated. Indeed, from the concerns raised by Turkle (2009) regarding the nature of simulation as “temp[ing] its users into a lack of fealty to the real” (Section 2.4.3), it may be observed that these are not far removed as those relayed by Brecht (Section 2.2.1.3).
However, in order to resolve the question of how interaction may still be *disinterested*, and this means for aesthetic and moral judgements, it is pertinent to return once again to the history of Western art.

One such offering, from Joseph et al. (2012) resolves the conflict between the problem of disinterested aesthetic experience and interacting with a mediated experience, by appealing to the philosophy of John Dewey, for whom aesthetics is a form of praxis that cannot be separated from life. McCarthy & Wright (2004) note the argument by Stuhr (1998) that Dewey’s pragmatist philosophy “was always at bottom a *social and political* philosophy, concerned with creating a democratic culture” (McCarthy & Wright, 2004, p. 53). Dewey sought to take aesthetic experience out of the domain of museums and fine art, and into the ordinary, lived experience of everyday people.

Instead, for Dewey, art is rooted in everyday experience; Joseph et al. (2012) describe how Dewey’s “challenge to traditional distinctions between the fine arts and other domains of life has been central to the development of the aesthetics of the everyday, a theory that, in turn, informed developments in contemporary art in the second half of the twentieth century, including… interactive art.”

For Dewey, aesthetic experiences are not just ones that are confined to museums or fine art, but instead, can be found throughout the everyday, from both dramatic events through to quiet, contemplative moments. McCarthy & Wright (2004) further extend Dewey’s notion of *Art as Experience*, and posit the importance of *Technology as Experience* by acknowledging the aesthetic accounts of interacting with videogames and narratives as given by Laurel (1993) and Murray (1997) and further extending this to other modern technological interactions such as online shopping, and social networks, and so forth.

However, it is contended that while everyday life may be open to *aesthetic experience*, just as everyday life is open to *critical distance* (Section 2.2.2), the specifics of *aesthetic distance* instead demand consideration with respect to *artistic* objects.

Thus, limiting this scope to art, another route for integrating artworks with interaction is addressed by Dovey & Kennedy (2006), who note that some scholars such as Aarseth (2003) argue for the interactive nature of all previous forms of media, from books to television, due to the viewer’s active participation with the object. Indeed, they note that “audience studies demonstrate that watching television, for example, is not a passive activity; the viewer or viewers actively interpret programmes in relation to their knowledge of particular codes and genres” (p. 6); it should be noted that such a “knowledge of particular codes and genres” arguably contributes to a viewer’s aesthetic attitude (Section 1.3.4), and to the concept of familiarity as previously addressed (Section 2.3.1.1).

However, despite this arguable account of interactivity across all historical media, Dovey & Kennedy level the criticism that “conflating ‘interactive’ with ‘actively interpreting’… does not help us to differentiate between texts” (p. 6), calling for further specificity than such a definition affords.
In order to address this criticism, it is proposed that a more appropriate route for integrating art and interaction, is that which is proposed by Kirkpatrick (2009, p. 123): considering the “role of the body [emphasis added] in art appreciation”. Kirkpatrick notes this is “almost always limited to an account of the eye.” He notes that the eye is indeed drawn into the three-dimensional space on the two-dimensional surface of a painting; though, there are cases throughout history where interaction with painting is required. He notes the example of *The Ambassadors* (1533) (Figure 2-7), a ‘double painting’ in which the viewer first notices the two men in a room, using linear perspective such that “it is co-extensive with reality itself” (Kirkpatrick, 2009, p. 124). However, the observer must physically alter their position with relation to the painting to make out more clearly the elliptical shape in the foreground.

![The Ambassadors (1533) by Hans Holbein the Younger. National Gallery, London.](image)

To see the skull, then, involves a physical puzzle of sorts; the painting requires physical participation in order to engage with it fully. In his analysis of the painting, Slavoj Žižek, as noted by Kirkpatrick, suggests that the lesson of the painting is that “reality already involves our gaze, that this gaze is *included* in the scene we are observing” (Žižek, 2009). Thus, this painting presents two incommensurate views. Kirkpatrick suggests, “the pleasure in this painting involves… movement” (p. 126).

Indeed, it can be argued that this painting is emblematic of the ways in which painting and other traditionally ‘noninteractive’ artwork is able to invite this kind of interaction, doing so in a manner that means the observer’s active *participation* with the object. Such thoughts on participation are echoed by Walton:
“We should expect viewers of paintings and films, spectators of plays, readers of novels and stories to participate in the games in which these works are props as much as children participate in games of cops and robbers, cowboys and Indians, dolls, and mud pies... Appreciation of representational works of art is primarily a matter of participation” (Walton, 1990, p. 213).

Thus for Walton, representational art, or simply, representations, are synonymous with *fictions*; representational art is that which generates fictional engagement for the observer. For Walton, this is the nature of participation with representational art.

Indeed, it was contended earlier that while everyday life may be open to *aesthetic experience*, just as everyday life is open to *critical distance* (Section 2.2.2), the specifics of *aesthetic distance* instead demand consideration with respect to *artistic* objects. Therefore, in order to address the research question (1.5), it is useful not to consider aesthetic experience in everyday life, but instead, target this exploration to consider, as Walton does, participation with the *fictional*.

### 2.4.4.1 The Role of Participation

Walton’s definition of ‘representational art’ is a permissive one, encompassing visual arts, literary works, theatre, film, opera, and indeed, children’s games using props such as stuffed toys and trucks (Walton, 1990). To this list can be added players of videogames too (Robson & Meskin, 2012). For Walton, appreciators of representational art are always participants, due to the role of imagination – or, as he terms it, make-believe, in interacting with the artwork. Indeed, for Walton, representational artworks are such that they represent *fictional worlds*. In Walton’s terms, a painting such as *The Ambassadors* (1533), it is *fictional* that two wealthy, powerful young men are standing in a room next to a table with several books and instruments. It is fictional because the painting is actually paint strokes on a canvas, configured in a certain way. However, perceiving the painting is, in Walton’s view, an automatic “act of imagination”. Referring specifically to the painting *The Shore at Sheveningen* (1660) by Willem van de Velde, which depicts a small number of fishing boats coming to land, he states:

“[The appreciator’s] act of imagination is not a deliberate or reflective one, but is triggered more or less automatically by his perception of the painting. He is simply disposed to think of himself as seeing ships, without deciding to do so, when he sees the painting” (p. 217).

This is a phenomenon also infamously evoked and addressed by the painting *The Treachery of Images* by Rene Magritte (1928-29), which depicts a pipe, captioned in French “Ceci n’est pas une pipe” (“This is not a pipe”), for it is a *representation* of a pipe. The pipe is *fictional*. Therefore, for Walton, appreciation of any representational art is an act of make-believe; he contends that “appre-
ciators immerse themselves in fictional worlds. They are carried away by the pretense, caught up in the story” (p. 274).

![Image](image_url)

**Figure 2-8: The Treachery of Images (Magritte, 1928-29)**

However, for Walton, this act of make-believe is a product of both the appreciator, and the form of the artwork. Thus, Walton concedes that some representational art actively tries to diminish participation, calling this ‘appreciation without participation’, though urges that it remains ‘appreciation’ nonetheless. However, where this happens, he asserts that this becomes more akin to a ‘spectator sport’: “our stance is more akin to that of an onlooker than a participant in games of make-believe.” He notes “one obvious way in which works sometimes discourage participation is by prominently declaring or displaying their fictionality”, giving the example of Calvino’s self-referential, ergodic literature novel *If on a Winter’s Night a Traveller* (1979). While he concedes that the fictionality is not news to the reader, but this compels the reader to dwell on it, and “restrains [his/her] imagining otherwise” (p. 275). In the realm of painting, Walton notes how “the conspicuous brush strokes of Van Gogh’s *Starry Night* call attention to themselves and to their record of the process by which paint was applied to the canvas, possibly intruding on the viewer’s participation in his game.” A parallel exists, then, between this and the work of interactive artists as described by Blackman (1998) (Section 2.4.2), which disrupted the user’s expectations by introducing ‘bugs’ and ‘malfunctions’, which ‘disturb’ the choice offered to the user, thus making the user feel more distanced from the experience, or, in other words, increasing their aesthetic distance from the work.

Walton also notes how the appreciator’s attitude is a factor in this make-believe that takes place in his or her participation with an artwork. Although he asserts, “participation is almost always partly
physical” (p. 240) with representational art, he concedes that “appreciators are passive, reflective, and ‘distanced’, it may seem, while children are active, physical, and involved” (p. 224). Thus, Walton notes how participation is restricted in the representational arts but that, “some restrictions are due to the nature of the props”, and furthermore, “one effect of this restriction and of limitations on participation generally is to give the appreciator a kind of objective, ‘distanced’ perspective on the world of his game” (p. 237).

Therefore, a Waltonian framework is indeed akin to the concept of aesthetic distance, which is a result of the salient stylistic properties of an artwork, and “the disposition of the observer” (Cupchik, 2002; Grau, 2000).

2.4.4.2 Contemporary Ideas about Distance

Continuing this conceptual thread of participation with artworks, the work done regarding relational aesthetics and participatory art also concerns new ideas about distance to be resolved here. Art historian Claire Bishop (2012) writes extensively on the contemporary prevalence of ‘participatory art’, and explores the discontents of this paradigm known as Relational Aesthetics (Bourriaud, 2002). Such a paradigm is rooted in the belief that collaborative art, which actively involves the audience in its creation and participation, is grounds for a more egalitarian society, through direct engagement with its production.

An additional factor in contemporary art is the assertion by Flanagan that twentieth century art history, which sought towards the “dissolution of the active and passive dichotomy of the art world, as well as aestheticization of the every day.” She notes, “the importance of the everyday object continued to grow with this new emphasis on play” (p. 170). It is proposed that such a move can be seen as akin to Brecht’s efforts to act against the establishment, and remove, from art, an elitist structure, and to eliminate the ‘active and passive dichotomy of the art world’. While other artists of the avant-garde sought to eliminate the aesthetic distance ensured by the “superiority of the spectator”, which would allow them to employ their aesthetic judgement (Groys, 2011, p. 101), Brecht’s approach was to create “a critical distancing, a jolting of the audience from the innate tendency towards passivity [that he] saw as both integral to the theatre, and actively encouraged by the naturalists and symbolists” (Pinchbeck, 2006) (Section 2.2.1.3), whereas mid-to-late twentieth century art practitioners in this tradition sought to remove aesthetic distance; the barriers between the spectator and the object.

For example, the work of Fluxus artist George Maciunas sought to create a “’nonprofessional, non-parasitic, nonelite’ art in which anything could be art, and anyone could make it” (Flanagan, 2009, p. 170). Intriguingly, such a movement parallels the current landscape within videogame creation, and in particular, the new tradition of creators such as Anna Anthropy, whose goals for videogames carry the same politic (Anthropy, 2012).
Thus, the everyday is framed by playfulness; it is still prudent to investigate the ways, that this playfulness in games, in turn, affects the everyday.

Artists working in these contemporary traditions eschew older conceptions of distance as have been discussed thus far. On this note, Bishop (2006, p. 11) underscores that: “By today’s standards, many would argue that the Brechtian model offers a relatively passive mode of spectatorship, since it relies on raising consciousness through the distance of critical thinking. By contrast, a paradigm of physical involvement – taking its lead from Antonin Artaud’s Theatre of Cruelty among others – sought to reduce the distance between actors and spectators.” Bishop notes that such a framework of reduced distance through physical involvement is intended to incite social change; such work was, she notes, also “paralleled by upheavals in visual art and pedagogy”. One such example is the work of Brazilian artist Lygia Clark (1948-1988) whose various interactive and participatory objects sought to create a space between “art and non-art… between aesthetic contemplation and self-analytical immersion” (2014).

Thus, such works are created by artists who work to this “rhetoric of democracy and emancipation” (Bishop, 2004), viewing the traditional producer-viewer relationship in art as unequal. Bishop further notes that such a tradition stretches across arts of many media, from experimental German theatre of the 1920s, to new-wave film, from Minimalist sculpture to post-Minimalist installation art in the 1970s, to socially engaged performance art in the 1980s. Crucially, Bishop notes that “it is no longer enough to [simply] say that activating the viewer… is a democratic act, for every art work—even the most “open-ended”—determines in advance the depth of participation that the viewer may have with it” (2004, p. 78). After all, she notes philosopher Umberto Eco’s suggestion that “every work of art is potentially “open,” since it may produce an unlimited range of possible readings; it is simply the achievement of contemporary art, music, and literature to have foregrounded this fact” (Bishop, 2004, p. 62).

This yields the question of how such assertions about art and participation and their supposed (though critiqued by Bishop) ‘emancipatory’ power (that is, the power to elicit social change towards a more equal society) might relate to videogames. This is pertinent if the interface, through increasing interface mimesis, is to change the relationship between a player and the game, and how they perceive it.

2.4.4.2.1 Applying Contemporary Ideas of Distance to Videogames

At first, this seems a complex relationship involving apparent contradictions: videogames are objects intentionally designed by the developers (whether this is a team or an individual), yet also offering often-unique experiences on a particular playthrough; the developers are the ones who “[determine] in advance the depth of participation that the viewer may have with [the game]”. Yet, as has been established through discussion of interactivity and agency in games, they are not a ‘disinterested’ activity either; it may be considered that games, as defined within the scope of the re-
search question (Section 1.5), are not able to convey meaning unless a player is interacting with them beyond simply observing them.

Whether participation (or, rather, interaction) with a game may fit this model as proposed by relational aesthetics of engendering social and political change through ‘self-analytical immersion’ (or rather, within the scope of this research, self-analytical spatial presence) is of interest. This question is one of the aesthetics of interactivity as having been defined by Penny (2004); that is, a focus on the experience of the player, engaged and interacting with a videogame experience.

Applied to videogames, it is argued that the ideas about games as confronting simulation, as explored earlier (Section 2.4.3), provide the answer here, and are a corollary to Bishop’s ideas of relational aesthetics.

This ‘self-analytical immersion’ is reflective of the idea of simulation fever by Bogost (2006), “the nervous discomfort caused by the interaction of the game’s…. representations of a segment of the real world and the player’s subjective understanding of that representation” (p. 136). By confronting the player with a certain simulation, a certain system of rules, they are tasked to play through it and confront the crisis this creates, thus creating meaning through this simulation gap. Bogost suggests that “the idea of simulation fever” insinuates seriousness back into play and suggests that games help us expose and explore complicated human conditions, rather than offering mere interruption and diversion” (p. 136). This is a paradigm also advocated by Mary Flanagan (2009) in her book Critical Play, about using games and play for social change, and the creation of “activist games”.

However, the question remains of whether an increase in interface mimesis thus leads to a narrowing of aesthetic distance, and whether this, in turn, makes simulations, in Turkle’s terms, more “easy to love and difficult to doubt.”

Therefore, this raises the question, once again, of what this means for the player engaged in a morally significant game using such a mimetic interface, a concern which the research question (Section 1.5) addresses through positing exploration of a player’s aesthetic and moral judgements. Therefore, it can now be addressed what the implications for these judgements may be as a player’s aesthetic distance moves from alienation to identification.

2.5 BETWEEN ALIENATION AND IDENTIFICATION IN VIDEOGAMES

2.5.1 The Moral Implications of Identification: Doing versus Doubting

This discussion has already presented the way in which distance shapes the experience of the observer (or player), by positing a model of aesthetic distance in videogames as a spectrum of identification to alienation, linked by double awareness, or simulation fever (Figure 2-5). It has been considered how, as also stated by Grau (2003): “since the eighteenth century aesthetic theories have
regarded distance as a constitutive element of reflection, self-discovery, and the experience of art and nature” (p. 286).

Having established empathy as an aesthetic concept (Section 2.2.1.2) and posited a model of aesthetic distance that considers how far the player is distanced vs. how far they identify with a game (Section 2.4.3.1), it is asserted that issues of identification while playing a game is of paramount importance to the concept of aesthetic distance, particularly as interface mimesis is enhanced.

Given the concept of *Einfühlung* [empathy] (Section 2.2.1.2), this identification is not, therefore, limited only to identification with a protagonist or player character. It also concerns identification with the videogame at large, including with the environment, and, in the context of *morally significant* games as addressed by the research question, identification with “depicted human non-player characters (NPCs)” about whom they should make decisions with dramatic consequences (Section 1.5).

As noted previously, Grau (2003) claims that “when actually immersed in a high-resolution, 360 illusion space, it is only with great difficulty that an observer can maintain any distance from the work or objectify it”. Therefore, this refers to the lack of identification with a work as a whole, not necessarily with a particular character within it. Grau further theorizes that due to this, “It is well-nigh impossible to perceive it as an autonomous aesthetic object… the dissolution of the interface is a political issue” (p. 202-203).

Addressing such “political issue[s]”, as noted previously, Bishop writes regarding contemporary trends in art discourse:

“…today, political, moral, and ethical judgments have come to fill the vacuum of aesthetic judgment in a way that was unthinkable forty years ago. This is partly because postmodernism has attacked the very notion of aesthetic judgment, and partly because contemporary art solicits the viewer’s literal interaction in ever more elaborate ways” (Bishop, 2004, p. 77).

Therefore, it is argued here that such judgments: aesthetic, versus “political, moral and ethical” are not so much of a dichotomy as may be presented by contemporary concerns; as Turkle (2009) also notes in her analysis of non-videogame simulations: “Life in simulation has ethical and political as well as artistic dimensions.”

While the meanings of ethics and morality contain overlaps within the literature, ethics (also referred to as moral philosophy) refers to the ways in which human beings assess concepts of right and wrong. As a subset of this, philosophical reflection specifically on the nature of moral judgement is known as *meta-ethics*. Indeed, while the focus of ethics is on the systems used to make such assessments, morality and morals refer to the customs and practices of right vs. wrong behav-
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...n o u r, as held by individuals, social groups, or cultures (Benn, 1998; Satyanarayana, 2008). Related closely to this, what is political/broadly concerns the ways in which people interact with one another, on a larger social and cultural scale.

An earlier, broad examination of the ethical implications of the socio-technological trend of progressive embodiment in games (particularly, the ethics of designing such games) is detailed in a book chapter by Khandaker (2011) in the edited collection Designing Games for Ethics: Models, Techniques and Frameworks (Appendix A). However, excluding this, additional analysis is pertinent to the discussion of how enhancing interface mimesis (thus, as it is hypothesised, narrowing aesthetic distance) may affect players.

Arguably, this primacy of distance in artwork is underpinned by the concept of how art – and indeed, the experience of an artwork – has an effect on morality. Indeed, in the edited collection Aesthetics and Ethics: Essays at the Intersection (1998), the overlap between these titular disciplines are described in the introduction by Jerrold Levinson as “an area of growing concern”; however, these disciplines can instead be considered to have been long-related: in 1921, Wittgenstein declared, “aesthetics and ethics are one”.

However, a shortcoming arises in Carroll’s conception of this relationship between art and morality, in the following:

“I think that with respect to most narratives, the audience’s role is more of the nature of an observer and that the contribution that narratives make to understanding has primarily to do with assessment of third parties rather than deliberation about action…. I think that imagining what it would feel like to be a character is not the norm in experiencing fictions” (Carroll, 1998, p. 153).

Carroll thus rejects the conception of the relationship between artworks and moral understanding as put forth by Palmer (1998) and Currie (1995), the latter of whom prioritizes how imaginative involvement in fiction, such as when we are reading a book, is akin to a simulation. Currie holds that, “What is so often called audience identification with a character is best described as mental simulation of the character’s situation by the audience” (1995, p. 157). Similarly, Palmer contends that engaging with morally significant fiction “feeds and strengthens the moral imagination’s capacity for knowing what it would be like to be, for example, a Macbeth, and that this exercise of the imagination is thereby linked to practical knowledge” (Carroll, 1998, p. 152).

Carroll dismisses this as “a reversion to the notion of identification” (emphasis added). Carroll thus rejects the theory that the audience’s relationship with most narratives is one of identification, and this line of argument is compelling when the narrative media in question is movies, plays, and...
books. He notes Plato’s reservations about the concept of identification, for whom “identifying with others is immediately morally suspicious.”

“Here, of course, Plato was not simply thinking of designated actors taking on roles; he also believed that ordinary readers of dramas would become involved in a species of identification with others as well, inasmuch as they spoke the lines of characters” (Carroll, 1998, p. 128).

In countering this, Carroll notes, “… As Diderot pointed out long ago with respect to the actor, no one could become Oedipus and continue the performance.” An audience does not, according to Carroll, tend to “standardsly identify cognitively or affectively with characters”; he gives the example of Oedipus, whose sense of crushing guilt the audience does not share, even though they may feel sorry for him (Carroll, 1998, p. 131).

In a similar vein, regarding the controversy about Manhunt 2 (befitting the definition of a morally significant game) as detailed earlier (Section 1.1), and in Khandaker (2011) (Appendix A), Bogost (2009a) claims that in A Clockwork Orange, for example, the audience is meant to feel repugnance at the protagonist Alex’s actions. That is, the audience does not identify “cognitively or effectively” with Alex, if Caroll’s (1998) definition is to be used. Thus, Bogost also addresses Manhunt 2 in this way:

“The game’s coupling of gestures to violent acts makes them more, not less repugnant by implicating the player in their commitment… In Manhunt 2, we are meant to feel the power of Daniel Lamb’s psychopathy alongside our own disgust at it. It is a game that helps us see how thin the line can be between madness and reason by making us perform abuse” (Bogost, 2009a).

Bogost (2007) asserts that ‘videogames have a unique persuasive power’, as they provide a systemic view of the world which can promote a certain mental model. He defines procedural rhetoric as ‘the art of persuasion through rule-based representations and interactions’, and ‘the act of using processes persuasively’; this can be extended to designed interactions within a game, and is of particular relevance when such actions in a morally significant game are mimetic. An increased sense of physical embodiment, it may be argued, could allow for procedural rhetoric that is perhaps more visceral and powerful, by committing the ‘forced actions’ of the player to their real world, physical body. However, it is this concept that the research question seeks to address through empirical exploration (Section 1.5).

Thus, the player’s relationship with Daniel in Manhunt 2, should not, from a virtue ethics perspective, be one of direct identification. Of course, such a notion remains valid as long as the player questions the gap between the simulation (Turkle’s simulation resignation, or as per the model of
aesthetic distance presented here, *identification*, and their own subjective feelings (Turkle’s *simulation denial*, or *alienation*). Furthermore, it is argued, as suggested in Khandaker (2011) (Appendix A), that the ability to maintain this simulation gap – and thus, make a moral judgement - is determined by the extent to which the player is ‘virtuous’. Within the context of empirical exploration, trait empathy (as measured in Hartmann et al., 2010) may be used to operationalise this ‘virtuous’ nature.

It is proposed that in the context of morally significant videogames, a virtuous player who appears more cognitively and emotionally engaged in a moral decision in a game is not necessarily displaying that they have *critical or aesthetic distance*, as they may be thinking about the situation as though it were a real life decision. Thus, a player who has low aesthetic distance from a game will experience greater *identification* with the game’s characters and environment.

Sicart (2009) asserts, “a designer is responsible for the object, but the players and their communities are ultimately responsible for the experience”. He further notes, “A player has to have ludic maturity to understand the reasons behind the simulation and the fact that she is interacting with a game world specifically designed to produce a ludic experience.”

2.5.2 Who is the Player Character in 3D Avatar-Driven Videogames?

The issue of identification with a particular protagonist is problematic across all artistic media, as established (Section 2.5.1), but within videogames, this relationship appears potentially complex for different reasons, which warrant further exploration.

For Robson & Meskin (2012), videogames do indeed adhere to the model of fiction as “make-believe” (Section 2.4.4.1), as proposed by Walton (1990); they defend this model of games against the criticisms mounted by both Tavinor (2005, 2009) and Velleman (2008). This model, by Walton, is a broad, inclusive model addressing all modes of fiction, from literature to theatre, and indeed, even fictional play involving toys (e.g. children playing house, etc.). For Walton, all of these types of fiction involve make-believe; the model presents a dichotomy between the ‘work world’ and the ‘game world’ (though, will be termed as Waltonian-game world from here, to avoid confusion with the fictional worlds presented within videogames). The ‘work world’ denotes the fictional world of the work itself (in the case of videogames, this is the game as presented through designed code, maps, and so forth), and the Waltonian-game world presents the way in which the fictional world serves as props for the audience. Robson & Meskin illustrate this by referring to the television show *Doctor Who* (1963-2015), in which the fictional world of the show is the ‘work world’, and the viewer ‘seeing’ the characters is the ‘Waltonian-game world’. That is, the viewer is not really part of the fictional world and is not ‘seeing’ the actual Doctor, but instead they are seeing an actor playing the Doctor.

Tavinor (2005) provides an account of the way in which Walton’s model is troubled or ‘smudged’ by videogames, as, “in contrast to consumers of standard [non-interactive] fictions, players of vide-
ogames can influence what is true in a work world”, as conceded by Robson & Meskin (2012, p. 8). However, they reject Tavinor’s proposition that there is no clear distinction within videogames, between what is true in the work world, and what is true in the Waltonian-game world. They argue instead that within a series such as BioShock (2007-2013), while the player may feel guilt at their own actions, they state that “there is no good reason to believe that the character feels guilt in the work world [i.e. the game itself]” (2012, p. 9).

It is proposed that this counterclaim by Robson & Meskin offers up two particular shortcomings. Using their own example of BioShock (2007), it is true that the game may not convey any grief, guilt, or remorse on the character’s part for committing murders; this does not happen either through scripted animation, nor through some other mechanic whereby the character’s abilities are apparently limited due to being consumed by emotion or similar. Instead, even in the “work world”, if the player does not continue out of being consumed by guilt, then the character does not continue either. If the player’s performance is impaired due to grief, then the character’s performance is also impaired. Thus, the character and the player are one; in this regard, there is no distinction between the work world and the Waltonian-game world in a case such as this.

That is not to say that games such as BioShock do not present inconsistencies within and between the “work world” and the “game world” of the videogame itself. Hocking (2007) offers an analysis of the ludonarrative dissonance within BioShock: that is, the disconnection between what the story tells the player about their character and the game’s fiction, and what the mechanics actually afford for the player to do.

The second shortcoming regards the universality of Robson & Meskin’s claims; the extents to which the interactions in a game vary are entirely a designed feature of that experience. That is, it is possible for a videogame to be designed to feature a mechanic through which a game character also expresses guilt; such a designed interaction is not a feature of the form of a videogame, but rather a specific detail of its realisation.

The example above regarding the lack of clear distinction between work-world and Waltonian-game-world in BioShock also serves as one of the reasons for silent protagonists in first-person videogames; by offering a more direct mapping between the work world and the Waltonian-game world, the videogame aspires towards player identification. Of course, there are other examples of this too within first person games, such as when the player character is artificially limited in some way. One such example is ‘sprinting’ mechanics within games, where the character is able to run or sprint for a limited amount of time, such as in Half-Life 2 (2004). Therefore, there are instances where the player wishes to keep sprinting, but the character is unable to. Thus, although for different reasons, the player and their character are unable to move faster, creating a synchronicity in the work-world and Waltonian-game world.
Games are often self-aware about the tensions between the work-world and the Waltonian-game world; with a game with a silent protagonist such as *Half-Life 2* as mentioned above, there exists a fuzzy line between the player, and the character of Gordon Freeman. However, intriguingly, in *Half-Life 2*, the game only acknowledges the player and the character as separate entities in a sequence that is only accessible if the typically expected rules of the work-world are violated, and the player accesses a specific area of the map. An ‘Easter egg’ can be accessed, featuring a character named *The All-Knowing Vortigaunt*, which delivers a cryptic set of speeches, some of which seemingly references the duality and the tension between the ‘real’ player and the character of Gordon Freeman. For example, lines such as “Far distant eyes look out through yours”, “How many are there in you?”, “Something secret steers us both. We shall not name it”, and “Your bright face obscures your darker mask” (*Half-Life 2*, 2004).

Games vary widely in the extent to which players may identify as – or become – the character. Videogame critic Leigh Alexander writes on the notion of the ‘self’ in games, asking “When We Play Games, Who Are We?” (2014). She notes that within the *Mass Effect* series (2007-2012), players are invited to define the hero “Commander Shepard”, both visually through character customization, and through the choices and interactions with other non-player characters, and the ‘disruptive’ feeling of being unsure whether to make decisions as herself, or role-play as a particular character. This is contrary, she notes, to *The Walking Dead Season One* (2012), in which the player takes on the role of Lee Everett, who is responsible for looking after a child. Thus, the player is invited to make decisions depending on how they wish to define Lee Everett, and who he is, but there are little constraints on making decisions based upon the player’s own morality. Thus, the issue of identification is a troubled one within videogames; involving a “capricious” sense of embodiment (either participative or physical) experienced by the player (Section 1.3.3.1).
This returns to the assertion by Salen & Zimmerman that the way in which games create meaning for players is via a mechanism of “double-consciousness”, a “multi-layered experience” that is “something separate from, but connected to the real world”. In this sense, the player is fully aware of their game character (where appropriate) as an artificial construct. This constant transfer of identity, which Swink (2009) describes as “capricious”, is also argued to be part of what makes games fun and engaging. This capricious flow of identity means that this extension can be “withdrawn” at an instant; Swink suggests that in this way, players avoid blame but maintain engagement, “getting back to the pleasurable sensations of control more quickly” (p. 28). In this context, one can consider the relationship between the player and the character within a game as one of a puppeteer-and-puppet (Westecott, 2009).

Thus, two things become apparent: firstly, the notion of identification within videogames is a complex, nuanced, and multifaceted subject. Secondly, it further highlights the importance of restricting the scope addressed by the research question to a subset of videogames; namely, those that are avatar-driven, and from a first or third person perspective. However, even within such a subset, issues of identification are still full of discontents.

Returning to Walton’s theories of participation with fiction (that is, fictional, representational art), suggests that videogames are not alone in this complex relationship with identification:

“Joyce does not imagine an identity between herself and Napoleon. But she does imagine both herself and Napoleon, and these two imaginings, though distinct, are significantly linked” (Walton, 1990, p. 34).

Indeed, Walton also notes the “strangely schizophrenic” nature of our links between the real world and fictional ones. He notes that for many representational fictions, the worlds and their contents “seem insulated or isolated in some peculiar way from the real world, separated from it by a logical or metaphysical barrier”, while at the same time, he notes, “we seem to be in psychological contact with characters, sometimes even intimated with them” (Walton, 1990, p. 191).

It is arguable that when applied to videogames, there is a semblance of “physical contact” with a protagonist character in a fictional world, unlike in the other worlds he describes (p. 192), due to the way in which players of videogames have agency over their avatar. Therefore, this relationship between players and their avatar in a first-person game, though still “strangely schizophrenic” and reminiscent of the various kinds of duality examined herein so far (cognitive synergy, double awareness, and simulation fever), is potentially more salient than the sense of identification between a reader and the protagonist of a first-person book, for example.

However, with an increase in interface mimesis, as in virtual reality, it is explored whether this increasingly becomes it a relationship of direct identification.
2.5.3 Identity and Identification in Virtual Reality

The theoretical and experimental work in the virtual reality literature offers much insight into issues of spatial presence and body ownership. While Slater & Vives (2014) describe the wealth of evidence indicating a sense of presence, or being there, in an immersive virtual environment, the latter concept of body ownership – that is, replacing one’s own sense of their physical body with a virtual one – is a subset of this for which there is increasing recent evidence.

This work is based upon experimental manipulation of (physical) embodied experience, a classic example of which is perhaps the ‘rubber hand illusion’ experiment by Botvinick & Cohen (1998) in which a fake rubber hand is placed alongside the participant’s own on a table, while an occluding screen prevents them from seeing their real left arm and hand. Both the real left hand and the rubber left hand are stimulated synchronously, after which the participant typically misidentifies the rubber hand as their own. A more recent version of this experiment applies this principle to a third “supernumerary” hand, indicating participants’ ownership over a third hand, suggesting this extra hand “borrows” some of the multisensory processes normally used to identify and localise the real limb” (Guterstam, Petkova, & Ehrsson, 2011).

The work of Slater and Usoh (1994) and Slater & Vives (2014b) describes nascent experimental work which connects ideas of spatial presence and the sense of having a virtual body, in which participants were given a virtual body (through use of a head-mounted display and some basic positional tracking, and later work in which they were given whole-body-tracking suits. To recap, they describe body ownership thus:

“… a person’s whole body can be ‘replaced’ by a virtual body in IVR [immersive virtual reality] so when they look down towards their own body, they would see the virtual body instead. Additionally when they look towards a virtual mirror, they would see this virtual body reflected back. This is already a very powerful cue to the brain to feel this virtual body as their own since throughout life whenever we look down towards our body - or in a mirror - of course we see our own body” (p. 3).

Further research has suggested that adults embodied through virtual reality in a child body influenced perception of object sizes (Banakou, Groten, & Slater, 2013); post-exposure, participants who had felt a sense of body ownership in a child body vastly overestimated the size of objects, compared to those who were embodied in an adult body.

Such virtual body experiments also have ethical and political implications; a similar study, but embodying adult men in the virtual body of a female child produces a strong physiological response when the child is placed in a threatening situation (Slater, Spanlang, Sanchez-Vives, & Blanke, 2010), and there is also research to suggest that being embodied in the virtual body of an elderly person can reduce negative stereotypes toward the elderly (Yee & Bailenson, 2007).
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

Thus, it is suggested in the literature that ‘inhabiting’ a virtual body of another demographic can be seen to reduce bias, and perhaps engender empathy (Peck, Seinfeld, Aglioti, & Slater, 2013; Slater et al., 2010; Slater & Vives, 2014; Yee & Bailenson, 2007). It was noted in the earlier discussion of spatial presence (Section 2.3.1) that a component factor of the construct, as discussed by Slater, Usoh, & Steed (1994) is “the self-representation of the participant”. That is, they suggest, that the participant’s virtual body should be “similar in appearance to the participants’ own body, respond correctly, and be seen to correlate with the movements of the participant”; however, such recent work appears to have revised the “similar in appearance” dimension.

Indeed, the work of Peck, Seinfeld, Aglioti, & Slater (2013) looks at reducing implicit racial bias by embodying light-skinned participants in the body of a dark-skinned virtual body via a HMD and full-body-tracking velcro suit. Other between-subjects conditions were embodying participants in a light-skinned virtual body, in an ‘alien’ purple-skinned body, and a non-embodied (i.e. no positional tracking) dark-skinned body. Participants took the Implicit Association Test (IAT) (Greenwald, McGhee, & Schwartz, 1998) (designed to expose subconscious racial biases), pre and post-exposure. Although the participants’ showed low degrees of explicit racial bias on average, the initial IAT tests showed higher levels of implicit racial bias. The participants were exposed to the conditions, and it was found that the mean levels of body ownership were high in all the embodied groups. The post-exposure findings upon taking the IAT again suggest that there was a reduction in mean level of implicit racial bias in the group embodied in the dark-skinned virtual body. Thus, Slater & Vives (2014a) suggest that, “In other words, the difference in body types— specifically, skin colour—was responsible for reducing implicit racial bias in the [embodied] group.” Indeed, Slater, in describing this study to the media, refers to virtual reality as an “empathy generating machine” (Hogenboom, 2013).

Along these lines, game interface technology has also been used by projects such as Girl Mirror Look (2013) and The Machine to be Another (Kuchera, 2014). These use the Oculus Rift in various ways in order to show the active observer a gender-swapped version of himself or herself. This is achieved in the former simply where the player is male, and showing them, via the HMD a female avatar in a ‘mirror’, whose head movements are mapped to the player’s own head movements. Thus, this is a rudimentary way of achieving a ‘virtual body’ in an interactive virtual reality (IVR).

Indeed, according to Slater & Vives (2014a) conception of IVR, such an implementation satisfies the conditions required, as “a standard IVR system has two critical components”. These include a “display device that delivers surrounding high-resolution stereovision and sound to a participant” substituting their real world sensory input with computer generated input. The second condition requires bodily tracking, of which the head must at least be tracked.

In the former example of The Machine to be Another, the virtual body is achieved in a semi-artificial manner, as it requires two observers, of opposite genders, who may see one another’s first-
person perspective (as if looking through each other’s eyes) through an Oculus Rift head-mounted display. These two observers must purposefully synchronize their movements while wearing the HMD; otherwise, the sense of having a virtual body is disrupted.

Thus, there are some notable implications of such virtual reality applications, for embodying active observers in a body other than their own, and with some reported potential effect on fighting ingrained biases through this body ownership. Of course, such a notion is not without criticism, as there is no indication at this point that any lasting effects of implicit association are long-term.

That these concepts are being employed and investigated in virtual reality support the claim by Grau (2003) that:

“After the collapse of the twentieth century’s utopias, it is no coincidence that religion and ethnic identity are once again coming to the fore and that the most advanced media technology is also the projection screen for our utopian visions.” (2003, p. 291)

These assertions are analogous to the theoretical contributions of Donna Haraway, Dovey & Kennedy (2006) summarise the contributions of Haraway’s cyborg manifesto, an explicitly feminist reimagining of Biocca’s notion of progressive embodiment. Haraway’s vision of the cyborg was offered “as a way to move beyond the traditional association of women with nature”, and avoid the “problematic binaries of nature/culture, male/female”, and allow traditionally marginalized people to create new “hybridized identities in which the traditional markers of gender, class, and ethnicity would be eroded” (Dovey & Kennedy, 2006, p. 68). Grau surmises this work thus:

“The physical body’s sensory and communication apparatus will grow together with hardware and software interfaces, our sex will possibly change to androgynous.” (Grau, 2003, p. 291)

While, as Dovey & Kennedy note the body of feminist scholarship around virtual reality, which re-examine the uses of the medium to play with identity (2006, pp. 80-81), or to explore sexuality, such as the work of Barber (1997). However, Dovey & Kennedy report that, “the progressive aspirations of Haraway’s cyborg often seem to have been overcome by the very worst forms of the militarized ‘command, control and conquer’ war machine that she sought to resist” (2006, p. 69), more recent aspirations for virtual reality once again seek to address these notions of the blurring of identity. It suggested that this notion aspires to function by narrowing the distance between the player and the virtual environment.

Nevertheless, the findings reported in this section suggest that feelings of ownership over a virtual body are elicited by techniques specifically created to design an immersive virtual reality (IVR); the existence of this is satisfied by the addition of a high-resolution HMD, and head tracking. However, this is not supported by the concept of the ‘double-consciousness’, which is the mechanism by
which meaning is generated in games and virtual environments. The relationship as described, in
the virtual reality literature, between an ‘embodied’ active observer and a first-person ‘virtual body’
appears to be one of direct identification. Furthermore, these studies purport to diminish the sense
of distance felt by ‘non-embodied’ observers. Instead, they are not distanced, but feel close the ex-
perience of ‘inhabiting’ and looking at the virtual body.

This raises the question of what a sense of direct identification – of having a ‘virtual body’ – may
have in a morally significant human narrative. Considering a morally significant game, for example
Call of Duty: Modern Warfare 2 (2009), whose No Russian mission (involving the invitation to
shoot masses of civilians in an airport) provoked media panic. An IVR implementation of the con-
troversial scene within this game, in which, the Wikipedia article describes, “civilians scream and
run in terror, the injured crawl away leaving a trail of blood, and some try to drag others to safety,
only to be shot with bloody results” (“Controversies surrounding Call of Duty: Modern Warfare 2,”
2014) would arguably engender heightened media panic. Indeed, such a move away from the cy-
bernetic dissonance (or aesthetic distance) suggested to be granted by classic controllers seems
simultaneously powerful and problematic. Whilst an increased sense of participative and physical
embodiment may strengthen the rhetoric of a game seeking to highlight the reprehensible nature of
violent action, it simultaneously creates a dangerous sense of close identification for those who
would seek to misuse such an experience.

However, meanwhile, it is suggested that a sense of alienation may however be fostered instead, by
purposefully decreasing physical embodiment, while participative embodiment remains.

2.5.4 Distancing Interaction through Player Identity
Farman (2010) suggests that the Verfremdungseffekt may be achieved in Grand Theft Auto: San
Andreas (2004) specifically through the character customization process. He notes that the player is
able to customize look of the protagonist of GTA: San Andreas, named CJ, and that this process
has a profound effect on hypermediation:

“What emerges out of game play in GTA: San Andreas (2004) is one of
two options: Players will experience the game as an immersive interface
that ultimately becomes a gang-violence simulator, or players will expe-
rience the game as a hypermediated space that satirizes the violence and
the media that such violence alludes to (e.g., the blood-soaked action
film). The key to the latter experience is the player’s interactions with
the customization controls that allow an alteration of the CJ avatar” (p.
104).
Farman suggests that by altering the avatar of CJ such that he “starkly juxtaposes the dark and gritty streets of San Andreas” (i.e. by giving him ridiculous clothes, wearing Groucho Marx joke glasses, etc) is the key to “hypermediating the interface”; that is, purposefully creating a sense of “double-consciousness”, as described by Salen and Zimmerman (2003).

“Aesthetic distance always comprises the possibility of attaining an overall view, of understanding organisation, structure, and function, and achieving a critical appraisal” (Grau, 2003, p. 202).

Following the Verfremdungseffekt, such a technique would potentially ‘break’ a player’s sense of identification with the player character, and thus engender a sense of aesthetic distance. Of course, it must be noted that GTA: San Andreas is a game played from a third-person perspective; such a conception is perhaps akin to the ‘puppeteer-and-puppet’ relationship as described earlier.

Thus, the example given by Farman (2010) is not only an example of distancing interaction through player identity, but also, of distancing player identity through interaction.

While such hypermediation of the interface may be possible with respect to third person morally significant games featuring an avatar, a player interacting with a game environment that qualifies as an immersive virtual reality (IVR) would feel a sense of direct identification with their virtual body. Given this sense of identification, it is pertinent to consider whether other design factors may influence the distancing in such a situation.

While the scope of the research question focuses, as described previously, on human narratives, it is possible for these to be implemented in such a way that is not necessarily grounded in ‘realistic’ interaction.

“In addition to things based on the familiar, computer-generated virtual reality allows the creation of aesthetics that are no longer bound to physical laws and which will become, with faster computers, more real, gripping, and involving.” (Grau, 2003, p. 203)

Slater & Usoh (1994) define interaction as “the ability of the participant to move through and change the world”, and divide this into two further categories: the mundane and magical. They assert that “mundane interaction is that which attempts to faithfully reproduce a corresponding interaction in everyday reality”, whereas “magical interaction involves actions that are only imaginable in everyday reality”. We can further extend this to mean interactions that are exaggerated, or have an oversimplified sequencing.

A hypothetical version of Manhunt 2 (2009), featuring a mimetic interface consisting of accurate haptic feedback, aspiring to reality, would be an example of ‘mundane’ rather than ‘magical’ interaction. Of course, it may be argued that by grounding the cybernetic mapping in ‘reality’, this fur-
ther highlights the reprehensible nature of the action performed in the game (namely, committing brutal killings through stabbing or garrotting). Thus, a mimetic interface designed to reflect ‘accurate’ real-life outcomes may in fact work to the advantage of a game that intends to highlight the reprehensible nature of its violence, rather than its opposite, aiming for a cartoonish portrayal aspiring towards “gestural excess” and over-the-top feedback. Indeed, Simon (2009) coins the term gestural excessiveness, which he notes is typically observed when playing on the Nintendo Wii, as it “becomes an excuse for engaging in a different sort of bodily play, a kind of performative gestural excessiveness that the game-as-software neither demands nor acknowledges”. Put simply, “Wii players … soon discover is that playing the game with minute motions is simply not as fun as playing with broader-than-necessary motions” (p. 19). Such a paradigm of ‘exaggerated’ or ‘excessive’ interaction can be defined under the umbrella of ‘magical’ interaction.

Of course, a game aspiring towards ‘mundane’ interaction, however, would also be questionable from a virtue ethics perspective, and would strongly rely upon Sicart’s theory of a ‘virtuous player’, that is, “those player-subjects who have actually developed their ethical reasoning”; one may posit that the virtuous player themselves must be relied upon to cognitively distance themselves.

2.5.5 Who Are The Non-Player Characters in 3D Avatar-Driven Videogames?

Having considered issues of who the player identifies as (Section 2.5.2), and establishing how this is a concept which may be affected by aesthetic distance, it is also prudent to discuss the issue of “identification” with a videogame at large.

As noted earlier, the concept of Einfühlung [empathy] (Section 2.2.1.2) as applied to videogames, is not limited to identification with a protagonist or player character, and also concerns identification with the videogame at large. This includes the environment, and, in the context of morally significant games as addressed by the research question, identification with “depicted human non-player characters (NPCs)” about whom they should make decisions with dramatic consequences (Section 1.5).

Having already examined the issue of a player’s identification (or lack thereof) with the player character, their relationship with non-player characters (NPCs) should also be examined in the context of altering aesthetic distance through interface mimesis.

Hartmann et al. (2010) reflect, as a result of their study on guilt responses to unjustified violence in empathetic players, that players may have the ability to perceive videogame characters as “moral entities… deserving of proper moral treatment”. This is particularly true when the situational context frames their actions as unjustified; their two-part study examined guilt responses when killing ‘terrorists’ vs. killing ‘civilians’ in one part, and in another part, killing NPCs whose ‘social background’ was revealed, versus those whose social backgrounds were not revealed. They suggest that their findings reflect that, given the right context (by providing NPCs with a social background),
videogame characters are “perceived as more social than objects, yet do not trigger the same perceptions as human beings.”

Given the findings by Hartmann et al. (2010), it is suggested that in embodied morally significant videogames (Section 1.4), the concept of *Einfühlung* [empathy] should apply with respect to NPCs, where appropriate social context has been provided for the player.

Therefore, the results of these empirical findings by Hartmann et al. (2010) help to illuminate the implications for altering aesthetic distance in videogames through interface mimesis, further bolstering this broader discussion about aesthetic distance through participation and increasing embodiment. It is suggested that other such experimental work should be examined in order to gain further insight not only into findings, but also the measures through which the research question may be addressed.

2.6 RELATED WORK: DISTANCE, EMBODIMENT AND INTERFACES

It is pertinent to explore related experimental work that addresses, *directly* or *indirectly*, issues that have thus far been identified regarding the altering of aesthetic distance through interface mimesis. Such consideration is also given to work *indirectly* exploring these issues, since, as established, aesthetic distance is a conceptual, emergent phenomenon occurring between the player and the game, that cannot be measured directly, and thus, altering distance must be explored through its epiphenomenal effects. Therefore, studies that consider such epiphenomenal effects are of interest.

![Figure 2-10: The Dance of the Body w/o Organs, Eber, Betz, & Little (2003)](image)

Eber, Betz, & Little (2003) explore thorough two quantitative studies, the relationship between *aesthetic experience* and *spatial presence*, as measured by the Independent Television Commission – Sense of Presence Inventory (ITC-SOPI). The first study exposed the participants to interactive art
piece *The Dance of the Body w/o Organs*, after which they reported on a 5-point Likert scale the extent to which they had an aesthetic experience. Eber et al. note:

“The moment is one of heightened attention to perception, which is what makes it both meaningful and memorable. For some this means getting lost in the visual elements, and for others it is highly emotional. It is this emotional response from the participant that will key our analysis into the emotional content and thus the aesthetic experience for the viewer.”

Such a conception of aesthetic experience is more akin to *aesthetic appreciation* or *aesthetic emotion*, as modelled by Leder et al. (2004) and Marković (2012) (Section 1.3.4). However, of interest here is *aesthetic judgement*, which is the cognitive contemplation of an art object by the active observer. However, the second part of this two-part study also factored for “cognitive set”, which they defined as “specific mental predisposition one uses in approaching a situation” – that is, what is defined as *aesthetic attitude*. A 2x2 design was adopted, in which one of the factors was “descriptive cognitive set” vs. “symbolic cognitive set” – that is, in the former condition, participants were simply asked to describe what they saw, rather than symbolically analysing it, and in the latter, participants were asked to focus on the possible meaning and symbolism of the environment. A significant main effect for cognitive set was found, with participants in the symbolic cognitive set conditions with higher ratings for aesthetic experience than participants in the descriptive cognitive set condition. This may suggest that aesthetic judgement was a part of aesthetic experience for these participants. Furthermore, significant positive correlations were found between aesthetic experience, and spatial presence.

Indeed, the authors of the study note, in concluding, “The aesthetic experience is a multifaceted and complex response to a work of art that is characteristic of a heightened sense of awareness and a feeling of awe over the art.”


“It was clear that immersion itself does not preclude critical reflection, but it did appear that without the use of distraction techniques, reflection was diminished. Participants who described themselves as fully immersed still reported communicable activity, but these responses seemed to be more richly described when stimulated by distractive elements.” (Stenner, 2007, p. 258)

In his PhD thesis: “Critical Reflection in a Digital Media Artwork: Playas Homeland”, Stenner tackles the question through naturalistic inquiry, finding differences between art experience and gaming experience with regards to what extent players of *Playas Homeland* critically reflected upon their experience: a huge disparity was shown in the groups, with those who frequently played games
being least likely to think about what they were doing; meanwhile, those who played games less frequently or not at all were more likely to engage in critical reflection. Indeed, experienced players reflected mainly upon the technical shortcomings of the installation. This finding parallels empirical aesthetics research into visual art, in which Cupchik & Gebotys (Cupchik & Gebotys, 1988) found that those without formal training in art found the ‘increasingly literal direction’ of visual art to be more meaningful, while trained viewers and artists placed more emphasis upon the visual effects. While this study showed promising early indication of required study of technological immersion and critical reflection, it lacks rigid empirical approach, and, of course, does not consider ethical/moral judgment.

Meanwhile, Klimmt, Hefner, Vorderer, Roth, & Blake (2010) describe two experiments exploring player identification in videogames, concluding that players identify with the role or character they are assigned, which leads to automatic shifts in implicit self-perceptions. Participants played one of two games (first-person shooter or racing game) and subsequently performed an Implicit Association Test (IAT), for which findings reported stronger automatic association of military-related concepts and a stronger association of racing-related concepts to each of the conditions respectively.

Approaching the experimental literature from another angle, it is prudent to also consider studies looking at the effects of evolving technology and formal structures within games. Beyond looking explicitly at distancing and critical reflection, there has been much work within the realm of empirical game studies looking at the effects of increasing spatial presence or ‘immersion’ on the player experience. The literature often contains overlapping definitions (Section 1.3.3.1) for concepts such as presence, immersion, and embodiment, and thus, all of these overlapping concepts are examined here; they can all be considered under the umbrella definition of aspiring towards ‘sensory realism’.

Jeong, Biocca, & Bohil (2012) explore the link between ‘sensory realism’ and mediated aggression in games, investigating the effect of blood colour, sound, and first person perspective on spatial presence and aggression in videogames. They define sensory realism as including “number of sensory modalities such as sound and visual cues, colour, and user perspective”, and how these have been reported to affect presence (Lombard & Ditton, 1997).

“Sensory realism refers to formal features of a representation that progressively simulates the same experience in the natural environment, for example a highly realistic representation of a gun (visual realism) or an addition of realistic sound (auditory realism). In interactive media, increased sensory realism results from a wide range of innovations in technological interfaces and interface techniques” (Jeong et al., 2012, p. 1841)

Noting that the construct of realism has a long history in the area of violence research, they note they wish to manipulate these “formal features that increase sensory realism of a violent act” – that
is, through the visual cues associated with blood (i.e. whether the blood is blue, or a realistic red), auditory cues related to sounds of violence and pain, and the “user’s viewpoint relative to violent acts” (i.e. camera perspective, first or third person). Thus, they performed a 2x2x2 between-subjects experiment manipulating these three factors as participants played Half Life 2, controlling for prior game experience with shooter games as a covariate in the analysis. The study found that realistic blood colour heightened physiological arousal and spatial presence, which they suggest is because “the realistic blood cues appears to make the players feel as if they are in the game”; also, the auditory cues of screams of pain were “as influential as blood colour on the player level of arousal.” However, they conclude that third or first-person perspective did not make any difference to physiological arousal or presence. This may, they suggest, be due to balancing out the effect of first-person games enhancing presence according to some studies, but third-person perspective being more effective in enhancing presence according to other studies (Benford, Bowers, Fahlén, & Greenhalgh, 1995), in situations where the avatar is not controlled by the player’s own body movement. Thus, their sense of having a virtual body is stronger when being able to see an avatar representation on screen. However, Jeong et al. also found that this heightened physiological arousal did not play a crucial role in predicting player’s state aggression while playing a game featuring virtual violence. Thus, though this latter central finding is not of significance to the scope of the research question, the connection between these sensory realism modalities and spatial presence is of interest.

A study by Nacke (2008) explores playing Resident Evil 4 (2005) on PlayStation 2 versus Wii; thus with an interface type with lower mimesis (a classic gamepad) versus higher mimesis (the gestural Wii Remote) respectively. The within-participants player experience was measured using items from the Game Experience Questionnaire (IJsselsteijn, De Kort, & Poels, 2007) and MEC Spatial Presence Questionnaire (Vorderer et al., 2004), and using electroencephalography (EEG). The focus of this study was to explore the effectiveness of EEG evaluation in games, though correlations were also made indicating that increased mental activity in a game enhanced Spatial Presence through allowing more actions (increasing Spatial Presence: Agency). It was suggested that in the context of RE4, the game controller required a significant amount of cognitive processing for the point-and-shoot task, while the more intuitive Wii Remote might have required less cognitive processing, hence it would not have significantly influenced the feeling of Spatial Presence: Agency. However, EEG activity pointed to increased sense of Spatial Presence: Self-Location with the more mimetic Wii Remote.

Furthermore, Dow (2008) explores ‘embodied narrative engagement’, defined as “the feeling of being physically transported into a fictitious world, transformed into a story character, and able to influence the unfolding events.” This is also conceptualised as being at the intersection of [spatial] presence (the feeling of being within an environment), agency (the feeling of empowerment of ac-
tions), and dramatic involvement (the feeling of being caught up in the plot and characters of a story), which has been termed *diegetic immersion* here.

Dow terms mimetic interfaces as immersive interfaces (or, *perceptually* immersive interfaces, or even immersive technologies). Through a series of studies comparing a PC (mouse and keyboard) version of *Façade* (2005) versus the game played in an AR (augmented reality) environment, he elucidates the effect of immersive interfaces on embodied narrative engagement, looking at their relationship with spatial presence, agency, and diegetic immersion respectively.

In a constituent study, Dow examined the effect of an augmented reality (AR) interface version of the game, versus a mouse-and-keyboard version of the game, in terms of the effect on a player’s agency. Overall, the findings suggested that player’s agency was diminished in the AR version, although players were *perceptually immersed* in their environment, as the characters of the game were superimposed onto the player’s actual surroundings. Thus, he notes that with respect to the construct of [spatial] presence, players felt a strong sense of this, though it was not necessarily the construct “as defined by the virtual reality presence community”; instead, due to the augmented reality environment, “participants in AR Façade were not talking about being “there”; they were already in a real place” (p. 204). He explains that, “players experienced a sense of freedom and ‘naturalness’ with their interactions in AR. Players could speak and move without having to think, but they were not satisfied with the interaction.”

“While players in desktop Façade are likely to approach the interactive drama as something between videogames and film, our players seem to relate AR Façade more to everyday life, perhaps setting overly high expectations for interactivity and player agency” (Dow, 2008, p. 232).

Thus, for this augmented reality version of the game, a gulf existed for players between their intention and their sense of agency; what they *wanted to be able to do* and felt they *should* be able to do, did not necessarily match up with what the system *let them do* and what they felt they *could* do. They also expressed a need for the experience to be more “mediated”. That is, players felt the need for more obvious cues to show what specific actions they can perform, by, for instance, providing a non-realistic user interface, amongst other things.

The data in the study was gathered using open-ended interviews, as well as quantitative data gathered from log files, calculating metrics such as length of play, number of statements by characters in the game, number of statements by the player, average length of statements, numbers of gestures, type of ending, total movement, and interpersonal distances between the player and the characters in the game. Furthermore, play styles were analysed, to further account for the variations in embodied narrative engagement as proposed by Dow.
Although such a study of the effect of such immersive interfaces on a player’s sense of agency, being there, and involvement, are relevant to the concerns of the research question, Dow’s study concerns augmented reality, which is an interaction paradigm different than that of becoming progressively embodied through virtual reality type interfaces. Stevens, Jerrams-Smith, Heathcote, & Callear, (2002) present this paradigm as a “special case of virtual reality”, centred on the concept of object-presence, or it is there, as closely linked to, but different from, the concept of spatial presence and being there.

2.6.1 Other Related Work
Given that videogames are posited here as a continuation of the history of art, it is posited that findings from other artistic media are also pertinent to the exploration here. For example, in the realm of psychology of literature, a recent study by Koopman et al. (2011) looks at reader responses to literary depictions of rape, studying subsequent experienced aesthetic distance from the scene when looking at highly stylized literary accounts of rape versus non-stylized representations of rape. This study, despite the differences in medium studied, is of interest as the difficult subject matter is a “morally significant” scenario, eliciting reader responses to varying stylistic qualities. Therefore, there are relevant parallels with the research question within this programme (Section 1.5).

Koopman et al. (2011) found that when reading fictional stories about rape that the more absorbed readers were in the narratives, the greater their experiences of unsettled emotion; at the same time, absorption in the narrative diminished any negative appraisal of the text. Thus, readers in the study, despite feeling more negative emotions, enjoyed the fact that these emotions were elicited.

This study is particularly notable as the reader’s experience of aesthetic distance is operationalized through a series of 12 questions measured on a 7-point Likert scale, asking respondents to report on the following axes:

1. Detached versus engaged with the scene from 1 (completely detached) to 7 (completely engaged)
2. Empathy with the victim(s) (“To what extent could you feel the emotions of the victim[s]?”) from 1 (not at all) to 7 (to a great extent)
3. Awareness of the perpetrator(s) (“To what extent could you feel the drive of the perpetrator[s]?”) from 1 (not at all) to 7 (to a great extent)
4. Perception of stylistic beauty from 1 (not at all stylistically beautiful) to 7 (very stylistically beautiful)
5. Focus on style or events from 1 (mainly on style) to 7 (mainly on events)
6. Perception of realism from 1 (completely implausible) to 7 (very plausible)
7. Experience of tension from 1 (not at all tense) to 7 (extremely tense)
8. Feelings versus intellectual response (“Did the excerpt primarily evoke feelings or thoughts?”) from 1 (primarily feelings) to 7 (primarily thoughts)
9. Repulsion versus arousal from 1 (primarily repulsive) to 7 (primarily arousing)
10. Moral indignation versus sexual fantasy (“Did you think the focus of the writer is on caus-
ing moral indignation or on describing a sexual fantasy?”) from 1 (causing moral indigna-
tion) to 7 (describing sexual fantasy)
11. Fiction/aesthetic attitude (“Did it make a difference for your experience of the fragment
that you knew it was fiction?”) from 1 (not at all) to 7 (very much so)
12. Read more (“After reading this excerpt, would you like to read more of the novel?”) from
1 (not at all) to 7 (very much so)

Figure 2-11: Aesthetic Experience questionnaire, Koopman et al. (2010)

Therefore, these questions encapsulate the moral and aesthetic judgements that are of concern
within the spectrum of alienation versus identification as proposed in the model for aesthetic dis-
tance in videogames, and encapsulate the factors that have been explored throughout this discus-
sion of the effects of altering aesthetic distance throughout the history of art.

2.7 SUMMARY: DISTANCE IN EMBODIED MORALLY SIGNIFICANT VIDEO-
GAMES

In this discussion, a working model of aesthetic distance, as applicable to videogames, was con-
structed from the review of the literature, and represented visually (Section 2.4.3.1) (Figure 2-12).
The model consists of identification or empathy on one end of the spectrum, and alienation or dis-
tanced on the other. It explored the ways, however, in which the concept is problematized, both
through contemporary definitions of art, and through issues of computation and simulation. Indeed,
rather than a straightforward relationship, it is posited that these two poles of aesthetic distance are
intricately linked by the oscillation caused by various forms of duality. This includes Bogost’s
(2006) concept of simulation fever is the tension that exists between identifying closely with a sim-
ulation, and ‘accepting’ it blindly (as Bogost asserts), and being critical of it; this is proposed as a
videogames-specific case of Downes’ double awareness, the oscillation between ignoring the med-
ium, and being aware of it.

It therefore established aesthetic distance as a concept relevant to the ways in which participants
make aesthetic and moral judgments of representational art works (Section 2.4.4.1), including vide-
ogames, and this is particularly salient in the context of playing morally significant videogames.

Finally, it was explored, through critical review, the ways in which players identify with their avatar
when playing a game, and the epiphenomenal effect of potentially narrowing aesthetic distance on
this sense of identification. As part of these increased feelings of identification with an avatar, the
virtual reality literature also contributes findings regarding participants’ feelings of having a virtual
body (Section 2.5.3).
However, the concept of *Einfühlung* [empathy] (Section 2.2.1.2) as applied to videogames, is not limited to identification with a player character, and also concerns identification with the videogame at large. This includes in the context of *morally significant* games as addressed by the research question, identification with “depicted human non-player characters (NPCs)” about whom they should make decisions with dramatic consequences (Section 2.5.5). Furthermore, this *identification* also extends to the game environment, via means of spatial presence (Section 2.3.1).

Indeed, it can be understood that decreasing aesthetic distance *is seen as an epiphenomenal effect of increasing spatial presence through increasingly mimetic technology*, in this case, videogame interfaces. Therefore, it is proposed that observing increasing *spatial presence* is a useful factor indicative of whether technology is successfully altered towards narrowing distance in terms of the “salient stylistic qualities” of the medium.

Finally, a review of related works conducted helped provided insight into the means through which these aesthetic and moral judgements may be measured. As aesthetic distance cannot be measured directly, it is posited that epiphenomenal measures indicating these judgements must instead be measured (Section 2.6.1).

This discussion has contributed findings about the way in which players perceive characters to be “moral entities… deserving of proper moral treatment”, and this is particularly true when the situational context frames them appropriately as such. Indeed, empathetic players feel more guilty when engaging in unjustified virtual violence against such characters (Hartmann et al., 2010) (Section 2.5.5).
Furthermore, as seen through the exploration of the concepts of naturalness and familiarity (Section 2.3.1.1), the goal of increasing interface mimesis is contributing to the way in which the “medium becomes invisible”. Therefore, in empirically investigating increasing interface mimesis, interactions that contribute to this ‘invisibility’, mapping the player’s physical action with that in the real world, must be prioritised.

Therefore, having established the means through which aesthetic distance in a morally significant videogame may be explored, it is pertinent to begin this exploration through empirical study, increasing interface mimesis in the context of a game depicting unjustified virtual violence, such that empathy with the player character, NPCs, and environment may be elicited.

Finally, it was proposed that in the context of morally significant videogames, a player who appears more cognitively and emotionally engaged in a moral decision in a game is not necessarily displaying that they have critical or aesthetic distance, as they may be thinking about the situation as though it were a real life decision (Section 2.2.2). Thus, a player who has less aesthetic distance from a game will experience greater identification with the game’s characters and environment.
3 Study 1: An Exploratory Investigation of Moral and Aesthetic Judgements of a Physically Embodied Morally Significant Videogame

3.1 Introduction

It has been suggested that meaning-making in games occurs in games through the aesthetic distance created between a game and its player (Section 2.4.3.1), and this aesthetic distance may be mediated by enhancing interface mimesis. As argued by Bogost (2007) (Section 1.3.3.7), an increased sense of physical embodiment, it may be argued, could allow for procedural rhetoric that is perhaps more visceral and powerful, by committing the ‘forced actions’ of the player to their real world, physical body.

Therefore, in the context of morally significant videogames, empirical exploration of enhancing interface mimesis, and what it means for aesthetic distance, is warranted. However, this has not been previously empirically explored. The research question asked:

Does interface mimesis affect aesthetic distance when playing a physically embodied, morally significant videogame, as assessed through a player’s moral and aesthetic judgements? Furthermore, is this experience of aesthetic distance affected by a player’s aesthetic attitude?

As suggested by Grau (2003), concerns about the limitations that enhancing interface mimesis places on critical reflection have long been the topic of plausible assumptions; although the study by Stenner (2007) begins to show promising results (through naturalistic enquiry), this requires further empirical research.

Through discussion of the work by Hartmann et al. (2010), it was established that players may perceive characters to be “moral entities… deserving of proper moral treatment”, and this is particularly true when the situational context frames them appropriately as such. Indeed, empathetic players feel more guilty when engaging in unjustified virtual violence against such characters (Hartmann et al., 2010) (Section 2.5.5). Such findings are also corroborated by Grizzard et al. (2014) and Klimmt et al. (2006), who suggests that players may also perceive and judge virtual violence in a moral way. In this study, a number of players indicated, for example, that they would find it disturbing if they accidentally shot a child or if painful injuries were depicted in the game.

While such scenarios, in light of enhanced interface mimesis, may create a problematic sense of close identification for those who would seek to misuse such an experience, the findings by Klimmt et al. (2006), Grizzard et al. (2014), as well as those by Hartmann et al. (2010), all support the theory of a virtuous player, for whom their empathetic response creates a more troubling experience.
Though the investigation of a ‘virtuous player’ is outside the scope of the research question, the contribution of the player’s subjective aesthetic attitude to the way in which they understand a morally significant experience is of interest.

Therefore, an empirical study is suggested, increasing interface mimesis in the context of a game depicting unjustified virtual violence, such that empathy (Section 2.2.1.2) and identification (Section 2.5) with the player character, non-player characters (NPCs), and environment (via means of Spatial Presence) may be elicited.

3.2 EXPERIMENT DESIGN

This study explores the effect of enhanced interface mimesis on a player’s moral and aesthetic judgements when playing a morally significant game. This can be operationalized as one that depicts unjustified virtual violence, as players may find content in games morally significant when engaging with unjustified virtual violence (Grizzard et al., 2014; Hartmann et al., 2010).

It elucidates the theoretical assertions that established interface mimesis as a ‘salient stylistic quality’ of videogames, contributing, along with ‘the disposition of the [player]’, to the emergent phenomenon of aesthetic distance established between the game and the player.

A between-participants study was carried out, in which volunteers were assigned randomly to one of the three conditions: two of these conditions involved interfaces of lower interface mimesis (using a gamepad, and a mouse-and-keyboard, labelled LIM-1 and LIM-2 respectively) and one was an interface with higher interface mimesis (a Razer Hydra motion controller, HIM). This design accounts for different types of classic controllers in addition, in order to counterbalance the effect of a priori experience with interface types.

Although within-participants were considered as an alternative design, there are too many additional effects introduced. For example, in addition to the obvious interaction fatigue, a within-participants design means each volunteer will have been exposed to the post-exposure questions after the first condition, and therefore will enter the second condition with a bias. In addition, research has shown that subsequent media exposure changes the aesthetic judgement (Leder et al., 2004). Furthermore, in order to reduce the burden of time required of volunteers, a between-participants design was determined to be the most appropriate.

Furthermore, since the quantitative component of the study required retrospective self-report through questionnaires, this was potentially prone to bias, as suggested by Schwarz & Oyserman (2001), especially when the data concerns the intensity of human experiences. However, this study seeks to avoid this potential for bias by not simply measuring guilt and disgust, but also, measuring several other gameplay experience questions, as well as a process-based measure of guilt and disgust (Section 3.5.6).
3.2.1 Operationalizing Aesthetic Distance

The research question (Section 1.5) posits aesthetic distance as a dependent variable. However, this is a mediating concept, which sits between the formal elements of the art object with its “salient stylistic qualities” (Cupchik, 2002) and the “disposition” of the person observing or interacting with it (Cupchik, 2002; Grau, 2000).

Therefore, as established previously (Section 2.7), due to its nature as a mediating concept, a player’s aesthetic distance from a game they are playing cannot be “measured” directly, but instead must be explored through epiphenomenal experiential effects: that is the moral and aesthetic judgements the player makes of the game (Section 1.3.4.2), or, on a broader level, the player’s “emotional and related cognitive processes” (Cupchik et al., 1998). This is an example of the “theoretical reductionism” that Cupchik (1986) notes should be acknowledged regarding the constructivist realist ideology through which this research takes place. That is, “the explanation of processes at one level of explanation in terms of processes at a more fundamental level” (p. 363).

Therefore, within the tradition of empirical aesthetics studies (Section 1.6), aesthetic distance is to be “operationalized” as these moral judgements, empathetic responses, and other aesthetic responses, following previous studies (Section 2.6.1) from outside the sphere of game experience research.

3.3 HYPOTHESES

Players using a more mimetic interface will have experiential effects that translate into a greater perception of controller naturalness (Section 1.3.3.6, 2.3.1.1) and a greater sense of spatial presence (Section 2.3.1). Therefore, the extent to which the violent subject matter “reminds us of our everyday lives” will be increased. It is expected, then, that feelings of Disgust and Guilt (Section 2.5.5) - will be increased. However, this may only be evident for players who exhibit Trait Empathy (Section 2.5, 1.3.4), ensuring that they are virtuous players. This exploration will be grounded within the materials. For clarity, they will be explained in terms of the materials, so that they may be subject to empirical analysis.

Thus, there are three main hypotheses to be tested in this study.

3.3.1 Aesthetic Hypothesis

H1: Players using an interface that enhances mimesis (HIM) will feel a reduced sense of distance from the violent action in the game, compared to an interface of lower mimesis (LIM). This means that they will experience altered aesthetic judgement, resulting in a closer sense of identification (Section 2.5), as well as moral judgements indicating greater emotional involvement, commensurate with equating the morally significant action to real life, rather than a game (Section 2.5.1, 2.7). Operationalized via appropriate empirical materials, this is measured by whether they:
i. Experience greater disgust (Section 3.5.6).
ii. Experience greater guilt (Section 3.5.6).
iii. Experience lower positive affect (Section 3.5.8).
iv. Experience less detachment from the game (Section 3.5.7).
v. Experience lower Imaginative & Sensory Immersion (Section 3.5.8).
vi. Experience greater empathy with victims (Section 3.5.7).
vii. Experience greater empathy with the character’s drive (Section 3.5.7).
viii. Experience greater stylistic beauty (Section 3.5.7).
ix. Experience greater plausibility of the scene (Section 3.5.7).
x. Focus more on feelings rather than thoughts (Section 3.5.7).
xi. Experience greater repulsion, rather than fun (Section 3.5.7).
xii. Feel that the game focuses on violent fantasy (Section 3.5.7).
xiii. Feel that the fact the game is fiction makes no difference to them (Section 3.5.7).
xiv. Not want to keep playing (Section 3.5.7).

3.3.2 Trait Hypothesis
H2: The player’s experience of moral judgements (guilt and disgust) will also be related to their empathy and aesthetic interest. Operationalized via appropriate empirical materials, this is measured by:

i. Their trait empathy (Section 3.5.3).
ii. Their trait aesthetic interest (Section 3.5.4).
iii. Their trait aesthetic fluency (Section 3.5.4).
iv. Their familiarity with the game (Section 3.5.5).
v. The number of civilians they attempt to shoot in the game (Section 3.5.6).

3.3.3 Experiential Hypothesis (Manipulation Check)
H3. As Biocca (1997) states, “the psychological effects or goals of progressive embodiment can be expressed as various forms of what is called [spatial] presence”, it is expected that spatial presence will increase in line with enhanced mimesis.

Furthermore, it can be understood that decreasing aesthetic distance is seen as an epiphenomenal effect of increasing spatial presence through increasingly mimetic technology (Section 2.3.1); in this case, videogame interfaces. Therefore, it is proposed that observing increasing spatial presence is a useful factor indicative of whether technology is successfully altered towards narrowing distance in terms of the “salient stylistic qualities” of the medium.

Therefore, in order to verify that the designed interface mimesis (LIM, HIM) is successfully manipulated between-subjects, ensuring it is “in line with expectations” (Skalski et al., 2011), this will be operationalized via appropriate empirical materials, and thus is measured by:
i. Experience greater perceived controller naturalness (Section 3.5).
ii. Experience greater spatial presence: self-location (Section 3.5.2).
iii. Experience greater spatial presence: agency (Section 3.5.2).

3.4 APPARATUS

3.4.1 Morally Significant Gameplay: Call of Duty: Modern Warfare 2

To empirically investigate the effect of increased interface mimesis on feelings of guilt, and explore aesthetic distance, a game in which unjustified virtual violence is portrayed must be used, thus also befitting Carroll’s conception of a ‘morally significant’ scenario (Section 1.3.4.2, 1.4). This also is in line with findings (Hartmann et al., 2010) that such scenarios of unjustified virtual violence elicit a response in empathetic players whereby they see non-player-characters as worthy of moral response (Section 2.5.5).

Furthermore, it must be a game in which part of the player-character’s body, or avatar, is represented on-screen, such that body ownership can be elicited; however, this is a convention that is typically upheld in first person games. As noted by Pinchbeck (2007), the avatar is how possible actions are communicated to the player.

Figure 3-1: Screenshot from “No Russian” Scenario in Call Of Duty: Modern Warfare 2

One notable example of such a game featuring a morally significant scenario is the “No Russian” level from Call of Duty: Modern Warfare 2 (2009) (abbreviated as COD: MW2 where appropriate) (Figure 3-1), which satisfies Carroll’s definition owing to being a human narrative and especially one featuring unjustified virtual violence. Indeed, Hartman et al. (2009) describes the controversy surrounding this mission and the related debate, and suggests that many players felt uncomfortable with this mission, with even experienced players stating that they found the mission disturbing.
“No Russian” is an ‘optional’ level within the campaign of *Call of Duty: Modern Warfare 2*, appearing early in the game, in which the player character is a CIA agent called Joseph Allen, under deep cover with a group of Russian ultranationalist terrorists enacting an airport massacre in Russia, in order to blame the US. The player must remain undercover throughout the mission, not being able to kill their own ‘allies’, though is not required to shoot any civilians themselves in order to complete the mission.

“Civilians scream and run in terror, the injured crawl away leaving a trail of blood, and some try to drag others to safety, only to be shot with bloody results” (“Controversies surrounding Call of Duty: Modern Warfare 2,” 2014).

The player is warned prior to starting the single player campaign of the mission’s "disturbing content", and can choose to skip the mission at no penalty. If the player chooses not to skip the mission in advance, they are still given the option to skip the level at any point. This serves as further acknowledgement by the developers that this scenario is indeed morally significant, and features content that has been deemed objectionable by players.

In interviewing heavy users of first-person shooters, Klimmt et al. (2006, in Hartman et al, 2010) found that respondents are able to recall situations of moral concern from videogames, even though it was “just a game” (p. 322): “Players also reported that disturbing situations interfered with their enjoyment. For example, one respondent mentioned that “if people [enemies] are not dead at once, but somehow lie on the ground and are still moving and so on. That reaches a limit.”

This infamous scenario therefore stands out as one of the notable situations of moral concern in a recent videogame, making it a suitable candidate for use in this study of empathy and aesthetic attitude. Furthermore, as is the convention in first person shooters, part of the player-character’s forearm, and gun, is represented on-screen (Figure 3-1).

### 3.4.2 Interface Mimesis

As discussed through exploration of the concepts of naturalness and familiarity (Section 2.3.1.1), the goal of increasing interface mimesis is contributing to the way in which the “medium becomes invisible”. Therefore, while ‘classic’ controllers such as a standard keyboard-and-mouse and an Xbox 360 Gamepad were used in order to operationalize the posited ‘low’ interface mimesis conditions, it was posited, that in order to explore the impact of only subtle ‘higher’ changes in interface mimesis, a simple gestural controller should be used.
Therefore, the posited higher interface mimesis condition, a Razer Hydra PC motion-sensing controller (Figure 3-2) was used in order to operationalise the interface mimesis condition. Other equipment used includes 5.1 headphones, 22” LCD monitor, and a PC with 3.10GHz CPU, 4GB RAM, and NVIDIA GeForce GTS 450 graphics card, running Windows 7, 64-bit.

The Razer Hydra motion controller was chosen as it could be used with existing PC first-person-shooter games. It comprises of two handheld controllers (Figure 3-2), each with buttons and analogue sticks. One controller is used for spatial navigation (moving through the 3D environment), and the other is used to look around the screen (and consequently aim the gun). Therefore, although the range of motion control is very limited, due to the simulation of aiming a gun, the mimetic action of pointing the gun was matched to the task at hand, as was the mimetic gesture for punching/melee attack. It was determined that, for the purposes of this experiment, the small degree of difference from the classic control mechanisms ($LIM\_1$ and $LIM\_2$) provided a useful, measurable base for comparison, as interface mimesis is only slightly increased, but still remains comparable to ‘classic’ controllers.
Figure 3-3: Razer HydraMappings for Call of Duty: MW2 (2009)

The default mappings for the game are supplied by the manufacturer of the Razer Hydra interface (Figure 3-3). Thus, this was deemed to be of a suitable commercial standard, and was provided to players for reference.

3.5 MATERIALS

An electronic questionnaire was created and distributed to participants on a tablet device.

3.5.1 Perceived Controller Naturalness

In order to measure perceived controller naturalness, a scale was adapted from McGloin (2011), containing 13 items; these contained questions such as “The game controls seemed natural” and “The way in which I moved my body to control my character felt realistic”, measured on a 7-point Likert scale. Some items were modified as the source was used for a boxing game, and so these questions were generalized for this study; for example “Throwing punches in the game was similar to how I would throw a punch in real life” was changed to “Attacking in the game was similar to how I would attack in real life” (Appendix G – Study 1 & 2 Materials [Digital]).
3.5.2 Spatial Presence: Self-Location and Agency

The way in which the history of Western mimetic art aspired towards feelings of situated immersion, or *spatial presence*, has been explored (Section 2.2.1, 2.3.1). It can be therefore be understood that decreasing aesthetic distance is seen as an epiphenomenal effect of increasing *spatial presence* through increasingly mimetic technology; in this case, videogame interfaces (Section 2.3.1). Therefore, as proposed, observing increasing *spatial presence* is a useful factor indicative of whether technology is successfully altered towards narrowing distance in terms of the “salient stylistic qualities” of the medium – in this case, in terms of interface mimesis.

Two subscales from the MEC- Spatial Presence Questionnaire were used: these are Self-Location (*SP: Self-Location*) and Possible Actions, termed here as agency (*SP: Agency*) (Section 1.3.3.1); the short-forms of these subscales were used, comprising of four items each. Therefore, measured on a 5-point Likert scale, were items such as: “I felt like I was actually there in the environment of the game”, “It seemed as though I actually took part in the action of the game”, “The objects in the game gave me the feeling that I could do things with them”, and “It seemed to me that I could do whatever I wanted in the environment of the game” (Appendix G – Study 1 & 2 Materials [Digital]).

Of course, as aesthetic distance emerges from the formal properties of a game, alongside a player’s own subjectivity, *Spatial Presence* in this context measures only whether the former was successfully manipulated. Therefore, it is important also to explore how the latter may be operationalized and measured.

3.5.3 Trait Empathy

Empathy is commonly defined as the ability to experience and understand another person’s affective or psychological state, the ability to imagine oneself in someone else’s shoes (Argo, Zhu, & Dahl, 2008; Chismar, 1988). It is often a spontaneous response that, as Keen (2006) suggests “can be provoked by witnessing another’s emotional state, by hearing about another’s condition, or even by reading” (p. 208). Empathy has often been studied empirically in the realm of media psychology, in terms of film and television (e.g. Raney 2002). Empathy is an aesthetic concept, that defines the “tendency, deeply embedded in human thought processes, for the mind to merge its activities as a perceiving subject with those of the perceived object” (Lee, 1912, in Stamatopoulou, 2004).

In order to explore these assumptions regarding empathy as an aesthetic concept, it is operationalized as *Trait Empathy* as defined in this study; this is an example of the thematic and theoretical reductionism within a constructivist realist worldview (Section 1.6). Furthermore, *Trait Empathy* is also measured in line with the theoretical discussion (Section 2.5.1), and is used to consider a player’s ‘virtuous’ nature. Once again, although a focus on virtue ethics is outside the scope of this research programme, it is posited that this subjective measure may contribute to a player’s aesthetic attitude.
Hartmann, Toz, and Brandon (2010) explore trait empathy in the context of virtual violence in games, finding that unjustified virtual violence triggers stronger guilt responses in users than justified virtual violence, particularly when users are more empathetic. The scale used in their study was an 11-item scale adapted from Raney (2002), which was considered; however, in order to establish a more rigorous exploration of player’s trait empathy, an alternative, standardized psychological measure was instead required.

The standardized Empathy Quotient, developed by Baron-Cohen and Wheelwright (2004) was thus considered. The shortened, 22-item version by the same group (Wakabayashi, Baron-Cohen, & Wheelwright, 2006) was however adopted here instead due to the reduced number of items, in order to reduce fatigue and completion time for the participants. This measure was a 4-point scale from “1 - strongly agree” to “4 - strongly disagree” (Appendix G – Study 1 & 2 Materials [Digital]).

3.5.4 Trait Aesthetic Attitude and Fluency

Aesthetic interest is a facet of aesthetic attitude (Section 1.3.4). As noted by Lundy, Schenkel, Akrie, and Walker (2010) aesthetic interest has been conceptualized by some studies as a personality trait: the NEO Personality Inventory-Revised (also referred to as ‘the Big Five’) features two personality dimensions of particular interest. The first is the Openness to Experience subscale, which measures the following six traits: “Aesthetics”, described as appreciation of art and beauty (Costa & McCrae, 1992), ‘Fantasy’ (receptivity to the inner world of imagination), ‘Feelings’ (Openness to inner feelings and emotions), ‘Actions’ (Openness to new experiences on a practical level), Ideas (Intellectual curiosity), and Values (Readiness to re-examine own values and those of authority figures). Lundy et al. (2010 – adapted from John, 1989) note, that this is “…admittedly a broad measure that only characterizes a person at a global level, being useful mainly for initial rough distinctions.” Nevertheless, for this exploratory study, in order to gauge a participant’s aesthetic interest, a short, 10-item version of the Openness to Experience subscale of the Big Five Inventory was used (Appendix G – Study 1 & 2 Materials [Digital]).

The second subscale to be employed of ‘the Big Five’, as suggested by Silvia (2007), is the 10-item Curiosity and Exploration Inventory-II, as curiosity has been suggested as a measure of aesthetic fluency, thus is operationalized as an additional facet of aesthetic attitude.

Thus, in this study, Trait Aesthetic Attitude is operationalized in part as Aesthetic Interest (Openness to Experience) and Aesthetic Fluency (Curiosity and Exploration).

3.5.5 Familiarity with the Game

Hartmann & Vorderer (2010) found “challenging” links between familiarity and guilt, negative affect, and enjoyment in their exploration of unjustified videogame violence. In their study using Half-Life 2 (2004), they found that the more familiar players were with the game, the weaker their experience of guilt and negative affect and the greater their enjoyment. The authors posit that par-
Participants who have played the game before could, through “repeated use of the game... have learned how to regulate their emotions and deal with potential violations of moral standards.” They state that “it seems reasonable that experienced users of violent games develop and apply cognitive strategies that help to reduce negative affect and make violent conduct more gratifying (cf. “desensitization,” Carnagey, Anderson, & Bushman, 2006; Raney, 2004). Moral disengagement may be one such strategy.”

Thus, further facets of aesthetic attitude, and indeed, players’ general a priori attitudes towards both the specific game (COD: MW2) and games of this type in general, were also explored. Players’ frequency of playing games in general was self-reported, as well as specifically their frequency of playing first-person games (shooters or otherwise). After being exposed to the condition, they were also asked to report their prior familiarity with the “No Russian” scenario, with responses ranging from “Played with the same type of controller”, “Played with a different type of controller”, “Watched someone else play”, “Never played nor seen the level before” (Appendix G – Study 1 & 2 Materials [Digital]).

3.5.6 Guilt and Disgust

Guilt and Disgust measures are operationalized versions of moral judgement for the purposes of this study, as they indicate cognitive evaluations of the game (Section 2.5.1). Guilt is defined “as the dysphoric feeling associated with the recognition that one has violated a personally relevant moral or social standard” (Kugler & Jones, 1992, p. 218). As noted by Hartmann & Vorderer (2009), “If a user violates his or her internal moral standards by doing harm to videogame characters, dissonant feelings like guilt and disgust are likely to emerge... Feelings of guilt or remorse, in turn, should hinder enjoyment.” Furthermore, Schnall et al. (2008) assert that feelings of disgust indicate “gut feelings in moral judgements”.

Following the tradition of previous studies looking at videogames with morally significant content (i.e. unjustified virtual violence) and the player’s experience of guilt (Hartman & Vorderer, 2010; Hartman et al., 2009), guilt was measured using a 3-item guilt subscale. These studies had opted, after reviewing existing measures to assess guilt, for an adaptation of the guilt-subscale of the Differential–Emotion–Scale (DES-IV; Kotsch, Gerbing, & Schwartz, 1982) to directly assess guilt responses to violent videogames.

The three items assessed how often participants felt as though they did something wrong when playing the game (e.g., “feel regret,” “sorry about something you did,” or “feel like you did something wrong”) on a 5-point Likert scale (from 1 – “Rarely or never” to 5 – “Very often”). Following this, three items from the disgust-subscale of the DES-IV were also used, similarly modifying the questions as in the Guilt subscale (“While playing the game, how often did you feel disgusted, like something is sickening?” “...How often did you feel like things are so rotten they could make you
sick?" and "…how often did you feel like something stinks, or put a bad taste in your mouth?"). This was also answered on a 5-point scale (Appendix G – Study 1 & 2 Materials [Digital]).

It was determined that a process-based measure of guilt and disgust, should be used in addition to the *Guilt* subscale items. Grizzard et al. (2014) note that “moral emotions are anticipatory as well as consequential”; that is, a player can anticipate feeling guilty before committing a potentially immoral action (Tangney, Stuewig, & Mashek, 2007). Therefore, in addition to the *Guilt* and *Disgust* questionnaire items, the number of attempted shots fired at civilians was also measured.

### 3.5.7 Aesthetic Experience

In order to measure a range of types of aesthetic experience, questions were adapted from Koopman et al. (2011), for the reasons discussed previously (Section 2.6.1).

Although this study was in the realm of literature, the intended manipulation of aesthetic distance through varying literary devices, as well as the aesthetic experience when dealing with morally significant content, bore parallels to this study. 12 questions were adapted from the study, rewording them to address a videogame playing experience, rather than literary passages; these asked about: detachment vs. engagement, empathy with the victims, awareness of the perpetrators, perception of stylistic beauty, focus on style vs. events, perception of realism, experience of tension, feelings vs. intellectual response, desire to keep playing.

Each question was measured on a 7-point Likert scale (Appendix G – Study 1 & 2 Materials [Digital]). These were:

- **AS1.** To what extent did you feel detached or engaged with the game?
- **AS2.** To what extent could you feel the emotions of the victims?
- **AS3.** To what extent could you feel the drive or motivations of your character?
- **AS4.** Did you find the game stylistically beautiful?
- **AS5.** To what extent were you focused mainly on 'style' (e.g. gameplay, visuals, the controls etc.) than events?
- **AS6.** How plausible did you find the events to be?
- **AS7.** How tense did you find the events in the game?
- **AS8.** Did playing the level primarily evoke feelings or thoughts?
- **AS9.** To what extent did you find the game primarily upsetting or repulsive, versus primarily fun?
- **AS10.** Did you think the focus of the game developers was on causing moral indignation, or on depicting a violent fantasy?
- **AS11.** Did it make a difference for your experience of the game that you knew that the events depicted were fictional?
- **AS12.** After playing this scene, would you like to play more of the game?
3.5.8 Gameplay Experience

In order to both explore a broader range of experiential effects of playing the game, and in order that players do not get a sense that their guilt and disgust responses are being specifically sought (which may skew results), the Game Experience Questionnaire was also employed in this study. The GEQ is a self-report measure, which aims to “dependably and broadly characterize the versatile experience of playing digital games” (IJsselsteijn et al., 2008). It is a 26-item measure, exploring subscales for: immersion, flow, competence, tension, challenge, positive affect, and negative affect. The questions are measured on a 5-point Likert scale (Appendix G – Study 1 & 2 Materials [Digital]).

3.6 Participants

Data was recorded from 36 staff and students recruited from the University of Portsmouth. Although efforts were made to balance for gender where possible, volunteers totalled 31 male and 5 female. Participants were all aged over 18, due to the age certificate requirement of Modern Warfare 2. 30.6% of participants were aged 18-24, 55.6% were aged 25-34, 11.1% were aged 35-44, and 2.8% were aged 45-54. Participants were sought who have played videogames before (only to an extent that they have an understanding of what videogames are), though did not necessarily need to identify as someone who regularly plays games. However, it was mentioned in the recruitment materials that participants would need to play a first-person game that contained violent scenes of warfare simulation; therefore, the contribution should be noted of participants’ self-selection by volunteering to take part and keeping the appointment. Indeed, 55.6% of participants reported playing games “every day”, with a further 19.4% reporting playing games “once a week”. Only 8% reported playing games less than once a month. Of all participants, 50% reported playing specifically first person shooters “often” or “frequently”, so the population skewed heavily towards regular players, who were familiar with first-person shooters.

Participants were not paid for taking part nor given course credit, though were entered into a departmental prize draw to win a games console. Ethical approval was sought for the study, and was approved (Ref: FO 02/12 - 0055) (Appendix D – Study 1 Materials).

3.7 Procedure

Participants were briefed on the study, and what to expect from the game, and asked to sign a consent form. The participants were informed that the experiment was concerned with how they critically think about games as art objects. This is because Leder et al. (2004) states that within a laboratory experiment, participants should be alerted to studies being concerned with aesthetics and art reception, as this “somehow assures a more representative mode of art reception.” They were asked to fill in a short, electronic survey distributed on a tablet, to explore their demographic, prior game playing experience, and fill in the trait questionnaires for Trait Empathy and aesthetic experience.
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

(AEQ); this totals 54 items. They were required to play a short tutorial level, to familiarize themselves with their assigned control mechanism. They were then asked to play the No Russian level of *Call of Duty: Modern Warfare 2* under their assigned condition, for 10 minutes, or until they had completed the level. After this, they were asked to fill out the post-exposure questionnaire, totalling 68 questions. The study then concluded, following a ten-minute semi-structured interview. In total, each participant was asked to participate for no longer than 45 minutes.

### 3.8 Results

All data was gathered electronically via means of a questionnaire, and downloaded directly into SPSS for analysis, thus eliminating human error where possible.

#### 3.8.1 Construct Reliability and Validity

As a first step, reliability was assessed for the measurements taken. Cronbach’s alpha was ascertained for each of the scales used, in order to verify internal consistency. This test showed acceptable to excellent reliability for each of the scales used.

The Empathy Quotient (short) generated a Cronbach’s score of $\alpha = 0.86$, with Curiosity and Exploration Inventory (CEI-II) and Big Five Inventory – Openness (BFI-O) generating scores of $\alpha = 0.84$ and $\alpha = 0.78$ respectively. *Spatial Presence: Self-Location and Spatial Presence: Agency* subscales generated scores of $\alpha = 0.83$ and $\alpha = 0.81$ respectively, while Controller Naturalness scale showed a Cronbach’s alpha reliability of $\alpha = 0.90$. Furthermore DES-IV guilt and disgust subscales generated scores of $\alpha = 0.82$ and $\alpha = 0.89$. The Game Experience Questionnaire (GEQ) showed acceptable to excellent reliability for all subscales: Sensory and Imaginative Immersion ($\alpha = 0.63$), Competence ($\alpha = 0.83$), Flow ($\alpha = 0.83$), Tension ($\alpha = 0.70$), Challenge ($\alpha = 0.76$), Positive Affect ($\alpha = 0.86$), and Negative Affect ($\alpha = 0.64$).

Additionally, correlations were sought between certain variables in order to verify validity. It should be noted that for the purposes of this study, the Pearson’s $r$ correlation is taken to be strong at values greater or less than 0.4 and -0.4 respectively for positive and negative correlations. Values greater or less than 0.7 and -0.7 respectively for positive and negative correlations imply very strong relationships (Dancey & Reidy, 2007).

There was a significant, strong correlation between previous experience of controller naturalness and current perceived controller naturalness ($r=0.44, n=36, p < 0.01$), showing that these are both related measures. Similarly, the GEQ Tension subscale significantly correlated with the Tension question from the aesthetic experience questionnaire ($r=0.36, n=36, p < 0.05$).

There was also a strong, significant correlation between *SP: Self-Location and Perceived Controller Naturalness* ($r=0.45, n=36, p < 0.01$), and a smaller but still significant correlation between *SP: Agency and Perceived Controller Naturalness* ($r=0.37, n=36, p < 0.05$). Additionally, *SP: Self-
Location correlated significantly with SP: Agency ($r=0.49$, $n=36$, $p < 0.01$). Therefore, these measures of validity give good precedence to see if manipulation occurred between conditions.

3.8.2 Hypothesis testing

3.8.2.1 Manipulation Check

In order to check whether the manipulation of interface mimesis successfully resulted in the expected experiential measures of Perceived Controller Naturalness, Spatial Presence: Self-Location and Spatial Presence: Agency, initial tests were conducted.

As a first step, an independent samples t-test was conducted between LIM-1 and LIM-2 to test if there were any statistically significant differences in Perceived Controller Naturalness scores. There were no outliers in the data, as assessed by inspection of a boxplot, and Perceived Controller Naturalness scores for each level of interface mimesis were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). As expected, no statistically significant differences were found between LIM-1 and LIM-2 in terms of Perceived Controller Naturalness, establishing these as a valid baseline measure to represent a Low Interface Mimesis condition.

Therefore, these two conditions, LIM-1 and LIM-2, were concatenated into one group, Low Interface Mimesis (LIM), and a Welch t-test was run (due to the substantial difference in group sizes) to determine if there were differences in Perceived Controller Naturalness between LIM and HIM. There were no outliers in the data, as assessed by inspection of a boxplot, and Perceived Controller Naturalness scores for each level of interface mimesis were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). As expected, there was a statistically significant difference in Perceived Controller Naturalness between LIM ($M=3.46$, $SD=1.30$) and HIM ($M=2.60$, $SD=0.76$), however, with LIM scoring higher than HIM in Perceived Controller Naturalness ($M=0.86$, 95% CI [0.16, 1.55], $t(32.92) = 2.50$, $p < 0.05$).

This difference was not, of course, in the order expected, as enhancing the designed interface mimesis of HIM was expected to increase Perceived Controller Naturalness.

In order to further explore this, further Welch t-tests were conducted between LIM and HIM to explore differences in Spatial Presence: Self-Location, and Spatial Presence: Agency. There were no outliers in the data, as assessed by inspection of a boxplot, and Spatial Presence: Self-Location and Spatial Presence: Agency scores for each level of interface mimesis were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$).

No statistically significant differences were however found in terms of Spatial Presence: Self-Location scores, between LIM ($M=2.77$, $SD=0.88$) and HIM ($M=2.26$, $SD=0.84$), nor in terms of Spatial Presence: Agency scores between LIM ($M=3.10$, $SD=0.85$) and HIM ($M=2.40$, $SD=1.12$).
Therefore, although there were differences in *Perceived Controller Naturalness* between LIM and HIM, indicating successful manipulation of interface mimesis, this was not supported by the Spatial Presence measures. Thus, this failed manipulation requires further exploration.

### 3.8.2.1.1 Factors in Failed Manipulation Check

In order to test for within-subjects variation, multiple hierarchical regressions were performed to explore the contribution of *Perceived Controller Naturalness* and frequency of playing first person shooters on spatial presence measures, if not just the interface mimesis condition alone.

#### Table 3-1: Hierarchical Regression for Spatial Presence: Self-Location

<table>
<thead>
<tr>
<th>Model Summary</th>
</tr>
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<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1. Condition</td>
</tr>
<tr>
<td>2. Condition, PCN</td>
</tr>
<tr>
<td>3. Condition, PCN, FPS Playing Frequency</td>
</tr>
</tbody>
</table>

The hierarchical regression showed (Table 3-1) that there is too much within-subject variation, compared to the between-subject variation. The treatment condition (interface mimesis) (Model 1) accounts for only 8% of the variability in *Spatial Presence: Self-Location*. Model 2, including *Perceived Controller Naturalness*, accounts for 22% of the variability in *Spatial Presence: Self-Location* (a 14.9% change). Model 3, including frequency of playing first person shooters, accounts for 33% of the variability in *Perceived Controller Naturalness* – an 11% change.
The hierarchical regression showed (Table 3-2) that there is too much within-subject variation, compared to the between-subject variation. The treatment condition (interface mimesis) (Model 1) accounts for only 11% of the variability in Spatial Presence: Agency. Model 2, including Perceived Controller Naturalness, accounts for 18% of the variability in Spatial Presence: Agency (a 7% change). Meanwhile, Model 3, including frequency of playing first person shooters, does not account for any further variability in Spatial Presence: Agency.

Therefore it can be seen from this analysis that the within-subjects variation is more significant than the between-subjects. From this regression, we can see that a significant predictor of Spatial Presence measures in both cases is Model 2: considering both interface mimesis condition, and Perceived Controller Naturalness. For Spatial Presence: Agency, this is then further improved by also considering how often first-person shooters are played, though this addition to the model makes no difference for Spatial Presence: Self-Location.

Therefore, it can be suggested that the manipulation check (Section 3.8.2.1) failed because of other causes of individual variation, such as Perceived Controller Naturalness; these were more significant predictors of Spatial Presence measures than interface mimesis condition alone. Since HIM was found to be perceived as less natural than LIM (Section 3.8.2.1), it is suggested that these difficulties arose due to a lack of competence with the interface mimesis condition assigned, though this lack of competence was not consistent between-subjects.

Considering these findings overall, it is clear that there were within-subject relationships as predicted and that the strength of these was greater than the between-subjects contribution. Thus, a between-subjects analysis is not possible for the aesthetic and trait results; however, the data can be concatenated for further analysis.
3.8.3 Exploratory Analysis

3.8.3.1 Correlations

3.8.3.1.1 Controller Naturalness and Spatial Presence

There is a strong significant correlation between Perceived Controller Naturalness and a player’s previous experience of naturalness with that type of controller ($r=0.44$, $n=36$, $p < 0.01$). There were also correlations between Perceived Controller Naturalness and Spatial Presence: Self-Location ($r=0.45$, $n=36$, $p < 0.01$), and Perceived Controller Naturalness and Spatial Presence: Agency ($r=0.37$, $n=36$, $p < 0.05$).

3.8.3.1.2 Spatial Presence and Aesthetic Experience

There is a very strong significant correlation between Spatial Presence: Self-Location and AS1: Detached versus engaged with the scene ($r=0.55$, $n=36$, $p < 0.01$) and AS6: perception of realism/plausibility ($r=0.53$, $n=36$, $p < 0.01$), and AS7: experience of tension ($r=0.44$, $n=36$, $p<0.01$). Smaller but significant correlations exist between SPSL and AS3: awareness of perpetrators ($r=0.35$, $n=36$, $p<0.05$), and AS4: perception of stylistic beauty ($r=0.37$, $n=36$, $p<0.05$).

Additionally, very strong significant correlations exist between Spatial Presence: Agency and AS6: perception of realism ($r=0.45$, $n=36$, $p<0.01$), and AS7: experience of tension ($r=0.47$, $n=36$, $p<0.01$), as well as AS4: perception of stylistic beauty ($r=0.48$, $n=36$, $p<0.01$). Furthermore, Spatial Presence: Agency is significantly correlated with AS2: empathy with the victims ($r=0.64$, $n=36$, $p < 0.01$).

There was a very strong significant correlation between Spatial Presence: Self-Location (SPSL) and GEQ Flow subscale ($r=0.71$, $n=36$, $p < 0.01$) and a small significant correlation between SPSL and GEQ Challenge ($r=0.40$, $n=36$, $p < 0.05$). A significant correlation also exists between Spatial Presence: Agency and GEQ Immersion subscale ($r=0.36$, $n=36$, $p < 0.05$) as well as a smaller but still significant correlation with GEQ Flow ($r=0.33$, $n=36$, $p < 0.05$).

3.8.3.1.3 Guilt and Disgust

There was a highly statistically significant moderate-correlation between Guilt and Disgust subscales ($r=0.53$, $n=36$, $p < 0.01$), thus indicating the reliability of these measures.

Very statistically significant negative moderate-correlation between AS8 (feelings vs. thoughts) and Guilt ($r=-0.60$, $n=36$, $p < 0.01$) as well as Disgust ($r=-0.60$, $n=36$, $p < 0.01$) – thus, those who focused on thoughts rather than feelings also experienced less Guilt and Disgust.

In addition, there is a very significant correlation between AS2: empathy with the victims, and both Guilt ($r=0.56$, $n=36$, $p < 0.01$) and Disgust ($r=0.48$ n=36, $p < 0.01$). Unsurprisingly, those who felt more Guilt and Disgust also experienced less positive affect ($r=-0.41$, $n=36$, $p < 0.01$ and $r=-0.49$, $n=36$, $p < 0.01$).
n=36, p < 0.01 respectively), and more AS9: repulsion, rather than fun \( (r=-0.48, n=36, p < 0.01 \) and \( r=-0.50, n=36, p < 0.01 \) ).

Furthermore, it made little difference to those who felt Disgust that they knew the game was fiction \( [AS11] (r=-0.46, n=36, p < 0.01) \). They focused on events rather than style \( [AS5] (r=0.46, n=36, p < 0.01) \) and they did not want to play more \( [AS12] (r=-0.37, n=36, p < 0.01) \). Those who felt more Guilt also fired fewer shots \( (r=-0.37, n=36, p < 0.05) \).

There was no significant correlation between Trait Empathy and Guilt and Disgust – nor between the Trait Aesthetic Attitude and Guilt and Disgust, so H2 \((i-iv)\) were not confirmed.

### 3.8.3.2 Factor Analysis

Given the failure of manipulation check (Section 3.8.2.1), and importance of individual variances, it should be more closely examined to determine what accounts for these. To investigate the correlation matrix, a factor analysis was conducted in order to find out which of the items clustered, using varimax rotation to maximize differences between factors (see Appendix B – Study 1 Factor Analysis). A principal axis factor analysis was performed in this case (rather than component analysis), as the intent of this exploration is to identify latent factors, rather than simplify the number of factors.

Ten factors were derived with eigenvalues greater than 1.00 (see Appendix B – Study 1 Factor Analysis), which explained 74.2% of the total variance. These were thus labelled as follows:

1. Having an “It’s Just a Game” Attitude (13.2%)
2. Empathising with the Victims and Environment (9.4%)
3. Being Inexperienced with FPS Games (9.4%)
4. Being Emotionally Absorbed (8.4%)
5. Identifying with Avatar (7.2%)
6. Trait Aesthetic Attitude & Fluency (6.4%)
7. Competency with the Interface (5.6%)
8. Focus On Events Rather Than Style (5.2%)
9. Frequent Player But Unfamiliar With Interface (5.0%)
10. Perceiving Game as Violent Fantasy (4.8%)

#### Table 3-3: List of Factor Analysis Results

Interestingly, Factor 1 encompasses intercorrelations for many of the variables in H1, with most significant loadings for AS11 (“Did it make a difference for your experience of the game that you knew that the events depicted were fictional?”), AS9 (“To what extent did you find the game primarily repulsive, versus primarily fun/arousing?”), as well as positive affect. Within this factor is also negative correlation for feelings of disgust, and positive correlations for number of shots fired,
competence, and wanting to play more. Therefore, this factor, accounting for the greatest variation, appears to be best summarized by an attitude of “it’s just a game”.

![Scree Plot](image.png)

**Figure 3-4: Scree Plot for Factor Analysis**

Although 10 was an unusually large number of factors, it is suggested that this is a result of the large number of items measured, and the complexity of the dataset. Cattell’s (1966) scree test is the factor estimation technique used in order to verify that ten factors would be suitable. Although the scree plot (Figure 3-4) shows two potential ‘elbows’, indicating either 5 factors or 10 factors (i.e. one before the cut off of the ‘elbow’ in each case), the intent of this exploration is to identify latent factors rather than simplify the number of factors; therefore 10 factors were identified. Furthermore, five factors only account for 47.6% of the total variance, whereas 10 factors account for 74.2% of the total variance.

### 3.9 Integrating Qualitative Results

Qualitative data from a post-exposure ten-minute semi-structured interview was collected in order to provide further context for the quantitative data collected, and to explore the research themes. This follows the concurrent triangulation strategy (also known as *confirmation, disconfirmation, cross-validation, or corroboration*) as outlined by Creswell (2008). The aim of this strategy is to offset the weaknesses inherent within one method with the strengths of another. In this analysis, weighting will be given to the quantitative data, while using the qualitative data to gain further insight into the former.
Due to issues with audibility or with the recording, usable data was transcribed from 28 of the participant interviews out of the total 36, and this data was then coded using qualitative data analysis software NVivo.

Open coding was applied to the data, as a first pass, then, the emergent codes were reworded where conceptually appropriate, to match keywords from the factor analysis. This was done in order to further illuminate the factors obtained via the factor analysis. Where themes emerged which were not present in the factor analysis, this coding was not reworded.

### 3.9.1 “Just a Game” Attitude

This theme arose most often in the data, with nearly a third of participants (32%) explicitly using a variation of the phrase “just a game” or “just a simulation” in their interviews, and others indicating a similar sentiment.

One such example of this was a participant claiming, “It was just a game. I suppose I knew that the people doing this in the game were wrong, but actually, it’s just a game.”

### 3.9.2 Double Awareness

A theme that emerged from the interview data that had not been illuminated through the quantitative analysis was that of participants showing two simultaneously existing but conflicting attitudes towards playing the game (although it cannot be confirmed that there are no more than two). This theme was coded as “double awareness”, and was exhibited by 25% of participants. For example, one participant initially answered:

“Generally, I’ve never felt like a perpetrator in videogames, it’s just something you do, it’s not real. It’s just about the skill of doing stuff. Having been in the army, I don’t think it's realistic at all.” – Participant.

Soon after, the same participant expressed surprise at approaches to playing the game that involved shooting civilians:

“Wow, does anyone really go and start shooting people, then?! … There's certain things you shouldn't do in games, 'it's just not polite'.“ – Participant

Other responses, however, expressed positions such as: “It’s a bit shocking, but at the same time it's a game”, thus overlapping with the previous coding (Section 3.9.1).

### 3.9.3 Belief in “Shock Value”

Consistent with the questionnaire item AS10, participant responses included expressions of belief in the game being designed for simply for “shock value”, and therefore making a conscious decision
to ignore the moral content of the scenario. For example, “No Russian annoys me because it’s just there for shock value, it doesn’t really make much sense.” 18% of participants exhibited this theme.

3.9.4 Unfamiliarity with Interface
A theme that also emerged from the qualitative data was that of unfamiliarity with the interface, despite playing videogames regularly. 18% of participants expressed such unfamiliarity with the interface, and in some cases, cited this as a reason for feeling more ‘detached’ from the game:

“I didn’t like it because I didn’t know the layout – I usually play using gamepad rather than mouse-and-keyboard, and it just didn’t feel right, this time I felt more detached.” – Participant

3.10 DISCUSSION
This study explored the relationship between interface mimesis and a player’s sense of aesthetic distance from a morally significant game. Aesthetic distance was operationalized by exploring guilt, disgust (moral judgements) and other aesthetic experience. As it was established from the literature review that an epiphenomenal effect of successfully manipulating interface mimesis to alter aesthetic distance would be altering *spatial presence* (Section 2.3.1), interface mimesis alone was not considered, and indeed, a manipulation check was necessary.

3.10.1 Manipulating Interface Mimesis and Perceived Controller Naturalness
A manipulation check was performed to test for differences in perceived controller naturalness. Unfortunately, the conditions were found to have failed successful manipulation of *Spatial Presence* measures (*SP: Self-Location* and *SP: Agency*). While this manipulation failed between the three conditions (when using various different types of handheld controllers), the concatenated data yields valuable exploratory results.

It had been expected that the Razer Hydra controller would increase Perceived Controller Naturalness, as it offers a small degree of greater interface mimesis, as motion sensing technology is used to ‘look around’ the screen (and mimetic gestures are used to reload and melee attack). However, this was not the player’s experience. Of course, this may have been due to usability shortcomings with the controller (and its mapping to the game) itself, though the data does not exist in order to investigate this fully, other than the resultant effect of reduced Perceived Controller Naturalness.

Indeed, a multiple hierarchical regression indicated that the most variability in *Spatial Presence: Self-Location* and *Spatial Presence: Agency* was actually best accounted for by factors including both interface mimesis and Perceived Controller Naturalness. Frequency of playing first-person shooters accounted for some variability as well in terms of *Spatial Presence: Self-Location*. Furthermore, correlations were found between Perceived Controller Naturalness and both of the *Spatial Presence* measures; such a finding is in keeping with studies within which have found perceived
controller naturalness to affect spatial presence (McGloin et al., 2011; Skalski et al., 2011; Tamborini & Skalski, 2006), and furthermore, Skalski et al. (2011) and R. McGloin & Krcmar (2011) found significant positive relationship between videogame skill and feelings of spatial presence. The authors posited that players with lower skill levels might struggle to move through an environment, or complete certain tasks using the controller available. Indeed, “natural mapping” or “[perceived] controller naturalness” is defined by Skalski et al. (2011) as “the extent to which users of interactive technology perceive the interactivity to be predictable, logical, or in line with expectations.” It is suggested that in this study, the interactions using the LIM interfaces were thus more “in line with expectations” than the HIM interface (Razer Hydra), possibly due to the prior games-playing experience of players.

Therefore, a controller and mapping which the player finds instantly more natural, regardless of previous experience, may be preferable for this type of study; and thus yield results that are more useful. In addition, the Razer Hydra was a controller that only slightly increased interface mimesis and it may be that there is a minimum threshold of interface mimesis before a game experience truly reminds the player of everyday life.

3.10.2 Aesthetic and Moral Judgements
This study does contribute some significant findings in terms of aesthetic and moral judgements, however. Notably, that increased Spatial Presence: Self-Location and Spatial Presence: Agency correlates with aesthetic measures such as increased engagement with the scene (vs. detachment), greater perception of realism/plausibility, greater feelings of tension, greater awareness of perpetrators’ motives, and greater perception of stylistic beauty. Spatial Presence: Agency also correlates with empathy with the victims.

As the goals of increasing interface mimesis are increased Spatial Presence, the findings were consistent with expectations. However, it was also found that rather than increase spatial presence in the order expected, the Razer Hydra interface, designed to be a more mimetic interface, did not elicit higher Perceived Controller Naturalness.

Indeed, higher levels of perceived controller naturalness correlated with previous experience with the controller allocated, thus confirming the assertion by Skalski et al. (2011) that successful fulfillment of “mental models” is what provides “more accurate and available information about how to interact with the game (Tamborini & Skalski, 2006) (Section 2.3.1.1). These mental models can develop through past experiences, whether these experiences are direct or mediated (Skalski, 2011, p. 226); this means that a player knows how to interact with a videogame either through the extent to which the controller successfully maps real-world interactions which they’ve had previous experience with – or, through having played a similar game using similar mappings before. It is these mental models and their successful fulfillment that give rise to spatial presence (Skalski et al., 2011), and this is what may have caused the variations in Spatial Presence measures in this study. Howev-
er, this would have to be confirmed further in another study, at the same time, also considering the additional factor of body ownership (Section 1.3.3.3) in order to gain further insight into a player’s sense of physical embodiment (Section 1.3.3.2.1).

3.10.3 Experienced Players and Prior Exposure

The limitations of using a game that has been commercially released and the subject of much media panic were apparent in this study, as a priori biases and attitudes were significant; 63.4% of participants reported having played the scenario previously themselves, or having watched someone else play it. Hartmann & Vorderer (2010) report “challenging” links between familiarity and subsequent guilt, negative affect, and enjoyment in their exploration of unjustified videogame violence. In their study, the more familiar players were with the game, the weaker their experience of guilt and negative affect and the greater their enjoyment. They posited that participants who have played the game before could, through “repeated use of the game… have learned how to regulate their emotions and deal with potential violations of moral standards.” They state that “it seems reasonable that experienced users of violent games develop and apply cognitive strategies that help to reduce negative affect and make violent conduct more gratifying (cf. “desensitization,” Carnagey, Anderson, & Bushman, 2006; Raney, 2004). Moral disengagement may be one such strategy.”

Thus, several potentially confounding factors to finding causal effects were identified within this study, such as the prevalence of a priori biases (with many participants having already played the game). Furthermore, it is proposed that in order to eliminate potential cultural biases towards first-person shooters, particularly popular franchises such as Call of Duty, that an alternate genre of first-person, morally significant game, may be more appropriate for future study (Chapter 4).

3.10.4 “It’s Just a Game” Attitude

Individual variability in results was explored through a factor analysis, yielding ten factors in total, accounting for 74.2% of the variability (Section 3.8.3.2). The most significant of these factors were what is termed here as having an “It’s just a game’ attitude” (thinking differently about the experience because they knew it was fiction, experiencing positive affect, and decreased feelings of disgust, etc.), and, seemingly opposing this, a factor encompassing a sense of empathy with the environment and the victims (increased feelings of Spatial Presence: Self-Location and Agency, as well as a focus on events rather than style, etc.) Perceived Controller Naturalness, meanwhile, accounted for only 5.3% of the variability.

It is suggested that this dichotomy between factors 1 (“it’s just a game” attitude) and 2 (empathizing with the victims and the environment) fits the model of aesthetic distance between identification and alienation as proposed (Section 2.7). Thus, some players were closer to the ‘alienation [distanted]’ end of the spectrum, and some closer to the ‘identification [empathy]’ end of the spectrum respectively (Figure 2-6).
However, since the data was concatenated, these factors were not necessarily separated in discrete participants, but potentially some participants could have exhibited both of these factors. Such an assertion would be in line with the qualitative interview data, in which 25% of participants relayed a sense of ‘double awareness’.

The qualitative data supports the findings, with regards to Factor 1, as the post-exposure interviews yielded 32.1% of participants specifically using the phrase “just a game” or “just a simulation” to refer to the material.

The capricious attitude in Factor 1 (‘“It’s just a game’ attitude”) is consistent with findings in previous studies regarding frequent players of first-person shooters; even though this factor did not encompass any items to do with frequency of play (nor prior familiarity with the game), it appears that this factor is consistent with the suggestion by Hartmann & Vorderer (2010) that ‘moral disengagement’ may be one ‘cognitive strategy’ applied by “experienced users”. Indeed, 55.6% of participants in this study reported playing “digital games of any sort” every day and a further 19.4% reported playing games “at least once a week”. Furthermore, 50% of participants reported specifically playing first person shooters “Often” or “Frequently”. Therefore, the population examined here skewed heavily in favour of “experienced users”.

On the other hand, this factor of “Having an ‘It’s just a game’ attitude” also encompassed a weak negative correlation with Openness to Experience, this is one of the trait factors that operationalized aesthetic attitudes and pre-dispositions in this study. Whilst there is no correlation between this trait and empathy or Curiosity and Exploration Inventory subscales, “Identifying with the character” (Factor 5) shows moderate inter-correlations between the latter items, showing that a player’s pre-existing attitudes account for more variability than perceived controller naturalness. This indicates some support for the idea of a ‘virtuous’ player.

Hartmann et al. (2010) highlight complexities in apparent player attitudes about violence in games; they challenge the work of Ladas (2002), which supports the view that “avid users of violent videogames” are able to distinguish that play is “just a game”, and that virtual violence does not bear any moral significance.

Hartmann et al. propose instead that according to their findings, “unjustified virtual violence triggers stronger guilt responses in users than justified virtual violence, particularly when users are more empathic.” It is proposed that in this study, the Factor 1 (the “‘just a game’ attitude”) findings support Ladas’ conception, contrary to Hartmann et al. However, this is also not a complete picture of players’ experience, due to the simultaneous prevalence of Factor 2 (empathy with the victims and environment). Hartmann et al. (2010) suggest that guilt responses are triggered depending on within-game factors and user factors (i.e. Trait Empathy); such a conception of the way in which guilt responses are triggered are seemingly in line with the Bulloughian model of aesthetic distance (Section 1.3.1, Section 2.5.1): through a combination of “salient stylistic [formal] qualities” (i.e.
“within-game factors, as suggested by Hartmann et al.), as well as “disposition of the [player]” (i.e. “user factors” such as “Trait Empathy”)

Therefore, due to the findings being supported by previous work considering an attitude of ‘it’s just a game’, this warrants further exploration (Chapter 4), specifically through an original game that the participants would not be familiar with, nor contextualise through ‘moral disengagement’ in the way they may do with violent content.

Unfortunately, the relationship between Trait Empathy and response as found by Hartmann et al. (2010) was not repeated in this study, although variability in Guilt and Disgust responses remained consistent with other emotional and aesthetic measures. One reason for this could be that these studies employed different scales for measuring Trait Empathy. Another is that within this population of frequent players of games, a priori attitudes and familiarity appeared to be of most significance. Indeed, this is in line with findings by Stenner (2007) that with players of Playas Homeland critically reflecting upon their experience, a huge disparity was shown between those who regularly play games, and those who do not, with the former being least likely to think about what they were doing; meanwhile, less frequent players were more likely to engage in critical reflection.

3.10.5 Methodological Limitations

There were a number of limitations in this study, some of which have been explored in the analysis (Section 3.10). This limits validity, but heightens reliability. There was a relatively small sample size (n=36), which, more significantly, was demographically heterogeneous from the general population, in terms of gender balance (31 male, 5 female), game-playing habits (the population skewed heavily towards very regular players of games), and educational level (most were of undergraduate level or higher).

Furthermore, due to the fact that a widely-available commercially popular game was used, many self-selecting participants had already been exposed to it, which, it is proposed, affected the results. Another factor in this may have been that participants, who tended to self-identify as regularly playing videogames, may have had preconceived ideas about how to mentally ‘frame’ Call of Duty: Modern Warfare 2 as ‘just a game’.

Furthermore, as shown by Hartman et al. (2009): “players who feel that they are doing something wrong begin to regulate the noxious experience (Schramm & Wirth, 2008). They may, therefore enter a more critical and distanced reception mode, which may also serve to diminish the aggressive effects of the displayed virtual violence.” This is also consistent with Koopman et al. (2011), who found in their study of rape literature that the more absorbed readers were in the narratives, the greater their experiences of unsettled emotion; at the same time, absorption in the narrative diminished any negative appraisal and consequent detachment from the text. Therefore, it may be that
the results were confounded by increased feelings of guilt and disgust that may lead players to intellectualize their experience more upon reflection.

However, this study sought to avoid the potential for bias (Schwarz & Oyserman, 2001) by not simply measuring guilt and disgust, but also measuring several other gameplay experience questions. Thus, the suggestion of process-based measures of guilt in addition to the questionnaire items (in order to complement the findings), should be heeded for future work.

Lastly, participant feedback noted feeling as though there were a few too many questionnaire items, which could have contributed to respondent fatigue (Ben-Nun, 2008), thus affecting the responses. Future work should therefore seek to strategically reduce the number of questionnaire items and demand on participants, while still collecting the necessary data.

### 3.11 Summary and Implications for Further Study

Despite the unexpected nature of the results of this exploratory study, it yielded promising results indicating strong correlations between the spatial presence measures and aesthetic measures, and offered intriguing insights into player attitudes, particularly in terms of the expressed double awareness shown by players; this is in line with the ‘double-consciousness’ of play as posited by Salen & Zimmerman (2003) (Section 1.3.3.8) and this concept should thus be further explored through further study.

Thus, the a priori attitudes and their significance to aesthetic distance should be further explored, as should the question of how incremental variations in interface mimesis affect these measures. Some promising correlations between the spatial presence measures and aesthetic and moral judgement measures were found, as discussed, indicating that this is suitable for further exploration.

However, to do so requires a number of adjustments: firstly, by developing an original ‘morally significant game’ that removes the bias from previous exposure to play, and allows for moral judgement without a sense of disgust, and without the expectations that violent content in games often has for players. Indeed, as stated by Hartmann & Vorderer (2010), “it seems reasonable that experienced users of violent games develop and apply cognitive strategies that help to reduce negative affect and make violent conduct more gratifying (cf. ‘desensitization,’” Carnagey, Anderson, & Bushman, 2006; Raney, 2004). Moral disengagement may be one such strategy.”

Secondly, any increases in interface mimesis, should add input modalities that participants are more likely to find ‘natural’ due to these interactions mirroring those in real life, thus avoiding the potential usability issues with the interface in this study. Therefore, interactions should be specifically designed in an original game to feel more natural, such that differences in mental model of the players is minimised.
4 Study 2: Investigating the Effect Of Interface Mimesis On Aesthetic Distance From A Morally Significant Videogame

4.1 Introduction

This study continues the conceptual thread evident in the previous study (Chapter 3), which yielded promising exploratory results in elucidating a relationship between spatial presence and aesthetic experience measures, as well as indicating varying attitudes towards approaching the game, commensurate with identification vs. alienation, as proposed by the suggested model of aesthetic distance (Section 2.7). However, in addition to the operationalized measures of aesthetic attitude that were sought, it is suggested that an additional component, an attitude of “it’s just a game” is in need of investigation.

Grau (2003) suggests that “the more intensely a participant is involved, interactively and emotionally, in a virtual reality, the less the computer-generated world appears as a construction: Rather, it is construed as personal experience.” Therefore, it was proposed that aesthetic distance and moral judgements should be further explored, through the lens of enhancing interface mimesis, in order to further explore how this manifests in games, and how this interacts with the “just a game” attitude.

Previous work in which this attitude was discussed (Hartmann et al., 2010; Hartmann & Vorderer, 2009) showed it is prudent to further explore such a theory and its centrality (or otherwise) to mimetic play of morally significant games.

4.2 Exploring the “It’s Just a Game” Attitude

4.2.1 Lusory Attitude

Suits’ (2005) defined the concept of a lusory attitude, which he suggests exists any time a game is played. Suits was originally writing in 1978, and thus not about digital games but rather sports, playground games, and card games; however, the concept of the lusory attitude was brought to contemporary game and videogame studies in Salen & Zimmerman’s seminal Rules of Play (2004). Suits’ concept is described by Kirkpatrick (2011), in his review of ludology and its distinction from other forms:

“To play a game is to attempt to achieve a specific state of affairs… using only means permitted by rules [lusory means], where the rules prohibit use of more efficient in favour of less efficient means [constitutive rules], and where the rules are accepted just because they make possible such activity [lusory attitude].” (pp. 54-55, emphasis added)
Therefore, Suits’ definition of the lusory attitude is one in which players wilfully choose to engage with the rules of a game, because to ignore the rules means the game would not be possible.

Kirkpatrick states that “The concept ‘game’ mediates our relationship with them; they are things we expect to play... At the same time, the person who insists that is all they are is an extremist.”(p. 186). Indeed, he underscores that the concept of a lusory attitude should be understood in its full ambivalence; a lusory attitude, according to him, can be “wry and detached” as well as “engaged and pleasure-orientated.” He refers to this as “the undecideability of the videogame.”

Calleja (2015) problematizes the application of Suits’ particular definition of lusory attitude to videogames as a desire to ‘play by the rules’, suggesting the nature of videogames as systems of rules which cannot be negotiated in a way that exists outside the boundaries of the game, even if the player wanted to:

“One cannot decide to ignore the rules written into a game like Fable II (2008)... and, for example, drag a chair found in one’s house to the town square and decide to sit there. The game does not allow for this to take place because the actions are not programmed into it” (p. X).

Therefore, while Calleja concedes that the lusory attitude’s defining feature, the wilful decision to ignore an easier course of action in favour of a less efficient means (the game’s rules), can apply to rules which are socially negotiated and enforced by other players (including oneself), this does not apply to the rules which are encoded in a videogame. Within videogames, however, emergent behaviour and outcomes, not necessarily predicted by the developers, are possible. For example, in game such as Redshirt (Khandaker-Kokoris, 2013), emergent results occur, but these still happen within the confines of the rules of the system; and, in fact, result from the interaction between internal rules of the game, and the players’ input.

Thus, the permissive adoption of the Suits’ definition of the lusory attitude by game scholars such as Salen & Zimmerman (2004) and Kirkpatrick (2011) is rejected here. However it is still apparent from the findings of the previous study, that, as asserted by Kirkpatrick, for some players, “the concept ‘game’ mediates our relationship with them; they are things we expect to play.” Therefore, alternative player conceptions of ‘game’ need to be explored.

4.2.2 The Magic Circle

This more generalised definition of a lusory attitude, one that posits games as things we intentionally engage with in a manner different from everyday life, is an attitude that exists within the frame of the magic circle of play. This is also an idea explored by Salen & Zimmerman in Rules of Play (2004), which once again, brought an older conception (Huizinga, 1955) into the literature of contemporary game studies. Huizinga only mentions the magic circle in passing, as one of a number of spatial and conceptual places in the world in which we construct “temporary worlds within the or-
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dinary world, dedicated to the performance of an act apart” (Huizinga, 1955). However, Salen & Zimmerman (2004) argue for this term to be used “as short-hand for the idea of a special place in time and space created by a game” (p. 95). While the spatial component of the magic circle is significant in Salen & Zimmerman’s definition, they also focus on the psychological attitude the magic circle creates, linking this to Suits’ *lusory attitude* as discussed above. However, as established, videogames do not (other than the social components therein) allow the decision to consciously follow the rules of the game rather than taking some other, “more efficient” action. (It should be noted that while cheating does of course exist in videogames, this can be framed as another kind of ludic activity; a comprehensive analysis of this is available in (Consalvo, 2009a), though is outside the scope of this research.)

Nevertheless, though lusory attitude as defined by Suits is rejected, it is apparent from the “just a game attitude” (Section 3.10.4) that engaging with videogames does, at least for some players, require some kind of special framing of the activity. Moreover, the magic circle is useful here in conceptualising this as a psychological (rather than necessarily spatial) ‘circle’ that the player places around the activity. While Salen & Zimmerman’s (2004) conception of the magic circle has been widely adopted in the game studies literature (Dansey, 2013; Klabber, 2009; Poremba, 2007; Woods, 2007), there is also criticism (Calleja, 2015; Consalvo, 2009b; Schleiner, 2011; c.f. Zimmerman, 2012), which centres largely around the claim of a space “apart from reality”. These criticisms are addressed by Zimmerman (2012) in a more recent clarification entitled “*Jerked Around by the Magic Circle - Clearing the Air Ten Years Later*”, addressing concerns about the magic circle not addressing “social interaction between players, a wider cultural context, or concrete socio-political reality”, and clarifying that it is intended as a useful design concept to think about the ways in which games generate meanings.

Indeed, Bogost (2006) offered a more nuanced, reconceptualised vision of Huizinga’s magic circle; for him, it is not “a closed circle... enclosed and separate from the real world” (Salen & Zimmerman, 2004, p. 95) but instead has a gap, “a breach through which the game world and the real world spill over into one another” (Bogost, 2006, p. 136). He concedes that while games do provide a protected space in which players are free from physical consequences of their actions, the magic circle is not “hermetic”. It is the result of this breach in the magic circle through which, his concept of *simulation fever* occurs (Section 2.4.3) as “the nervous discomfort caused by the interaction of the game’s... representations of a segment of the real world and the player’s subjective understanding of that representation” (Bogost, 2006, p. 136). Thus, in Bogost’s conception - which is also attributed to an early interview with Zimmerman (Porter, 1999) – the magic circle is not such that “you’re either playing a game or you’re not.” For Bogost, although Huizinga’s original conception of games is “compelling”, it does not hold if games are to be both ideological and extrinsically subjective; he states that the magic circle cannot maintain its status as a hallowed, isolated safe
place. Indeed, for Bogost, “all games convey ideas, and those ideas may instil a process of subjective interrogation and altered mental state” (Bogost, 2006, p. 136).

This idea of the magic circle as not being “hermetic”, but instead, connected to the player’s understanding of the real world, supports the qualitative finding from the previous study that some players exhibited a sense of double awareness in the way they conceived of their experience. This thus supports Downes’ conception of double awareness as the conflict, or the oscillation between ignoring the medium, and being aware of it; the process of simultaneously looking through and looking at a medium.

The work of Hartmann et al. (2010) underscores the real-life social implications of violence in videogames, challenging the work of Ladas (2002), which supports the view that “avid users of violent videogames” are able to distinguish that play is “just a game”, and that virtual violence does not bear any moral significance. Weaving a link between these two conceptions, it is proposed that the ambiguous “undecideability of the videogame” (Kirkpatrick, 2008) means that both of these attitudes may exist simultaneously. Thus, it is proposed that a model of the magic circle which allows for double awareness reflects the way in which a player’s engagement with morally significant games operates.

Furthermore, it is proposed that this idea of the magic circle is compatible with Bullough’s conception of aesthetic (or, rather, psychical) distance, as he stated:
“Distance ... is obtained by separating the object and its appeal from one’s own self, by putting it out of gear with practical needs and ends. Thereby the ‘contemplation’ of the object becomes alone possible. But it does not mean that the relation between the self and the object is broken to the extent of becoming ‘impersonal’” (Bullough, 1912).

Such ideas of ambiguous attitudes towards play are not only also addressed by theorists such as Sutton-Smith (1997), but can also be seen to be in line with notions of make-believe as proposed by Walton (1990) (Section 2.4.4.1, 2.5.2). For Walton, while interactions with representational art (whether that is playing with a toy train, looking at a painting, or reading a book) can elicit emotion (even strong emotion), these emotions remain within the frame of fictional participation.

4.2.3 Waltonian Make-Believe: Representational Art as Play

Indeed, Walton (1990) frames all representational art in a playful framework, positing participation with it to always be an act of make-believe. For Walton, representational art, or simply, representations, are synonymous with fictions. Thus, representational art is that which generates fictional engagement for the observer. Waltonian make-believe is thus applicable to all representational arts. However, this concept is comparable with the frame of the magic circle, although the latter is specific to games.

Walton contends “appreciators immerse themselves in fictional worlds. They are carried away by the pretense, caught up in the story” (p. 274). It has been discussed previously (Section 2.4.4.1) that Walton’s conception of make-believe has many commonalities with the concept of aesthetic distance, and thus, can be framed as an alternate conception of aesthetic distance; one in which all the resultant effects of reduction of distance are still within the realm of make-believe.

Indeed, Walton makes the case that the resulting emotions that participants with an artwork feel are only fictional emotions. He states: “it is true that the pleasure... we take in tragedies depends, not infrequently, on its being only fictional that we feel sorrow or terror; in many cases we would not actually enjoy feeling the way it is fictional that we feel.” He further makes the case that some people do not enjoy feeling fear at horror movies for example, even though it is only fictional fear that they feel, and thus may avoid horror movies. Thus, for Walton, fictional emotions may be just as salient as ‘real’ ones:

“We are beginning to see how fictional worlds can seem to us almost as ‘real’ as the real world, even though we know perfectly well that they are not” (p. 249).

Walton does acknowledge the paradox that some representations arouse “actual sorrow or terror – sorrow for actual people they remind us of, terror of horrors we think we might actually face – or an objectless mood of anxiety.” He suggests, also, that:
“…appreciators recognize benefits which certain painful experiences produce – deepened awareness of themselves and their situations or whatever – and that they undergo the experiences for the sake of these benefits, like taking castor oil.” (p. 257)

There is some evidence that for this with respect to videogames: Grizzard, Tamborini, Lewis, Wang, & Prabhu (2014) note that the literature supports the theory that being forced to commit “immoral” virtual behaviours in a game has prosocial consequences. They subsequently found, through an empirical study, that performing unjustified virtual violence, using the same game as developed by Hartmann et al. (2010), “can lead to increased moral sensitivity of the player”. That is, performing violent action can increase “the salience of content-relevant intuitions”, operationalized by asking a group of participants to recall a situation in which they felt particularly guilty, versus asking another group to recall an ordinary day. Furthermore, the original two seminal studies by Hartmann et al. (2009 and 2010) as discussed previously (Section 3.10.4) found that both player factors and within-game factors influence users’ moral responses to virtual violence” (2010, p. 140), and that “unjustified virtual violence triggers stronger guilt responses in users than justified virtual violence”, particularly when users are more empathetic (and thus, are virtuous players). This indicates that such morally significant games are capable of evoking moral responses in players. These findings support Walton’s conception of representations arousing emotions which are fictional, but may also be actual; a kind of duality which, it is suggested is akin to the conception of the magic circle by Bogost as separate from the real world, but still connected to it.

“The appreciator’s perspective is a dual one. He observes fictional worlds as well as living in them; he discovers what is fictional as well as fictionally learning about and responding to characters and their situations. The former perspective also has an important place in appreciation, and sometimes it is dominant. Participation – the notion or thought of participation – remains fundamental.” (p. 274)

Indeed, Walton notes that ‘repleteness’ and ‘continuous correlation’ contribute the richness and vivacity of our visual mental games: “By enhancing the open-endedness of investigation of picture worlds, or by ensuring correspondences in what is easy or difficult to ascertain perceptually about fictional worlds and about the real one” (p. 349). Therefore, in Walton’s view, the properties of the medium that guide the user towards a sense of verisimilitude may heighten a participants’ sense of involvement with the work. Indeed, for Walton, this richness and vivacity is defined by the properties of the medium of the work – its salient stylistic qualities: “Representations generate fictional truths by virtue of their features – the marks on the surface of a painting, the words of a novel, occurrences on stage during the performance of a play – in accordance with applicable principles of generation” (p. 138). He notes how it is a sense of “possibility” that enhances this fictionality.
“… a vague realization of the possibility of fictionally probing the cues underlying one’s perceptions of three dimensional objects is present in one’s experience of the Vermeer and significantly colours it, even if one pays no attention to the portrayal of light and shadow. This realization – the realization of the potential richness of his visual game of make-believe – is an important part of what makes so vivid the viewer’s imaginings of his viewings that they are observations in the real world.” (p. 324)

Thus, Walton’s model for participation with representational arts appears to follow the model of aesthetic distance as explored in this research. Walton’s conception draws a parallel between media; for example, describing the use of first-person literary techniques, those in which only a character’s limited point of view is relayed to the reader, he compares this to points-of-view shots in film. (p. 378)

Furthermore, Walton also centralises the disposition of the player within this paradigm; representational arts (including games) are Waltonian ‘props’, and Walton states, “Props function only in a… human setting”; that is, when a participant is interacting with them. The nature of this interaction remains, however, one in which the participant knows that the experience is fictional.

Indeed, Walton doesn’t believe in Aristotelian drama as given at all (p 249); people are not really emotionally involved, even though within those fictional worlds our mental lives can be “almost as rich, varied, and subtle as our actual ones” – but they are not actual ones, they’re fictional emotions. There is no need for Brecht’s anti-Aristotelian theatre then, in Walton’s view, since people always know they are looking at fiction. There is no being lulled into disbelief.

“Must we declare Aristotle wrong in decreeing that tragedies should evoke fear and pity? Not unless we naively insist on a literal minded reading of his words.” (p. 249)

Thus, adopting Walton’s concept of representational art as “make-believe” provides a framework, beyond simply familiarity and repeated-exposure (Section 3.5.5, 3.10.3), explaining why players may appear to have a kind of double awareness, as reported in the previous study (Section 3.10.4). Therefore, it is proposed that this framework should be considered when exploring differences in aesthetic distance within the context of increasingly mimetic interfaces.

### 4.3 Experiment Design

In order to further the exploration of the research question (Section 1.5), this time taking into account the possibility of the “just a game attitude”, a further study is required.
Thus this further study should explore the concept of aesthetic distance in games, through the context of enhancing interface mimesis, and the player’s own attitudes; this is both in terms of Trait Empathy (as explored previously), and their attitudes towards approaching games, particularly those with morally significant content, and observing whether the “just a game attitude” applies in this context.

Measures must also be taken to minimise the a priori biases observed and suggested in the previous study. It was determined that participants should not have encountered the materials (the game to be used in the study) previously, as well as ensuring that the game features a morally significant scenario. Therefore, the decision was taken to design and develop a new game scenario.

Furthermore, since it was proposed that gestural fidelity and controller mapping was an issue within the previous study, due to the failed manipulation (Section 3.10.1), interface mimesis should be enhanced in a more ‘natural’ way (Section 2.3.1.1). Therefore, instead of altering the designed gestural interaction (which was found to be unnatural throughout all the conditions in the previous study, due to the limitations in gestural input technology), the differences in interface mimesis could instead be focused on control of the player’s viewing experience. This would be altered such that in the higher designed interface mimesis conditions, the input modality maps real world movement more closely than a traditional fixed display and unconnected input device. This may be achieved through head-tracking technology. As noted by Slater & Vives (2014):

“A standard IVR system has two critical components. The first is a display device that delivers surrounding high-resolution stereovision and sound to a participant that substitutes their real world sensory input by computer-generated input, including haptic feedback. The second is the use of tracking so that at the very least their head is tracked (with six degrees of freedom) in real time.”

The increase in interface mimesis, through head tracking rather than through gestural input (Chapter 3), adds an input modality that participants should already be familiar with from real life (i.e. moving one’s head to look around the world), and would not have the shortcomings in mental model that were found in the previous study.

However, in order to establish a basis for mimetic interaction, it was determined that a consistent mimetic interface would be used for the gestural interaction in this study; for this reason, the Razer Hydra controller was used once again, though the apparatus was designed around the constraints of providing a more suitable mapping for this device (Section 4.5.1.1) than in the previous experiment.

This study was designed as a two-part experiment.
4.3.1 Study 2A: Between-Participants
A between-participants study was carried out, in which participants were assigned randomly to one of the three interface mimesis conditions for viewing experience: using a regular fixed display monitor with an analogue stick for virtual camera movement [“Fixed Display and Analogue Stick”] designed to operationalise low interface mimesis. Secondly, using a regular fixed display monitor with head tracking for virtual camera movement [“Fixed Display and Head Tracking”] designed to operationalise medium interface mimesis. Finally, using an Oculus Rift virtual reality head-mounted display (with head tracking for virtual camera movement) [“HMD and Head Tracking”], designed to operationalise high interface mimesis. These were intended to operationalize increasing points along the spectrum of progressive embodiment, although the exact position on this continuum is not suggested, only that these are different relative to one another.

In all three of these conditions, participants used a Razer Hydra motion controller to simulate the action of rock climbing, such that, to some extent, at it would remain an embodied morally significant game in all scenarios, and the increasing mimesis would be afforded via the addition of head tracking.

In addition to the questionnaire items, qualitative data from a post-exposure five-minute semi-structured interview was collected in order to provide further context for the quantitative data collected, and to explore any emergent themes. This follows the concurrent triangulation strategy (also known as confirmation, disconfirmation, cross-validation, or corroboration) as outlined by Creswell (2008). The aim of this strategy is to offset the weaknesses inherent within one method with the strengths of another. In this analysis, weighting will be given to the quantitative data, while using the qualitative data to gain further insight into the former.

As with the previous experiment (Section 2.7), although within-participants were considered as an alternative design, there are too many additional effects introduced. For example, in addition to the obvious interaction fatigue, a within-subjects design means each participant will have been exposed to the questionnaire after the first condition, and therefore will enter the second condition with a bias. In addition, research has shown that subsequent media exposure changes the aesthetic experience.

However, there are of course benefits to within-participants designs, such as having a greater control of confounding variables between conditions. In order to balance out these benefits and disadvantages, and to gain additional insight into the outcomes, a second component was added to the study design (Study 2B).

4.3.2 Study 2B: Within-Participants
In following the concurrent triangulation strategy described, participants taking part in Study 2A in the non-“HMD and Head Tracking” conditions were given the additional option of also playing the
same game within the “HMD and Head Tracking” condition, for an additional 2-10 minutes (depending on completion time). It was stressed to the participants that this component of the study was entirely optional, and if they did decide to continue, then they were under no obligation (as was also the case in Study 2A) to complete the game if they did not desire. However, due to the novelty of the Oculus Rift headset, nearly all of the participants in this situation chose to accept this offer, and played the game to completion a second time.

4.4 HYPOTHESES

Players using a more (successfully designed) mimetic interface (i.e. natural for all players, regardless of prior familiarity) will have experiential effects that translate into a greater perception of controller naturalness (Section 1.3.3.6, 2.3.1.1) and a greater sense of spatial presence (Section 2.3.1). Therefore, the extent to which a morally significant action performed in a game (Section 4.5.1) “reminds us of our everyday lives” will be increased. It is expected, then, that feelings of guilt (Section 2.5.5) - will be increased. However, this may only be evident for players who exhibit Trait Empathy (Section 2.5, 1.3.4), ensuring that they are virtuous players. This exploration will be grounded within the materials. For clarity, they will be explained in terms of the materials, so that they may be subject to empirical analysis. Thus, there are three main hypotheses to be tested in this study.

4.4.1 Aesthetic Hypothesis

H1: Enhancing interface mimesis will affect a closer sense of distance from the morally significant action in a game (Section 4.5.1), meaning that “HMD and Head Tracking” will be closer than “Fixed Display and Head Tracking” which in turn will be closer than “Fixed Display and Analogue Stick”. This means that they will experience altered aesthetic judgement, resulting in a closer sense of identification (Section 2.5), as well as moral judgements indicating greater emotional involvement, commensurate with equating the morally significant action to real life, rather than a game (Section 2.5.1, 2.7). Operationalized via appropriate empirical materials, is measured by whether they:

a. Take a ‘virtuous’ action when presented with a morally significant decision to “Cut the Rope” (Section 4.5.1), meaning either:

   (1) Cut the rope for the climbing partner (or intend to) (Section 4.5.1), while:

   (a) Taking longer to make the decision (Section 4.6.3).

   (b) Experiencing greater guilt (Section 4.6.3).

   (2) Take no action when presented with decision (Section 4.6.3).

b. Experience greater Imaginative & Sensory Immersion (Section 4.6.8).

c. Experience greater Flow (Section 4.6.8).

d. Experience more engagement and less detachment from the game (Section 4.6.4).
e. Experience greater empathy with victims (Section 4.6.4).
f. Experience greater empathy with the character’s drive (Section 4.6.4).
g. Experience greater stylistic beauty (Section 4.6.4).
h. Have a greater focus on style over events (Section 4.6.4).
i. Experience greater plausibility of the scene (Section 4.6.4).
j. Experience greater feeling of tension (Section 4.6.4).
k. Focus more on feelings rather than thoughts (Section 4.6.4).
l. Find the game more upsetting/repulsive than fun. (Section 4.6.4).
m. Feel that the fact the game is fiction makes no difference to them (Section 4.6.4).

4.4.2 Trait Hypotheses

H2. The player’s experience of moral and aesthetic judgements will also be related to their empathy and aesthetic interest. Operationalized via appropriate empirical materials, this is measured by:

a. The player’s experience of guilt will be related to their (i) trait empathy (Section 4.6.1) and (ii) their trait aesthetic attitude (Section 4.6.2).

d-m. The player’s further aesthetic experience (as defined in H1d-m) will be related to their (i) trait empathy (Section 4.6.1) and their (ii) trait aesthetic attitude (Section 4.6.2).

4.4.3 Experiential Hypothesis (Manipulation Check)

H3. As Biocca (1997) states, “the psychological effects or goals of progressive embodiment can be expressed as various forms of what is called [spatial] presence”, it is expected that spatial presence will increase in line with enhanced mimesis.

Furthermore, it can be understood that decreasing aesthetic distance is seen as an epiphenomenal effect of increasing spatial presence through increasingly mimetic technology (Section 2.3.1); in this case, videogame interfaces. Therefore, it is proposed that observing increasing spatial presence is a useful factor indicative of whether technology is successfully altered towards narrowing distance in terms of the “salient stylistic qualities” of the medium.

Therefore, in order to verify that the designed interface mimesis is successfully manipulated between-subjects, ensuring it is “in line with expectations” (Skalski et al., 2011), this will be operationalized via appropriate empirical materials, and thus is measured by:

a. Experience greater Perceived Controller Naturalness (Section 4.6.5).
b. Experience greater Spatial Presence: Self-Location (Section 4.6.6).
c. Experience greater Spatial Presence: Agency (Section 4.6.6).
d. Experience greater Body Ownership (4.6.7).
4.5 APPARATUS

4.5.1 Morally Significant Gameplay

4.5.1.1 *Designing and Developing a Morally-Significant Game*

In the first study, 63.4% of participants had played the selected game (Call of Duty: Modern Warfare 2) previously, or had watched someone else play the scenario. Thus, the effect of *a priori* biases was a potential confounding factor in the results.

Furthermore, it is proposed that following both the results of the previous study, and Hartmann & Vorderer’s (2009) assertion that contemporary violent videogames effectively help players to disengage from moral concern through various cues, it was deemed that a first person shooter type game should not be used.

Indeed, in order to both mitigate this effect – and because the nascentess of the technologies in question meaning that there are not many games that fit the requirements, it was determined that a bespoke game needed to be developed specifically for the study. In order to do this, the requirements were first scoped. The game would require:

1. A ‘morally significant’ narrative, featuring a situation not common to videogames, requiring use of arms and hands, so that a gestural component (mimicking real life) could be supported (according to 2).

2. An intuitive application for the Razer Hydra controller, with the intention that it would feature a situation (according to 1), to be gesturally acted out (i.e. mimetic), in addition to the increasing interface mimesis of head tracking (Section 4.3).

These requirements were addressed in parallel with one another, in order to create a game that would be appropriate material for this study; a small number of Oculus Rift and Razer Hydra game prototypes were developed using Unity3D, ranging from pulling up a rope to save a child, to administering a lethal injection on a battlefield (*Appendix F – Materials from Design & Development of Study 2 Game*). However, it was determined through playtesting that the combination of gestural action, together with ‘morally significant’ story justification, for each of these, was not convincing or compelling enough.


4.5.1.2 “THE CLIMB”

The final project that was developed, however, was a short game scenario depicting rock climbing, entitled The Climb (Khandaker-Kokoris, 2014); the player character (represented by virtual hands) (Figure 4-2) was tasked with climbing a rock face, together with a ‘climbing partner’, a non-player character (NPC). The player had to mimic the actions of rock climbing with the Razer Hydra, by physically reaching their arm out, grabbing the rock face (by pulling the trigger) and hoisting themselves up (by pulling their arm down). The player was instructed to climb towards and reach depicted anchor points at various increasing heights along the rock face. Once the player reached out and touched an anchor point, they would then ‘clip in’ to them with their climbing rope (shared with the climbing partner) in the fiction of the game, and hence progress up the rock face. The player was given agency over the manner and direction in which they could climb.

A professional female voice actor, Elspeth Edmonds, credited on critically acclaimed independent games such as Ether One (2014), provided the voice of the NPC climbing partner, “Sara”. A script was provided to the actor (Appendix F – Materials from Design & Development of Study 2 Game).

Therefore, the NPC “Sara” would refer to having climbed with the player’s character several times before. This was informed by the findings from Hartmann et al. (2010) that player guilt responses were higher when engaging in ‘unjustified virtual violence’ against civilians when their ‘social background’ was revealed, versus those whose social backgrounds were not revealed. Therefore, it was determined that Sara should be posited as having some form of history with the player, though the nature of the relationship was deliberately left ambiguous such that players could fill in the gap with their own meaning. This, according to Carroll (1998) (Section 1.4), is a fundamental compo-
ment of the way we interact with fictions, “narratives make all sorts of presuppositions, and is the task of the reader, viewer, or listener, to fill these in. It is of the nature of narratives to be essentially incomplete.”

It was posited that after several minutes spent ‘climbing’ (using the Razer Hydra and the mimetic controller mapping), and listening to the climbing partner, the player would feel emotionally invested in the subsequent morally significant action in the “Cut the Rope” sequence. This was triggered once the player had completed a set number of anchor points, climbing up and out on an overhang. The final anchor was programmed to ‘break’, thus making the player character fall back down, such they were suspended from the rope, away from the rock face, with their climbing partner hanging helplessly below them.

Here, the voice actress delivered an emotional performance, first panicking, and then, after some apparent consideration, demanding, with increasing intensity, that the player cut the rope, killing her, but ensuring the player character would survive. Due to the way in which the rope physics were realistically simulated, the player would have to cut the rope below their own anchor point, such that the climbing partner would be released, but they could also cut the rope above their own anchor point too, effectively committing suicide (and also killing the climbing partner). If the player took no action at all after 60 seconds, the rope snapped (under the weight of the two hanging climbers, in the fiction of the game), and both characters were killed.

The action required to cut the rope was a single, quick, mimetically appropriate ‘slicing’ action using the Razer Hydra controller.

Figure 4-3: The surrounding environment in The Climb (2014)
Therefore, this “Cut the Rope” sequence was the operationalized ‘morally significant gameplay’ within this study; the player was afforded a choice as to whether to kill their climbing partner, and save themselves, or let both of the characters fall and die. Either way, when either the climbing partner or both the climbing partner and player character fell, the player was instructed that the game had ended.

4.5.2 Interface Mimesis
Since interface mapping had been an issue in the previous study (Chapter 3), in order to optimise the mimetic interactions and ensure a commercial standard, a senior game designer, who has worked on commercial ‘AAA’ motion control games for Microsoft Xbox Kinect, acted as a consultant on the game.

In all three of these conditions, participants used a Razer Hydra motion controller to simulate the action of rock climbing. In addition to this, participants were assigned randomly to one of the three interface mimesis conditions for camera movement: using a regular 23” Monitor, with no head tracking, but using an analogue stick for camera movement [“Fixed Display and Analogue Stick”], using a regular 23” Monitor (with head tracking for camera movement) [“Fixed Display and Head Tracking”], and using an Oculus Rift virtual reality head-mounted display (with head tracking) [“HMD and Head Tracking”].

Other equipment used includes 5.1 headphones, and a PC with 3.10GHz CPU, 4GB RAM, and NVIDIA GeForce GTS 450 graphics card, running Windows 7 64-bit.

4.6 MATERIALS
An electronic questionnaire was created and distributed to participants on a tablet device.

4.6.1 Trait Empathy
Following on from the operationalization of Trait Empathy in the previous study (Section 3.5.3), it is once again to be measured as a theoretically and thematically reduced construct denoting a player’s “virtuous” nature. Once again, although a focus on virtue ethics is outside the scope of this research programme, it is posited that this subjective measure may contribute to a player’s aesthetic attitude.

Empathy has been defined as an aesthetic concept (Section 2.2.1.2), and is the “tendency, deeply embedded in human thought processes, for the mind to merge its activities as a perceiving subject with those of the perceived object” (Lee, 1912, in Stamatopoulou, 2004).

In line with the participant feedback from the previous study (Section 3.10.5), it was ascertained that to reduce respondent fatigue, the number of questions should be reduced. Therefore, shorter versions of the questionnaires were sought where possible. As an 8-item version of the EQ-short
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questionnaire (comprising 22 questions) was found, this measure was used instead (Loewen, 2009) (Appendix G – Study 1 & 2 Materials [Digital]).

4.6.2 Trait Aesthetic Attitude and Fluency
Aesthetic interest is a facet of aesthetic attitude (Section 1.3.4). As noted by Lundy, Schenkel, Akrie, and Walker (2010) aesthetic interest has been conceptualized by some studies as a personality trait: the NEO Personality Inventory Revised (also referred to as ‘the Big Five’) features two personality dimensions of particular interest. The first is the Openness to Experience subscale, which measures the following six traits: “Aesthetics”, described as appreciation of art and beauty (Costa & McCrae, 1992), ‘Fantasy’ (receptivity to the inner world of imagination), ‘Feelings’ (Openness to inner feelings and emotions), ‘Actions’ (Openness to new experiences on a practical level), Ideas (Intellectual curiosity), and Values (Readiness to re-examine own values and those of authority figures). Lundy et al. (2010 – adapted from John, 1989) note, that this is “…admittedly a broad measure that only characterizes a person at a global level, being useful mainly for initial rough distinctions.” Nevertheless, for this exploratory study, in order to gauge a participant’s aesthetic interest, a short, 10-item version of the Openness to Experience subscale of the Big Five Inventory was used (Appendix G – Study 1 & 2 Materials [Digital]).

The second subscale to be employed of ‘the Big Five’, as suggested by Silvia (2007), is the 10-item Curiosity and Exploration Inventory-II, as curiosity has been suggested as a measure of aesthetic fluency, thus is operationalized as an additional facet of aesthetic attitude (Appendix G – Study 1 & 2 Materials [Digital]).

Thus, in line with the previous study (Chapter 3), Trait Aesthetic Attitude is operationalized as a combination of Aesthetic Interest (Openness to Experience) and Aesthetic Fluency (Curiosity and Exploration).

4.6.3 Guilt
As it was deemed that the morally significant game in this study (Section 4.5.1.1) does not merit a ‘disgust’ response (the scenario is designed to elicit guilt, rather than feelings of disgust), the 3-item Guilt subscale (DES-IV Guilt) as utilised in the previous study (Section 3.5.6) was only used instead. Once again this follows the tradition of previous studies looking at videogames with morally significant content (i.e. unjustified virtual violence) and the player’s experience of guilt (Hartman & Vorderer, 2010; Hartman et al., 2009).

The three items assessed how often participants felt as though they did something wrong when playing the game (e.g., “feel regret,” “sorry about something you did,” or “feel like you did something wrong”) on a 5-point scale (from 1 – “Rarely or never” to 5 – “Very often”) (Appendix G – Study 1 & 2 Materials [Digital]).
It was determined that a process-based measure of guilt, as identified in the methodological limitations of the previous study (Section 3.10.5), should be used in addition to the Guilt subscale items. Grizzard et al. (2014) note that “moral emotions are anticipatory as well as consequential”; that is, a player can anticipate feeling guilty before committing a potentially immoral action (Tangney et al., 2007). Therefore, in addition to the Guilt questionnaire items, the Time Taken to Cut the Rope was also measured. In order to eliminate possible usability-related factors, this time was measured from the moment it became clear that the participant had read and acknowledged the text on screen (informing them about how to cut the rope), until the moment that they attempted to (whether successfully or not) cut the rope.

4.6.4 Aesthetic Experience

The questions from the previous study (Section 3.5.7) to denote aesthetic experience (and assess aesthetic distance) were once again used, as adapted from Koopman et al. (2011) (Section 2.6.1). These questions had been reworded to address a videogame playing experience, rather than literary passages. This time, only 10 questions were used, after eliminating questions that were not relevant to playing The Climb.

Thus, each question was measured on a 7-point Likert scale:

AS1. To what extent did you feel detached or engaged with the game?
AS2. To what extent could you feel the emotions of your climbing partner?
AS3. To what extent could you feel the drive or motivations of your character?
AS4. Did you find the game stylistically beautiful?
AS5. To what extent were you focused mainly on 'style' (e.g. gameplay, visuals, the controls etc.) than events?
AS6. How plausible did you find the events to be?
AS7. How tense did you find the events in the game?
AS8. Did playing the level primarily evoke feelings or thoughts?
AS9. To what extent did you find the game primarily upsetting or repulsive, versus primarily fun?
AS10. Did it make a difference for your experience of the game that you knew that the events depicted were fictional?

The eliminated questions referred to the desire to keep playing or not (irrelevant due to the final nature of the scenario presented), and the question “Did you think the focus of the game developers was on causing moral indignation, or on depicting a violent fantasy?” which was also not relevant (Appendix G – Study 1 & 2 Materials [Digital]).

4.6.5 Perceived Controller Naturalness
Once again, as in the previous study, in order to measure perceived controller naturalness, a scale was adapted from McGloin (2011), containing 13 items; these contained questions such as “The game controls seemed natural” and “The way in which I moved my body to control my character felt realistic”, measured on a 7-point scale. Some items were modified as the source was used for a boxing game, and so these questions were generalized for this study; for example “Throwing punches in the game was similar to how I would throw a punch in real life” was changed to “Climbing in the game was similar to how I would climb in real life” (Appendix G – Study 1 & 2 Materials [Digital]).

4.6.6 Spatial Presence: Self-Location and Agency

Having shown good reliability in the previous study, as well as contributing significantly to correlational results, the two subscales from the MEC-Spatial Presence Questionnaire were again used: these are Self-Location and Possible Actions (Agency); the short-forms of these subscales were used, comprising of four items each. Therefore, measured on a 5-point scale, were items such as “I felt like I was actually there in the environment of the game”, “It seemed as though I actually took part in the action of the game”, “The objects in the game gave me the feeling that I could do things with them”, and “It seemed to me that I could do whatever I wanted in the environment of the game” (Appendix G – Study 1 & 2 Materials [Digital]).

4.6.7 Body Ownership

The concept of virtual body ownership (Section 1.3.3.3) is defined here as an additional psychological effect, or goal, of progressive embodiment. Thus, progressive embodiment can be framed as the increasing move towards the concept of a player having a virtual body.

The concept of virtual body ownership is therefore a subjective construct, referring to the extent to which players feel like a virtual body is their own, or that they are looking at their own body (or part of their body) when they look at the avatar of a virtual body (or part of a virtual body) (Longo & Schu, 2008, p. 986). As the game to be used in this study was designed such that the player’s “virtual hands” were represented on-screen, and were mapped to the movements of the motion-sensing Razer Hydra controller.

Due to the mapping concerning only hands (Figure 4-2), questions were adapted from Kalckert & Ehrsson (2012), whose work referred to feelings of ownership and agency over a rubber hand. This work was an updated version of the rubber hand illusion (Section 1.3.3.3), finding that the concepts of agency and ownership are dissociable. The questions were measured on a 7-point Likert scale, with 1 = “Totally disagree” and 7 = “Totally agree” (Appendix G – Study 1 & 2 Materials [Digital]). They were as follows:

a. It seemed as if I were sensing the movement of my fingers in the location where the virtual fingers moved.
b. I felt as if the virtual hands were part of my body.
c. I felt as if the virtual hands were my hands.
d. I felt as if I was looking at my own hand.

### 4.6.8 Gameplay Experience

In order to determine additional contributing factors in addition to aesthetic and moral judgements, a more general questionnaire to measure gameplay experience was once again used, as in the previous study (Section 3.5.8).

The Gameplay Experience Questionnaire (GEQ) is a self-report measure, which aims to “dependably and broadly characterize the versatile experience of playing digital games” (IJsselsteijn et al., 2008). The full version is a 26-item measure, exploring subscales for: sensory and imaginative immersion, flow, competence, tension, challenge, positive affect, and negative affect. The questions are measured on a 5-point Likert scale.

The GEQ had been used in the previous study to mitigate the effect of perceived bias by not only asking the participants about their level of guilt and disgust. However, in responding to the participant feedback from the previous study, and the possibility of respondent fatigue, it was established that while it was a useful measure (which illuminated a larger picture of the participants’ experience of playing the game), many of the measures were outside the scope of the current hypotheses (Section 4.4).

Therefore, in order to reduce this respondent fatigue, it was determined that many of the subscales of the GEQ would not be used, and instead, only the GEQ Sensory and Imaginative Immersion and GEQ Flow measures would be used in order to retain a wider range of types of questions, and additionally, such that these can be used as additional measures of a player’s identification with the game as a whole (Section 2.5).

### 4.7 Participants

Data was recorded from 95 participants, collected at the University of Portsmouth, formed of staff, students, and members of the public. Efforts were made to balance for gender, though volunteers totalled 64.2% male, 33.7% female, and 2.1% non-binary. The population also skewed towards higher levels of education, with 75.8% of participants reportedly undertaking an undergraduate degree or higher. In terms of videogame familiarity, 57.9% reported playing a digital game (of any format) ‘every day’, though 8.4% reported playing ‘less than once a month’.

Participants were offered a £10 gift voucher to a choice of two popular general retail outlets, so that this did not define the demographic that volunteered for the study. Ethical approval was sought for the study, and was approved (Ref: FO 12/14-0085) (Appendix E – Study 2 Materials).
4.8 Procedure

Participants were briefed on the study, and what to expect from the game, and asked to sign a consent form. Participants were informed that the experiment was concerned with how they critically think about games as art objects. This is because Leder et al. (2004) states that within a laboratory experiment, participants should be alerted to studies being concerned with aesthetics and art reception, as this “somehow assures a more representative mode of art reception.”

They were asked to fill in a short survey, on a tablet device, to explore their demographic, prior game playing experience, and fill in the trait questionnaires for Trait Empathy and aesthetic experience; this totals 31 items. Participants in the “HMD and Head Tracking” condition were then given the chance to try out a configuration demo for the Oculus Rift, during which the headset was adjusted to their comfort and eyesight.

Further to this, all participants were briefed on how to play The Climb, and were given a sheet with instructions (Appendix E – Study 2 Materials). Once they were happy that they understood, they were then asked to play the game, under their assigned condition, for 10 minutes, or until they had completed the level. After this, they were asked to fill out the post-exposure questionnaire, totalling 49 questions. The study then concluded, following a three-to-five-minute semi-structured interview. In total, each participant was asked to participate for no longer than 45 minutes.

Participants who had also agreed to take part in Study 2B did not complete the interview immediately after the post-exposure questionnaire, but instead, once the questionnaire was completed, they were given the opportunity to try the configuration demo for the Oculus Rift, during which the headset was again adjusted to their comfort and eyesight. Further to this, the participant was asked to play the game again, using the Oculus Rift, for any period of their choosing up to 10 minutes, but once again, they did not need to complete the game if they did not wish to do so. After this, they completed their five-minute semi-structured interview, asking about not only the experience of playing the game in their original assigned condition, but also, the comparative experience with the Oculus Rift.
Figure 4-4: A Participant Plays the Game in the “HMD and Head Tracking” Condition

4.9 RESULTS: STUDY 2A

4.9.1 Assessing the Data

All data was gathered from 95 participants via means of an electronic questionnaire, and downloaded directly into SPSS for analysis, thus eliminating human error where possible.

As a first step, data was omitted for 11 participants who were not able or willing to reach the “Cut the Rope” sequence within a timeframe that felt comfortable to them, and stopped playing the game before this point. In a similar vein, data was also omitted for a further 1 participant, in the HMD and Head Tracking condition, who did not realise they had to look down to see the climbing partner during the “Cut the Rope” sequence; this was cross-referenced from both the gameplay footage and the interview data.

As a second step, the data was then checked for extreme outliers (after analysing box plots across all the dependent variables) as suggested by Dancey & Reidy (2007). Where participants were shown to be outliers across two or more dependent variables, this was cross-referenced with the follow-up interview and gameplay footage data to ascertain if participants expressed confusion or uncertainty about the game, or there was some other mitigating reason for the outlier status. If participants appeared to be appropriately engaged with the scenario and showed no indication of confusion or reason for outlier status, the outlier variables were included following the procedure by Dancey & Reidy (2007); this process was performed for five participants. From this analysis, data was only omitted for Participant 59, who in the follow-up interview, expressed confusion over the climbing partner’s voiceover dialogue and therefore their identity, assuming that it was the player.
character’s internal monologue, and thinking that the climbing partner, “Sara”, was instead a silent male character.

Therefore, this process yielded omissions of 11 participants unable to complete, and two who had been confused or misunderstood the scenario. This left usable data from 82 participants, who were confirmed as having engaged with the scenario as intended.

4.9.2 Reliability

As a first step, reliability was assessed for the measurements taken. Cronbach’s alpha was ascertained for each of the scales used, in order to verify internal consistency. This test showed acceptable to excellent reliability for each of the scales used, and specific scores are detailed below. Additionally, correlations were sought between certain variables in order to verify validity. It should be noted that for the purposes of this study, the Pearson’s $r$ correlation is taken to be strong at values greater or less than 0.4 and -0.4 respectively for positive and negative correlations. Values greater or less than 0.7 and -0.7 respectively for positive and negative correlations imply very strong relationships (Dancey & Reidy, 2007). Furthermore, the statistical significance ($p$-value) is of particular attention; a relationship may have a weaker $r$-value, but be strongly statistically significant.

Thus, Spatial Presence: Self-Location and Spatial Presence: Agency generated Cronbach’s scores of $\alpha = 0.87$ and $\alpha = 0.84$ respectively, showing excellent reliability, as did Controller Naturalness ($\alpha = 0.91$), and Body Ownership ($\alpha = 0.90$).

Furthermore, DES-IV Guilt subscale also had excellent reliability with a Cronbach’s score of $\alpha = 0.88$. The Game Experience Questionnaire (GEQ) scales of Sensory & Imaginative Immersion, and Flow had scores of $\alpha = 0.82$ and 0.83 respectively. Curiosity and Exploration Inventory (CEI-II) subscales of Stretching and Embracing both showed good reliability at $\alpha = 0.78$ for both subscales. Furthermore, as these were substantially correlated ($r = 0.64$, $n = 81$, $p < 0.01$) these measures were collapsed into a single factor (CEI-II) with excellent reliability ($\alpha = 0.86$).

The only scale to show poor reliability was the 8-item Empathy Quotient (EQ-8) [$Trait Empathy$], with a Cronbach’s score of $\alpha = 0.56$.

4.9.3 Hypothesis testing

4.9.3.1 Experimental Hypothesis Manipulation Check

Interface mimesis refers to a designed property of the game-and-interface pairing, which was increased across the three conditions: “Fixed Display and Analogue Stick”, “Fixed Display and Head Tracking”, and “HMD and Head Tracking”. This was intended to operationalize progressive embodiment, the “progressive coupling of sensors and display devices to the body” (Biocca, 1997, p. 14); in this case the progressive coupling concerned the modality for camera movement in the game.
Indeed, Biocca also states, “the psychological effects or goals of progressive embodiment can be expressed as various forms of what is called [spatial] presence”. Thus, statistically significant differences across conditions should be sought for Spatial Presence: Self-Location and Spatial Presence: Agency. Furthermore, as established earlier, virtual body ownership is a component of physical embodiment, thus differences in this construct (in this case, specifically Body Ownership) are also to be sought in order to establish whether the manipulation was successful.

There was a large, strongly significant correlation between Spatial Presence: Self-Location with Spatial Presence: Agency ($r=0.70, n=82, p < 0.01$) and SPSL with Body Ownership ($r=0.74, n=82, p < 0.01$), and between Spatial Presence: Agency with Body Ownership ($r=0.68, n=82, p < 0.01$). Furthermore, there were correlations between perceived controller naturalness with Spatial Presence: Self-Location ($r=0.57, n=82, p < 0.01$), Spatial Presence: Agency ($r=0.71, n=82, p < 0.01$) and Body Ownership ($r=0.65, n=82, p < 0.01$). These successful intercorrelations therefore further establish the validity of these measures.

It was previously reasoned that increasing spatial presence through increasingly mimetic technology is an epiphenomenal effect of decreasing aesthetic distance (Section 2.5), and it was proposed that observing increasing spatial presence is a useful factor indicative of whether technology is successfully altered towards narrowing distance in terms of the “salient stylistic qualities” of the medium. Therefore, in order to check this successful manipulation across interface mimesis conditions, a one-way ANOVA was used to test for differences in Spatial Presence: Self-Location, Spatial Presence: Agency and Body Ownership across the three interface mimesis conditions. It was indeed found that there was a significant effect of manipulating interface mimesis on Spatial Presence: Self-Location, Spatial Presence: Agency and Body Ownership, as detailed in the table below.

<table>
<thead>
<tr>
<th>ANOVA</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPATIAL PRESENCE: SELF-LOCATION</strong></td>
<td>Between Groups</td>
<td>33.51</td>
<td>2</td>
<td>16.75</td>
<td>25.58</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>51.75</td>
<td>79</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>85.26</td>
<td>81</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SPATIAL PRESENCE: AGENCY</strong></td>
<td>Between Groups</td>
<td>17.97</td>
<td>2</td>
<td>8.98</td>
<td>16.40</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>43.27</td>
<td>79</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>61.23</td>
<td>81</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BODY OWNERSHIP</strong></td>
<td>Between Groups</td>
<td>26.78</td>
<td>2</td>
<td>13.39</td>
<td>8.38</td>
</tr>
</tbody>
</table>
Thus, it is apparent that there are differences across the three conditions for all of these factors, significant at the $p < 0.01$ for all but Body Ownership, which was significant at $p < 0.05$.

However, the order of the differences was not entirely as expected; from the means plots (Figure 4-6), it is apparent that instead of these measures increasing in the order expected (consistent with increasing designed interface mimesis), the “Fixed Display and Head Tracking” condition yielded the lowest scores for Spatial Presence: Self-Location, Spatial Presence: Agency (Possible Actions), and Body Ownership.

In order to further verify these results, a one-way ANOVA was also performed to test for differences in Perceived Controller Naturalness across the three conditions. Perceived Controller Naturalness refers to the player’s subjective sense of how far the resulting interactivity is “predictable, logical, or in line with expectations” (Skalski et al., 2011).
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

Therefore, though interface mimesis (a designed property) increased across the three conditions, a manipulation check was required to ascertain whether this increase in interface mimesis also meant an increase in *Perceived Controller Naturalness*, or how far the manipulation of interface mimesis resulted in a sense of more natural interaction for the player.

There was a significant effect of manipulating interface mimesis on *Perceived Controller Naturalness* at the $p < 0.01$ level for the three conditions [$F(2,79) = 10.46, p < 0.01$]. Once again, there was a statistically significant difference across perceived controller naturalness for all three conditions, and the means plot was analysed (Figure 4-7), and found to correlate to the means plots for *Spatial Presence: Self-Location, Spatial Presence: Agency* and *Body Ownership*.

![Figure 4-7 Means Plot For Perceived Controller Naturalness](image)

Therefore, it is posited that the unexpected shape of the means plots for the *Spatial Presence* sub-scales and *Body Ownership* were related to the variation in *Perceived Controller Naturalness* across the interface mimesis conditions. This increasing interface mimesis not yielding a linear increase in feelings of perceived controller naturalness (and thus also *Spatial Presence: Self-Location, Spatial Presence: Agency* and *Body Ownership*) is in accordance with the assertions made previously (Section 1.3.3.8), in which Gregersen & Grodal (2009) noted the possibility of a “less is more” strategy being more useful in creating a sense of *Self-Location, Agency* and *Body Ownership* due to a sense of incongruence. The assertion made in Khandaker (2011) (Appendix A) was also noted that due to this incongruence, increasing interface mimesis may not necessarily increase spatial presence along a linear spectrum, but instead, the model may be akin to that of Mori’s (1970) uncanny valley. These results support such a model.

Therefore, H3a-d were all partially supported – increased interface mimesis gave rise to increased spatial presence and *Body Ownership* across the “Fixed Display and Analogue Stick” and “HMD
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and Head Tracking” conditions as predicted, and also across the “Fixed Display and Head Tracking” and “HMD and Head Tracking” conditions; thus, the goals of the designed interface mimesis in accordance with progressive embodiment was fulfilled in these cases. However, it was not fulfilled across the “Fixed Display and Analogue Stick” and “Fixed Display and Head Tracking” condition, which displayed lower scores for all of the experiential measures.

However, as there were significant differences in these measures across the three conditions, the hypotheses will continue to be explored, while also accounting for this unexpected difference.

Therefore, where appropriate, differences will also be explored across the dependent variables while Perceived Controller Naturalness, Body Ownership, and Spatial Presence subscales increase.

4.9.3.2 TAKING A ‘VIRTUOUS’ ACTION

H1. Enhancing interface mimesis will affect a closer sense of distance from the morally significant action in the game. This means that they will experience altered aesthetic judgement, resulting in a closer sense of identification, as well as moral judgements indicating greater emotional involvement, commensurate with equating the morally significant action to real life, rather than a game. Players will:

   a. Take a ‘virtuous’ action when presented with decision to cut the rope:

      (1) Cut away the climbing partner (or intend to), while:

         (a) Taking longer to make the decision.

The dataset was isolated to include only participants who had cut the rope to kill the climbing partner (or had intended to, but had accidentally killed the player character too in the process).

In order to further establish the validity of measuring the increasing Time Taken to Cut the Rope as an indication of a virtuous action, a Pearson product-moment correlation was run between this and the DES-IV Guilt subscale score. There was a moderate, positive correlation between time taken to cut the rope to kill the climbing partner, and feelings of guilt, which was statistically significant ($r = 0.33$, $n = 63$, $p < 0.05$). Therefore, it is proposed that within this study, Time Taken to Cut the Rope is an effective indicator of moral judgement. This is in line with the assertion by Grizzard et al. (2014) that “moral emotions are anticipatory as well as consequential”; that is, a player can anticipate feeling guilty before committing a potentially immoral action (Tangney et al., 2007).

Therefore, as a first step towards performing an ANOVA in order to explore differences between the conditions, the data was analysed for outliers which would unduly influence the observation (Dancey & Reidy, 2007; Howitt & Cramer, 2000); such identification is important, as the statistical tests to be used involve the calculation of means, which are sensitive to such outliers, yet these are not representative of the dataset as a whole. Thus, the dataset was tested for outliers, as assessed...
by inspection of a boxplot for values greater than 1.5 box-lengths from the edge of the box. Outliers were found, as noted in the boxplot below.

![Boxplot for Time Taken To Cut Rope, Showing Outliers](image)

**Figure 4-8: Boxplots for Time Taken To Cut Rope, Showing Outliers**

These data points were re-checked for validity by cross-referencing with the interview and gameplay data, and found to be valid, though representing extreme scores. To further analyse whether these outliers should be eliminated due to unduly influencing the observations, the means were compared.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Data with Outliers</th>
<th>Data without Outliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Display and Analogue Stick</td>
<td>7.89 (SD = 8.16, N = 23)</td>
<td>5.64 (SD = 3.50, N = 21)</td>
</tr>
<tr>
<td>Fixed Display and Head Tracking</td>
<td>11.11 (SD = 7.33, N = 18)</td>
<td>11.11 (SD = 7.33, N = 18)</td>
</tr>
<tr>
<td>HMD and Head Tracking</td>
<td>14.76 (SD = 13.08, N = 22)</td>
<td>13.32 (SD = 11.50, N = 21)</td>
</tr>
<tr>
<td>Total</td>
<td>11.21 (SD = 10.24, N = 63)</td>
<td>9.97 (SD = 8.68, N = 60)</td>
</tr>
</tbody>
</table>

**Table 4-1: Comparing Means And Standard Deviation Across Data With And Without Outliers**

Thus, the outliers are indeed influencing the means (and standard deviation) of the dataset. Therefore, these data points were justifiably eliminated before analysis continued. As a next step, the data was assessed for normality by assessing Q-Q plots (Appendix C – Study 1 & 2 Q-Q Plots).

These Q-Q plots indicate that while scores were normally distributed for the “Fixed Display and Analogue Stick” condition, there is some deviation from normality for the “Fixed Display and Head Tracking” and “HMD and Head Tracking” conditions. However, as suggested by Maxwell &
Delaney (2004), ANOVA is robust to deviations from normality, particularly where the data has sample sizes which are equal, or nearly equal, as is the case with this dataset.

As the assumption of homogeneity of variances was violated, as assessed by Levene’s Test of Homogeneity of Variance (p < 0.01), a one-way Welch’s ANOVA was performed in order to test hypothesis H1a(1)(a). Therefore, the time taken to cut the rope to intend to kill the climbing partner was statistically significant between different interface mimesis conditions, Welch’s F(2,30.34) = 7.45, p < 0.01. The means increased between the “Fixed Display and Analogue Stick” condition (M = 5.64, SD = 3.50) to the “Fixed Display and Head Tracking” condition (M= 11.11, SD = 7.33) to the “HMD and Head Tracking” condition (M = 13.32, SD = 11.50), in that order.

Games-Howell post-hoc analysis revealed that the mean increase between “Fixed Display and Analogue Stick” to “Fixed Display and Head Tracking” (5.48, 95% CI [0.75, 10.20]) was statistically significant (p < 0.05), as well as the increase between “Fixed Display and Analogue Stick” to “HMD and Head Tracking” (7.68, 95% CI [1.14, 14.23], p < 0.05). However, the increase between “Fixed Display and Head Tracking” to “HMD and Head Tracking” (2.21, 95% CI [-5.24, 9.66]) was not statistically significant (p = 0.75). The means plot was calculated in order to illustrate this.

![Means Plot for Time Taken To Cut Rope](image.png)

Figure 4-9: Means Plot for Time Taken To Cut Rope

As, overall there was a statistically significant difference between means (p < 0.01) and, therefore, the null hypothesis H1a(1)(a) can be rejected, and the alternative hypothesis H1a(1)(a) accepted.

**H1. Enhancing interface mimesis will affect a closer sense of distance from the morally significant action in the game. This means that they will experience altered aesthetic judgement, resulting in a closer sense of identification, as well as moral judgements indicating greater emotional involvement,**
commensurate with equating the morally significant action to real life, rather than a game. Players will:

a. Take a ‘virtuous’ action when presented with decision to cut the rope:
   (1) Cut away the climbing partner (or intend to), while:
   (b) Experiencing greater guilt

It was hypothesised that those players who cut the rope to kill (or intend to kill) the climbing partner would feel guiltier across the increasing interface mimesis conditions than those who did not cut the rope. In order to test this, a 3x2 ANOVA was performed on the data. In order to cancel out any potential influential effects of unintentionally killing the player character by cutting the rope in the wrong place, only data for Guilt scores were used for participants who had cut the rope exactly in the way they intended, thus killing the climbing partner, and also for those who did not cut the rope. This meant that data was excluded for participants who also killed the player character, whether accidentally or intentionally as a moral action.

Thus, those who cut the rope to kill the player were coded as MoralAction = 0, and those who refused to cut the rope were coded as MoralAction = 1.

As a first step, the dataset was tested for outliers, as assessed by inspection of a boxplot for values greater than 1.5 box-lengths from the edge of the box. No outliers were found.

Figure 4-10: Boxplots for Condition x MoralAction
It was also found that *Guilt* score was normally distributed for all group combinations of Interface mimesis condition and Moral Action (whether or not they cut the rope), as assessed by Shapiro-Wilk’s test ($p > 0.05$). There was also homogeneity of variances, as assessed by Levene’s Test of Homogeneity of Variance ($p = 0.277$).

<table>
<thead>
<tr>
<th>Condition</th>
<th>Moral Action</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Fixed Display and Analogue Stick”</td>
<td>Cut Rope</td>
<td>2.80</td>
<td>1.26</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Did not Cut Rope</td>
<td>2.27</td>
<td>0.86</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.68</td>
<td>1.19</td>
<td>23</td>
</tr>
<tr>
<td>“Fixed Display and Head Tracking”</td>
<td>Cut Rope</td>
<td>2.64</td>
<td>1.33</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Did not Cut Rope</td>
<td>3.00</td>
<td>1.27</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.74</td>
<td>1.29</td>
<td>18</td>
</tr>
<tr>
<td>“HMD and Head Tracking”</td>
<td>Cut Rope</td>
<td>3.36</td>
<td>1.57</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Did not Cut Rope</td>
<td>2.87</td>
<td>1.39</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3.22</td>
<td>1.49</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>Cut Rope</td>
<td>2.91</td>
<td>1.37</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Did not Cut Rope</td>
<td>2.71</td>
<td>1.15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.86</td>
<td>1.31</td>
<td>58</td>
</tr>
</tbody>
</table>

*Table 4-2: Descriptive Statistics Table for Guilt Scores, Condition x Moral Action*

It can be seen from the descriptive statistics table that across both the “Fixed Display and Analogue Stick” and “HMD and Head Tracking” conditions, there was an overall difference in mean scores for both Moral Action categories. That is, the mean scores for *Guilt* were higher for the “HMD and Head Tracking” condition than the “Fixed Display and Analogue Stick” condition. Furthermore, the mean scores for *Guilt* within both these conditions were higher for those who did cut the rope, than for those who did. However, *Guilt* scores for the “Fixed Display and Head Tracking” condition did not follow this pattern.

Therefore, in order to test whether a significant interaction effect exists, a 3x2 ANOVA was run between the participant’s condition and whether or not the participant cut the rope (Moral Action). There was no statistically significant interaction between these factors on feelings of *Guilt*. $F(2,52) = 0.52$, $p = 0.60$, partial $\eta^2 = 0.02$. 
Furthermore, removing the interaction term and testing for main effects also yielded no significant statistical differences for neither Condition \[ F(2,52) = 0.71, p = 0.50, \text{partial } \eta^2 = 0.03 \] nor Moral Action \[ F(1,52) = 0.31, p = 0.58, \text{partial } \eta^2 = 0.01 \].

Thus, it is not possible to reject the null hypothesis, \( H_{1a}(1)(b) \). No statistically significant difference in experience of guilt existed across the different interface mimesis conditions alone.

Through visual inspection of the isolated means plot for the Guilt scores across conditions for those who did cut the rope (killing the climbing partner) it is suggested that relationships should be further explored between this measure and those experiential factors which yielded a similar means plot in the manipulation check (i.e. Body Ownership, Spatial Presence: Self-Location, and Spatial Presence: Agency, as well as Perceived Controller Naturalness).
Therefore, in order to instead explore the relationship between Guilt scores and Perceived Controller Naturalness, Body Ownership, and Spatial Presence subscales, Pearson’s product-moment correlations were run between these measures.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. (2-Tailed)</td>
<td></td>
<td>0.08</td>
<td>.039</td>
<td>0.13</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td>0.27</td>
<td>.31*</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.23</td>
<td>0.25</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level.

Table 4-3: Pearson’s Product Moment Correlations between Guilt and Experiential Measures

It was found that feelings of Guilt yielded a statistically positive, moderate correlation with Spatial Presence: Self-Location ($r = 0.31$, $n = 44$, $p < 0.05$). There were no further statistically significant correlations between these measures.

It is thus suggested that alternative factors gave rise to the variation in Guilt scores. Indeed, H2a posits that the participants’ experience of guilt will be related to their Trait Empathy and Trait Aesthetic Attitude. In order to explore both this and the contribution of Spatial Presence: Self-Location, a multiple hierarchical regression was performed.

The regression determined if the addition of Spatial Presence: Self-Location and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of Guilt score over and above Interface Mimesis condition alone. See table below for full details on each regression model. The full model of interface mimesis condition, Spatial Presence: Self-Location, Trait Empathy, And Trait Aesthetic Attitude to predict Guilt (Model 4) was statistically significant, $R^2 = 0.17$, $F(4, 53) = 2.72$, $p < 0.05$; adjusted $R^2 = 0.11$. As observed previously, interface mimesis condition alone could not predict Guilt (Model 1) and this model alone was not statistically significant ($p = 0.22$). While the addition of Spatial Presence: Self-Location to the prediction of Guilt (Model 2) did lead to a very small increase in $R^2$ of 0.04, $F(2, 55) = 1.82$, this was also not statistically significant ($p=0.16$). However, the addition of Trait Empathy to the prediction of Guilt (Model 3) led to a statistically significant increase in $R^2$ of 0.12, $F(3, 54) = 3.56$, $p < 0.05$. Thus, model 3 was statistically significant. The addition of Trait Aesthetic Attitude (Model 4) led only to a negligible increase in $R^2$ of 0.01, $F(4, 53) = 2.72$, and this change was also not statistically significant ($p = 0.57$).
### Table 4-4: Hierarchical Regression Analysis for Variables Predicting Guilt scores

Therefore, from the results of this multiple hierarchical regression, the null hypothesis $H_{2a(i)}$ can be rejected, and the alternate hypothesis $H_{2a(i)}$ can be accepted; Trait Empathy (when combined with interface mimesis condition and Spatial Presence: Self-Location) did indeed contribute to the prediction of Guilt score. However, the null hypothesis regarding the addition of Trait Aesthetic Attitude $H_{2a(ii)}$ cannot be rejected at this time.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE_B$</td>
<td>$\beta$</td>
<td>$B$</td>
</tr>
<tr>
<td>Constant</td>
<td>2.37</td>
<td>0.43</td>
<td></td>
<td>1.95</td>
</tr>
<tr>
<td>Condition</td>
<td>0.26</td>
<td>0.21</td>
<td>0.16</td>
<td>0.05</td>
</tr>
<tr>
<td>Spatial Presence: Self-Location</td>
<td>0.27</td>
<td>0.19</td>
<td>0.23</td>
<td>0.30</td>
</tr>
<tr>
<td>Trait Empathy</td>
<td>0.16</td>
<td>0.60</td>
<td>0.32*</td>
<td>0.16</td>
</tr>
<tr>
<td>Trait Aesthetic Attitude</td>
<td>-0.03</td>
<td>0.05</td>
<td>-0.07</td>
<td></td>
</tr>
</tbody>
</table>

Note: N=58, *$p < 0.05$, **$p < 0.01$, $B$ = unstandardized regression coefficient; $SE_B$ = Standard error of the coefficient; $\beta$ = standardized coefficient.
**H1.** Enhancing interface mimesis will affect a closer sense of distance from the morally significant action in the game. This means that they will experience altered aesthetic judgement, resulting in a closer sense of identification, as well as moral judgements indicating greater emotional involvement, commensurate with equating the morally significant action to real life, rather than a game. Players will:

- Take a ‘virtuous’ action when presented with decision to cut the rope: 
  
  2. Take no action when presented with the decision

In order to test the hypothesis that the likelihood of refusing to cut the rope (or taking another virtuous action) increases as interface mimesis is enhanced, a Chi-square test for association was conducted between Condition and Moral Action. All expected cell frequencies were greater than five. There was, however, no statistically significant association between interface mimesis condition and likelihood for performing a moral action, \( \chi^2 (1) = 8.58, p = 0.65 \).

Thus it is not possible to reject the null hypothesis, \( H1a(2) \), at this time.
4.9.3.3 Further Aesthetic and Moral Judgements

H1. Enhancing interface mimesis will affect a closer sense of distance from the morally significant action in the game. This means that they will experience altered aesthetic judgement, resulting in a closer sense of identification, as well as moral judgements indicating greater emotional involvement, commensurate with equating the morally significant action to real life, rather than a game. Players will:

b. Experience greater Imaginative & Sensory Immersion.

c. Experience greater Flow.

In order to test the hypothesis that GEQ subscale items Imaginative and Sensory Immersion and Flow would increase along with increasing interface mimesis, a one-way ANOVA was run on each of these dependent variables. There were no outliers in the data for either measure, as assessed by inspection of a boxplot for values greater than 1.5 box-lengths from the edge of the box. In addition, both GEQ Imaginative and Sensory Immersion and GEQ Flow scores were normally distributed across all three interface mimesis conditions, as assessed by Shapiro-Wilk’s test of normality (p > .05).

Participants’ experience of Imaginative and Sensory Immersion from was lowest for the “Fixed Display and Analogue Stick” condition, (M=3.17, SD=0.86) though was higher for the “Fixed Display and Head Tracking” condition (M=3.24, SD=0.74), and higher still for the “HMD and Head Tracking” condition (M=4.11, SD=0.58). Meanwhile, Flow for the “Fixed Display and Analogue Stick” condition (M=3.26, SD=0.96) was higher than that for the “Fixed Display and Head Tracking” condition (M=3.14, SD=0.93), but the “HMD and Head Tracking” (M=3.98, SD=0.92) condition was higher still (Figure 4-14).

There was homogeneity of variances, as assessed by Levene’s Test of Homogeneity of Variance, for both GEQ Imaginative and Sensory Immersion (p =0.99) and GEQ Flow (p = 0.50).
Thus, a one-way ANOVA was performed for both GEQ subscales. Significant statistical differences were found across the three conditions for both GEQ Imaginative and Sensory Immersion \( F(2,79) = 13.71, p < 0.01 \) and GEQ Flow \( F(2,79) = 7.53, p < 0.01 \).

Tukey post-hoc analysis revealed that the mean increase in Sensory and Imaginative Immersion between “Fixed Display and Analogue Stick” and “HMD and Head Tracking” \( (0.94, 95\% \text{ CI} [0.47, 1.41]) \) was statistically significant \( (p<0.01) \), as well as the increase between “Fixed Display and Head Tracking” and “HMD and Head Tracking” \( (0.87, 95\% \text{ CI} [0.43, 1.32], p<0.01) \), but no other group differences were statistically significant.

Tukey post-hoc analysis also revealed that the mean increase in Flow between “Fixed Display and Analogue Stick” and “HMD and Head Tracking” \( (0.72, 95\% \text{ CI} [0.17, 1.30]) \) was statistically significant \( (p<0.01) \), as well as the increase between “Fixed Display and Head Tracking” and “HMD and Head Tracking” \( (0.84, 95\% \text{ CI} [0.28, 1.40], p<0.01) \), but no other group differences were statistically significant.

Therefore, the null hypotheses of \( H1b_0 \) and \( H1c_0 \) can be rejected, and the alternate hypotheses \( H1b \) and \( H1c \) can be accepted, as significant statistical differences were found between the conditions.

In order to further explore this result, especially in the context of the unexpected nature of the differences in controller naturalness, Body Ownership, and spatial presence across the conditions, Pearson’s product-moment correlations were run between these measures and the GEQ subscales.

<table>
<thead>
<tr>
<th></th>
<th>GEQ: Sensory And Imaginative Immersion</th>
<th>GEQ: Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEQ: Sensory And Imaginative Immersion</td>
<td>1</td>
<td>0.65**</td>
</tr>
<tr>
<td>GEQ: Flow</td>
<td>0.65**</td>
<td>1</td>
</tr>
<tr>
<td>Controller Naturalness</td>
<td>0.77**</td>
<td>0.49**</td>
</tr>
<tr>
<td>Body Ownership</td>
<td>0.70**</td>
<td>0.61**</td>
</tr>
<tr>
<td>Spatial Presence: Self-Location</td>
<td>0.61**</td>
<td>0.67**</td>
</tr>
<tr>
<td>Spatial Presence: Agency</td>
<td>0.70**</td>
<td>0.58**</td>
</tr>
</tbody>
</table>

**. Correlation Is Significant At The 0.01 Level (2-Tailed), N = 82

| Table 4-5: Pearson Correlation Matrix for GEQ Subscales |

It can therefore be seen from the above table that both GEQ subscales showed moderate-to-large correlations with Perceived Controller Naturalness, Body Ownership, and Spatial Presence (Self-
Location and Agency) (i.e. Sense of Embodiment measures), at the statistically significant p<0.01 level. Therefore, it is suggested that while statistically significant differences exist across conditions, the variation in means plots between GEQ Imaginative and Sensory Immersion and GEQ Flow may be related to variations in experiences of Perceived Controller Naturalness, Body Ownership, and Spatial Presence (Self-Location and Agency).

4.9.3.3.1 Aesthetic Experience Items

In order to evaluate the remaining aesthetic experience-related hypotheses (H1 d-m) the Kruskal-Wallis H test was performed on the dataset to examine the differences between the three interface mimesis conditions alone.

Then, as a second step, a multiple hierarchical regression was performed on the data, both to test for H2 outcomes, and to find out whether the addition of Perceived Controller Naturalness (which varied across conditions statistically significantly, though in an unexpected order) accounts for better predictability of the dependent variables. The models tested for within all of these multiple hierarchical regressions were as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interface Mimesis Condition</td>
</tr>
<tr>
<td>2</td>
<td>Interface Mimesis Condition, Perceived Controller Naturalness</td>
</tr>
<tr>
<td>3</td>
<td>Interface Mimesis Condition, Perceived Controller Naturalness, Trait Empathy</td>
</tr>
<tr>
<td>4</td>
<td>Interface Mimesis Condition, Perceived Controller Naturalness, Trait Empathy, Trait Aesthetic Attitude</td>
</tr>
</tbody>
</table>

Table 4-6: Models and Predictors for Multiple Hierarchical Regression

However, before proceeding with this analysis, as a first step in order to establish validity of the data, it was first concatenated so that intercorrelations could be sought between all the aesthetic experience items. Spearman’s rho was used for this analysis, and the boundaries used to determine the strength of correlations are as follows, for values of rs, where 0-0.19 is “very weak”, 0.20-0.39 is “weak”, 0.40-0.59 is “moderate”, 0.60-0.79 is “strong” and 0.80-1.0 is “very strong”.
### Table 4-7: Spearman’s Correlations for Aesthetic Experience Scores

Thus, the pattern of intercorrelations within these results is consistent with the player’s experience of aesthetic distance as examined through the critical review (Section 2); a further discussion of this follows the analysis of results (Section 4.11). However, these correlations mean that differences between conditions can be sought.
**H1. Enhancing interface mimesis will affect a closer sense of distance from the morally significant action in the game. This means that they will experience altered aesthetic judgement, resulting in a closer sense of identification, as well as moral judgements indicating greater emotional involvement, commensurate with equating the morally significant action to real life, rather than a game. Players will:**

d. Experience more engagement and less detachment from the game

A Kruskal-Wallis H test was conducted to determine if there were differences in engagement vs. detachment (AS1) score (a 7-point Likert scale where 1 = “Completely detached” and 7 = “Completely engaged”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were similar for all groups, as assessed by visual inspection of a boxplot.

Median engagement vs. detachment scores were statistically significantly different between groups, \( \chi^2 (2) = 10.63, p < 0.01 \). Subsequently, pairwise comparisons were performed using Dunn’s (1964) procedure. A Bonferroni correction for multiple comparisons was made with statistical significance accepted at the \( p < 0.017 \) level. The medians increased between the “Fixed Display and Analogue Stick” and “Fixed Display and Head Tracking”, and the “HMD and Head Tracking” conditions. This post hoc analysis revealed statistically significant differences in engagement vs. detachment score between the “Fixed Display and Analogue Stick” (Mdn = 4.00) and “HMD and Head Tracking” (Mdn = 6.00) (\( p < 0.01 \)) conditions, but not between “Fixed Display and Head Tracking” (Mdn = 5.00) and any other combination. Therefore, the alternative hypothesis of H1d can be (partially) accepted.

![Figure 4-15: Pairwise Comparisons of Condition for AS1](image-url)
In order to further explore the variability in these results, a hierarchical multiple regression was conducted to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of engagement vs. detachment score over and above the interface mimesis condition alone. The full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict engagement vs. detachment (Model 4) was statistically significant, $R^2 = 0.24$, $F(4, 77) = 6.03$, $p < 0.01$; adjusted $R^2 = .199$. The addition of controller naturalness to the prediction of engagement vs. detachment (Model 2) led to a statistically significant increase in $R^2$ of 0.11, $F(1, 79) = 11.41$, $p < 0.01$. The addition of Trait Empathy to the prediction of engagement vs. detachment (Model 3) also led to a small increase in $R^2$ of 0.02, $F(1, 78) = 1.82$, but the change was not statistically significant ($p = 0.18$). The addition of Trait Aesthetic Attitude (Model 4) led only to a negligible increase in $R^2$, and this change was also not statistically significant.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE_B$</td>
<td>$\beta$</td>
<td>$B$</td>
</tr>
<tr>
<td>Constant</td>
<td>3.46</td>
<td>0.42</td>
<td></td>
<td>1.63</td>
</tr>
<tr>
<td>Condition</td>
<td>0.61</td>
<td>0.20</td>
<td>0.33**</td>
<td>0.36</td>
</tr>
<tr>
<td>Trait Empathy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trait Aesthetic Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.11</td>
<td></td>
<td></td>
<td>0.22</td>
</tr>
<tr>
<td>$F$</td>
<td>9.75**</td>
<td></td>
<td></td>
<td>11.1**</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.11</td>
<td></td>
<td></td>
<td>0.11</td>
</tr>
<tr>
<td>$\Delta F$</td>
<td>9.75**</td>
<td></td>
<td></td>
<td>11.1**</td>
</tr>
</tbody>
</table>

Note: $N=82$, *$p < 0.05$, **$p < 0.01$, $B$ = unstandardized regression coefficient; $SE_B$ = Standard error of the coefficient; $\beta$ = standardized coefficient.

Table 4-8: Hierarchical Regression for Engagement vs. Detachment
Therefore, while the regression offers insight into the contribution of perceived controller naturalness to improve the variability in engagement vs. detachment, the alternative hypothesis of H2d cannot be accepted at this time, as the increases yielded by the trait variables were not statistically significant.

e. Experience greater empathy with the climbing partner

A Kruskal-Wallis H test was conducted to determine if there were differences in empathy with the climbing partner (AS2) score (a 7-point Likert scale where participants were asked how strongly they could feel the emotions of the climbing partner, where 1 = “Not at all” and 7 = “To a great extent”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were not similar for all groups, as assessed by visual inspection of a boxplot. Empathy with the climbing partner scores increased between the “Fixed Display and Analogue Stick” (mean rank = 37.00) condition, and the “Fixed Display and Head Tracking” (mean rank = 39.40) condition, and the “HMD and Head Tracking” (mean rank = 48.35) condition but the differences were not statistically significant, $\chi^2 (2) = 3.66, p = 0.16$. Therefore, the null hypothesis cannot be rejected at this same, and the alternative hypothesis of H1e cannot be accepted.

In order to further explore the variability, a hierarchical multiple regression was run to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of empathy with the climbing partner score over and above the interface mimesis condition alone. However, the full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict empathy with the climbing partner (Model 4) was not statistically significant, $R^2 = 0.08$, $F(4, 77) = 1.56, p = 0.20$; adjusted $R^2 = 0.03$. Perceived Controller Naturalness did not yield a statistically significant increase when added to the model. Furthermore, there were only negligible increases in $R^2$ with the addition of Trait Empathy ($\Delta R^2 < 0.01$) and Trait Aesthetic Attitude ($\Delta R^2 = 0.02$) respectively, and these were not statistically significant. Therefore, the alternative hypothesis of H2e could not be accepted at this time.

f. Experience greater empathy with the player character’s motivations

A Kruskal-Wallis H test was conducted to determine if there were differences in empathy with the player character’s motivations (AS3) score (a 7-point Likert scale where participants were asked how strongly they could feel the motivations of their character, where 1 = “Not at all” and 7 = “To a great extent”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

“HMD and Head Tracking” (n=27). Distributions of scores were similar for all groups, as assessed by visual inspection of a boxplot.

Median empathy with the player character’s motivations scores were statistically significantly different between groups. $\chi^2 (2) = 9.94$, $p < 0.05$. The median was the same for both “Fixed Display and Analogue Stick” and “Fixed Display and Head Tracking”, but increased to the “HMD and Head Tracking” condition. Subsequently, pairwise comparisons were performed using Dunn’s (1964) procedure. A Bonferroni correction for multiple comparisons was made with statistical significance accepted at the $p < 0.017$ level. This post hoc analysis revealed statistically significant differences in empathy with the player character’s motivations score between the “Fixed Display and Analogue Stick” (Mdn = 4.00) and “HMD and Head Tracking” (Mdn = 5.00) ($p < 0.01$) conditions, and between the “Fixed Display and Head Tracking” (Mdn = 4.00) and “HMD and Head Tracking” (Mdn = 5.00) ($p = 0.03$) conditions, but not between any other combination. Therefore, the null hypothesis can be rejected, and the alternative hypothesis of H1f can be accepted.

In order to further explore variability, a hierarchical multiple regression was run to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of empathy with the player character’s motivations score over and above the interface mimesis condition alone. The full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict empathy with the player character’s motivations (Model 4) was statistically significant, $R^2 = 0.15$, $F(1, 77) = 3.37$, $p < 0.05$; adjusted $R^2 = 0.11$. The addition of Perceived Controller Naturalness yielded a statistically significant increase to the model of $R^2$ of 0.14, $F(1, 79) = 6.63$, $p < 0.01$. Furthermore, while there were small, increases in $R^2$ with the addition of Trait Empathy ($\Delta R^2 = 0.01$) but this was very small and not statistically significant. Therefore, this regression shows that perceived controller naturalness improves the prediction of empathy with the player character’s motivations, but it does not
allow for rejection of the null hypothesis H2e, the alternative hypothesis of H2e could not be accepted at this time.

g. **Experience greater stylistic beauty**

A Kruskal-Wallis H test was conducted to determine if there were differences in experience of *stylistic beauty* (AS4) score (a 7-point Likert scale where 1 = “Not at all stylistically beautiful” and 7 = “Very stylistically beautiful”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were similar for all groups, as assessed by visual inspection of a boxplot.

Median experience of stylistic beauty scores were statistically significantly different between groups, $\chi^2 (2) = 11.10, p < 0.01$. The median was the same for both “Fixed Display and Analogue Stick” and “Fixed Display and Head Tracking”, but higher for the “HMD and Head Tracking” condition. Subsequently, pairwise comparisons were performed using Dunn’s (1964) procedure. A Bonferroni correction for multiple comparisons was made with statistical significance accepted at the p < 0.017 level. This post hoc analysis revealed statistically significant differences in experience of stylistic beauty score between the “Fixed Display and Head Tracking” (Mdn = 4.00) to “HMD and Head Tracking” (Mdn = 5.00) (p < 0.01) conditions, but not between any other combination. Therefore, the null hypothesis can be rejected and the alternative hypothesis of H1g can be accepted.

![Pairwise Comparisons of Condition](image)

**Figure 4-17: Pairwise Comparison of Condition for AS4**

In order to further explore variability, a hierarchical multiple regression was run to determine if the addition of *Perceived Controller Naturalness*, and then of *Trait Empathy* and then of *Trait Aesthetic Attitude* improved the prediction of experience of *stylistic beauty* score over and above the interface mimesis condition alone. The full model of interface mimesis condition, *Perceived Controller Naturalness, Trait Empathy*, and *Trait Aesthetic Attitude* to predict experience of *stylistic beauty* (Model 4) was statistically significant, $R^2 = 0.26, F(1, 77) = 6.66, p < 0.05$; adjusted $R^2 = 0.22$. The addition of *Perceived Controller Naturalness* yielded a statistically significant increase to the model of $R^2$


of 0.24, F(1, 79) = 12.29, p < 0.01. Furthermore, while there were small, increases in $R^2$ with the addition of Trait Empathy ($\Delta R^2 = 0.02$) and Trait Aesthetic Attitude ($\Delta R^2 = 0.04$) but these were very small and not statistically significant. Therefore, this regression shows that perceived controller naturalness improves the prediction of experience of stylistic beauty, but it does not allow for rejection of the null hypothesis H2g, the alternative hypothesis of H2g could not be accepted at this time.

h. Have a greater focus on style over events

A Kruskal-Wallis H test was conducted to determine if there were differences in focus on style over events score (a 7-point Likert scale where 1 = “Focused mainly on style” and 7 = “Focused mainly on events”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were not similar for all groups, as assessed by visual inspection of a boxplot. Focus on style over events scores decreased from the “Fixed Display and Analogue Stick” (mean rank = 39.53) condition, to the “Fixed Display and Head Tracking” (mean rank = 37.90) condition, and increased again to the “HMD and Head Tracking” (mean rank = 47.04) condition but the differences were not statistically significant, $\chi^2 (2) = 2.34$, $p = 0.31$. Therefore, it is not possible to reject the null hypothesis at this time, so the alternative hypothesis of H1h cannot be accepted.

In order to further explore the variability, a hierarchical multiple regression was run to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of focus on style over events score over and above the interface mimesis condition alone. However, the full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict focus on style over events (Model 4) was not statistically significant, $R^2 = 0.08$, F(4, 77) = 1.56, $p = 0.20$; adjusted $R^2 = 0.03$. Perceived Controller Naturalness did not yield a statistically significant increase when added to the model, though increased $R^2$ by 0.04. Furthermore, while there was a very small increases in $R^2$ with the addition of Trait Empathy ($\Delta R^2 = 0.01$) this was not statistically significant. Therefore, the alternative hypothesis of H2h could not be accepted at this time.

i. Experience greater plausibility of the scene

A Kruskal-Wallis H test was conducted to determine if there were differences in experience of plausibility score (a 7-point Likert scale where 1 = “Completely implausible” and 7 = “Very plausible”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were not similar for all groups, as assessed by visual inspection of a boxplot. Experience of plausibility scores increased from the “Fixed Display and Ana-
logue Stick” (mean rank = 36.02) condition, to the “Fixed Display and Head Tracking” (mean rank = 42.04) condition, and increased from this to the “HMD and Head Tracking” (mean rank = 46.87) condition but the differences were not statistically significant, $\chi^2 (2) = 3.05, p = 0.22$. Therefore, it is not possible to reject the null hypothesis at this time, so the alternative hypothesis of $H_1$ cannot be accepted.

Therefore, in order to explore the variability, a hierarchical multiple regression was run to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of experience of plausibility score over and above the interface mimesis condition alone. Indeed, the full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict experience of plausibility (Model 4) was statistically significant, $R^2 = 0.13$, $F(1, 77) = 2.80, p < 0.05$; adjusted $R^2 = 0.08$. The addition of Perceived Controller Naturalness yielded a statistically significant increase when added to the model, of $R^2$ of 0.12, $F(1, 79) = 5.50, p < 0.05$. Furthermore, there were only negligible increases in $R^2$ with the addition of Trait Empathy ($\Delta R^2 < 0.01$) and Trait Aesthetic Attitude ($\Delta R^2 < 0.01$) this was not statistically significant.

<table>
<thead>
<tr>
<th>Experience of Plausibility score</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>$B$</td>
<td>$SE$</td>
<td>$\beta$</td>
<td>$B$</td>
</tr>
<tr>
<td>Constant</td>
<td>4.49</td>
<td>0.43</td>
<td></td>
<td>2.84</td>
</tr>
<tr>
<td>Condition</td>
<td>0.29</td>
<td>0.20</td>
<td>0.16</td>
<td>0.06</td>
</tr>
<tr>
<td>Trait Empathy</td>
<td></td>
<td></td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>Trait Aesthetic Attitude</td>
<td></td>
<td></td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.03</td>
<td>0.12**</td>
<td></td>
<td>0.13</td>
</tr>
<tr>
<td>$F$</td>
<td>2.11</td>
<td>5.50*</td>
<td></td>
<td>3.76*</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.03</td>
<td>0.10**</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>$\Delta F$</td>
<td>2.11</td>
<td>8.68</td>
<td></td>
<td>0.37</td>
</tr>
</tbody>
</table>
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

Note: N=82, *p < 0.05, **p<0.01, \( B \) = unstandardized regression coefficient; \( SE \) = Standard error of the coefficient; \( \beta \) = standardized coefficient.

Table 4-9: Multiple Hierarchical Regressions Showing Experience of Plausibility Score

Therefore, this regression shows that perceived controller naturalness improves the prediction of experience of plausibility to a statistically significant level (thus offering more insight to H1i), but it does not allow for rejection of the null hypothesis H2i.

j. Experience greater feeling of tension

A Kruskal-Wallis H test was conducted to determine if there were differences in experience of tension score (a 7-point Likert scale where 1 = “Not at all tense” and 7 = “Extremely tense”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were not similar for all groups, as assessed by visual inspection of a boxplot.

However, the mean ranks of experience of tension scores were statistically significantly different between groups, \( \chi^2 (2) = 12.12, p < 0.01 \). Subsequently, pairwise comparisons were performed using Dunn’s (1964) procedure. A Bonferroni correction for multiple comparisons was made with statistical significance accepted at the \( p < 0.017 \) level. This post hoc analysis revealed statistically significant differences in experience of tension score between the “Fixed Display and Analogue Stick” (Mean rank=36.28) to “HMD and Head Tracking” conditions (Mean rank=54.20) (\( p < 0.05 \)), and between the “Fixed Display and Head Tracking” (Mean rank=34.13) to “HMD and Head Tracking” (Mean rank=54.20) (\( p < 0.01 \)) conditions, but not between any other combinations. Therefore, the null hypothesis can be rejected and the alternative hypothesis of H1j can be accepted.

![Figure 4-18 Pairwise Comparison of Condition for AS7](image)
Therefore, in order to explore the variability, a hierarchical multiple regression was run to determine if the addition of *Perceived Controller Naturalness*, and then of *Trait Empathy* and then of *Trait Aesthetic Attitude* improved the prediction of *experience of tension* score over and above the interface mimesis condition alone. The full model of interface mimesis condition, *Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude* to predict *experience of tension* (Model 4) was statistically significant, $R^2 = 0.19$, $F(4, 77) = 4.90$, $p < 0.01$; adjusted $R^2 = 0.16$. The addition of *Perceived Controller Naturalness* yielded a statistically significant increase when added to the model, of $R^2$ of 0.19, $F(2, 79) = 9.41$, $p < 0.01$. However, there were only negligible increases to $R^2$ with the addition of *Trait Empathy* and *Trait Aesthetic Attitude* respectively. Therefore, this regression shows that perceived controller naturalness improves the prediction of *experience of tension* to a statistically significant level (thus offering more insight to H1j), but it does not allow for rejection of the null hypothesis H2j).

**k. Focus more on feelings rather than thoughts**

A Kruskal-Wallis H test was conducted to determine if there were differences in *focus on feelings vs. thoughts* score (a 7-point Likert scale where 1 = “Primarily feelings” and 7 = “Primarily thoughts”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were not similar for all groups, as assessed by visual inspection of a boxplot.

However, the mean ranks for *focus on feelings vs. thoughts* scores were statistically significantly different between groups, $\chi^2 (2) = 9.36$, $p < 0.01$. Subsequently, pairwise comparisons were performed using Dunn’s (1964) procedure. A Bonferroni correction for multiple comparisons was made with statistical significance accepted at the $p < 0.017$ level. This post hoc analysis revealed statistically significant differences in *focus on feelings vs. thoughts* score between the “Fixed Display and Analogue Stick” (Mean rank=43.04) to “HMD and Head Tracking” conditions (Mean rank=30.96) ($p=0.07$) but not between any other combinations. Therefore, the null hypothesis can be rejected and the alternative hypothesis of H1k can be accepted.
Therefore, in order to explore the variability, a hierarchical multiple regression was run to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of focus on feelings vs. thoughts score over and above the interface mimesis condition alone. The full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict focus on feelings vs. thoughts (Model 4) was statistically significant, $R^2 = 0.17$, $F(4, 77) = 3.83$, $p < 0.05$; adjusted $R^2 = 0.12$. The addition of Perceived Controller Naturalness yielded a statistically significant increase when added to the model, of $R^2$ of 0.16, $F(2, 79) = 7.58$, $p < 0.01$. There were only negligible increases to $R^2$ with the addition of Trait Empathy ($\Delta R^2 < 0.01$) and Trait Aesthetic Attitude ($\Delta R^2 < 0.01$) respectively, and there were not statistically significant. Therefore, this regression shows that perceived controller naturalness improves the prediction of focus on feelings vs. thoughts to a statistically significant level (thus offering more insight to H1k), but it does not allow for rejection of the null hypothesis H2k.

1. Find the game more upsetting/repulsive than fun.

A Kruskal-Wallis H test was conducted to determine if there were differences in finding game upsetting vs. fun score score (a 7-point Likert scale where 1 = “Primarily upsetting” and 7 = “Primarily fun”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were not similar for all groups, as assessed by visual inspection of a boxplot. Finding game upsetting vs. fun scores increased from the “Fixed Display and Analogue Stick” (mean rank = 34.71) condition, to the “Fixed Display and Head Tracking” (mean rank = 42.90) condition, and increased from this to the “HMD and Head Tracking” (mean rank = 47.44) condition but the differences were not statistically significant, $\chi^2 (2) = 4.51$. 
p = 0.11. Therefore, it is not possible to reject the null hypothesis at this time, so the alternative hypothesis of H1l cannot be accepted.

In order to further explore the variability, a hierarchical multiple regression was run to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction of finding game upsetting vs. fun score over and above the interface mimesis condition alone. However, the full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict finding game upsetting vs. fun (Model 4) was not statistically significant, $R^2 = 0.08$, $F(4, 77) = 1.77$, $p = 0.14$; adjusted $R^2 = 0.04$. None of the predictor models yielded statistically significant additions to the model. Therefore, the alternative hypothesis of H2l could not be accepted at this time.

m. Feel that the fact the game is fiction makes no difference to them

A Kruskal-Wallis H test was conducted to determine if there were differences in game being fiction made a difference score (a 7-point Likert scale where participants were asked whether or not it made a difference to them that they knew that the game was fiction, where 1 = “Not at all” and 7 = “Very much so”) between three groups of participants with different interface mimesis levels – that is, “Fixed Display and Analogue Stick” (n=29), “Fixed Display and Head Tracking” (n=26) and “HMD and Head Tracking” (n=27). Distributions of scores were similar for all groups, as assessed by visual inspection of a boxplot. Game being fiction made a difference scores decreased from the “Fixed Display and Analogue Stick” (Median=5.00) condition, decreasing to the “Fixed Display and Head Tracking” (Median=4.50) condition, and decreasing from this to the “HMD and Head Tracking” (mean rank = 4.00) condition but the differences were not statistically significant, $\chi^2 (2) = 0.59$, $p = 0.75$. Therefore, it is not possible to reject the null hypothesis at this time, so the alternative hypothesis of H1m cannot be accepted.

Therefore, in order to explore the variability, a hierarchical multiple regression was run to determine if the addition of Perceived Controller Naturalness, and then of Trait Empathy and then of Trait Aesthetic Attitude improved the prediction in game being fiction made a difference score over and above the interface mimesis condition alone. Indeed, while the full model of interface mimesis condition, Perceived Controller Naturalness, Trait Empathy, and Trait Aesthetic Attitude to predict in game being fiction made a difference (Model 4) was not statistically significant, $R^2 = 0.1$, $F(4, 77) = 2.12$, $p = 0.09$; adjusted $R^2 = 0.05$, the addition of Perceived Controller Naturalness yielded a statistically significant increase when added to the model, of $R^2$ of 0.08, $F(2, 79) = 3.42$, $p < 0.05$. 

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An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

"Game being fiction made a difference" score

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.87</td>
<td>6.85</td>
<td>7.01</td>
<td>8.20</td>
</tr>
<tr>
<td>Condition</td>
<td>-0.22</td>
<td>0.06</td>
<td>0.05</td>
<td>-0.02</td>
</tr>
<tr>
<td>Perceived</td>
<td>-0.54</td>
<td>-0.54</td>
<td>-0.45</td>
<td>-0.02</td>
</tr>
<tr>
<td>Controller</td>
<td>0.22</td>
<td>0.29</td>
<td>0.29</td>
<td>0.30</td>
</tr>
<tr>
<td>Naturalness</td>
<td>0.08</td>
<td>0.02</td>
<td>0.22</td>
<td>0.23</td>
</tr>
<tr>
<td>Trait Empathy</td>
<td>-0.02</td>
<td>0.08</td>
<td>-0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Trait Aesthetic</td>
<td>-0.09</td>
<td>0.07</td>
<td>-0.15</td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.01</td>
<td>0.08</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>$F$</td>
<td>0.61</td>
<td>3.42*</td>
<td>2.27</td>
<td>2.12</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>0.01</td>
<td>0.07*</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>$\Delta F$</td>
<td>0.61</td>
<td>6.20*</td>
<td>0.04</td>
<td>1.62</td>
</tr>
</tbody>
</table>

Note: N=82, *p < 0.05, **p<0.01, $B$ = unstandardized regression coefficient; $SE_B$ = Standard error of the coefficient; $\beta$ = standardized coefficient.

Table 4-10: Multiple Hierarchical Regression for AS10

Therefore, this regression shows that perceived controller naturalness improves the prediction of in game being fiction made a difference to a statistically significant level (thus offering more insight to H1m), but it does not allow for rejection of the null hypothesis H2m. 

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### 4.9.4 Summary of Hypotheses

Therefore, it was hypothesised that across enhanced interface mimesis conditions, players will feel a closer sense of identification and reduced sense of aesthetic distance from the morally significant action and content in the game. Operationalized, this means that they will:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Outcomes</th>
<th>H1 (Interface mimesis conditions)</th>
<th>H2 (Addition of Trait Empathy &amp; Trait Aesthetic Attitude)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Take longer to make the decision.</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Experiencing greater guilt</td>
<td>Cannot reject null hypothesis.</td>
<td>Accept alternate hypothesis (for Trait Empathy only). (p &lt; 0.05)</td>
<td></td>
</tr>
<tr>
<td>(2) Take no action when presented with decision.</td>
<td>Cannot reject null hypothesis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b Experience greater Imaginative &amp; Sensory Immersion.</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c Experience greater Flow.</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d Experience more engagement and less detachment from the game</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
<td>Cannot reject null hypothesis.</td>
<td></td>
</tr>
<tr>
<td>e Experience greater empathy with the climbing partner’s emotions</td>
<td>Cannot reject null hypothesis.</td>
<td>Cannot reject null hypothesis.</td>
<td></td>
</tr>
<tr>
<td>f Experience greater empathy with the player character’s motivations</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
<td>Cannot reject null hypothesis.</td>
<td></td>
</tr>
<tr>
<td>g Experience greater stylistic beauty</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
<td>Cannot reject null hypothesis.</td>
<td></td>
</tr>
<tr>
<td>h Have a greater focus on style over events</td>
<td>Cannot reject null hypothesis.</td>
<td>Cannot reject null hypothesis.</td>
<td></td>
</tr>
<tr>
<td>i Experience greater plausibility of the scene</td>
<td>Accept alternate hypothesis. ***</td>
<td>Cannot reject null hypothesis.</td>
<td></td>
</tr>
</tbody>
</table>
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>j</td>
<td>Experience greater feeling of tension</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
</tr>
<tr>
<td>k</td>
<td>Focus more on feelings rather than thoughts</td>
<td>Accept alternate hypothesis. (p &lt; 0.01)</td>
</tr>
<tr>
<td>l</td>
<td>Find the game more upsetting/repulsive than fun</td>
<td>Cannot reject null hypothesis.</td>
</tr>
<tr>
<td>m</td>
<td>Feel that the fact the game is fiction makes no difference to them</td>
<td>Accept alternate hypothesis. ***</td>
</tr>
</tbody>
</table>

*** Indicates that null hypotheses could be rejected only once Perceived Controller Naturalness is also accounted for. As the manipulation check showed an unexpected non-linear increase for Perceived Controller Naturalness across conditions, this is corrected for here.

**Table 4-11: Table Summarising Findings for All Hypotheses**

4.9.5 Experiential Correlations

In order to further explore the variation in the data, which gave rise to the failure to disprove some of the null hypotheses as detailed above, and to explore the relationships in light of the unexpected difference in controller naturalness, spatial presence, and Body Ownership across conditions, the data was concatenated so that additional correlations could be sought.

Due to the non-normally distributed nature of some of the data (as explored earlier), Spearman’s rho was used. The boundaries used to determine the strength of correlations are as follows, for values of r, where 0-0.19 is “very weak”, 0.20-0.39 is “weak”, 0.40-0.59 is “moderate”, 0.60-0.79 is “strong” and 0.80-1.0 is “very strong”.

Aside from the inter-correlations between the experiential variables relating to the interface (perceived controller naturalness, Body Ownership, Spatial Presence: Self-Location, and Spatial Presence: Agency) as reported earlier (Section 4.9.3.1), other correlations were also observed. In addition, as noted earlier (Section 4.9.3.2) a positive correlation existed between experience of Guilt and Spatial Presence: Self-Location.

<table>
<thead>
<tr>
<th></th>
<th>CONTROLLER NATURALNESS</th>
<th>SPATIAL PRESENCE: SELF-LOCATION</th>
<th>SPATIAL PRESENCE: AGENCY</th>
<th>BODY OWNERSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEQ: Sensory and Imaginative Immersion</td>
<td>r 0.77**</td>
<td>0.63**</td>
<td>0.74**</td>
<td>0.70**</td>
</tr>
<tr>
<td></td>
<td>Sig. 0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>GEQ: Flow</td>
<td>r 0.47**</td>
<td>0.68**</td>
<td>0.60**</td>
<td>0.59**</td>
</tr>
<tr>
<td></td>
<td>Sig. 0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>
Further to these, however, there were very significant, moderate or strong positive correlations between these variables and GEQ Sensory and Imaginative Immersion, and Flow subscales, as detailed in the table. Moreover, there were statistically significant relationships of moderate-to-excellent strength between many of these experiential variables relating to the interface, and the aesthetic experience scores. These are also detailed further in the table.

Trait player tendencies merit further exploration as a result of this study. While Trait Empathy alone was shown to contribute to increased feelings of Guilt as interface mimesis and Spatial Presence: Self-Location increased, neither Trait Empathy nor Trait Aesthetic Attitude were shown to contribute to the aesthetic experience items (AS1-AS10).

There did exist weak, positive correlations between Trait Aesthetic Attitude and Body Ownership [\(r(82) = 0.23, p < 0.05\)] and also between Trait Aesthetic Attitude and GEQ Sensory and Imaginative Immersion [\(r(82) = 0.25, p < 0.05\)], suggesting that the measure may contribute in some small way towards the tendency to identify with an avatar. A weak, negative correlation also existed between Trait Aesthetic Attitude, and scores for game being fiction made a difference [\(r(82) = -0.22, p < 0.05\)], meaning those with higher scores for Trait Aesthetic Attitude also felt it made little dif-

<table>
<thead>
<tr>
<th></th>
<th>(r)</th>
<th>(0.46^{**})</th>
<th>(0.47^{**})</th>
<th>(0.51^{**})</th>
<th>(0.43^{**})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement vs. detachment</td>
<td>Sig.</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Empathy with the climbing partner’s emotions</td>
<td>(r)</td>
<td>(0.24^{*})</td>
<td>(0.22^{*})</td>
<td>0.18</td>
<td>0.24^{*}</td>
</tr>
<tr>
<td>Empathy with the player character’s motivations</td>
<td>Sig.</td>
<td>0.03</td>
<td>0.05</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>Experience of stylistic beauty</td>
<td>(r)</td>
<td>(0.39^{**})</td>
<td>(0.60^{**})</td>
<td>(0.35^{**})</td>
<td>(0.54^{**})</td>
</tr>
<tr>
<td>Focus on style vs. events</td>
<td>Sig.</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Experience of plausibility</td>
<td>(r)</td>
<td>(0.34^{**})</td>
<td>(0.31^{**})</td>
<td>(0.39^{**})</td>
<td>(0.29^{**})</td>
</tr>
<tr>
<td>Experience of tension</td>
<td>Sig.</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Focus on feelings vs. thoughts</td>
<td>(r)</td>
<td>-0.35^{**}</td>
<td>-0.24^{*}</td>
<td>-0.27^{*}</td>
<td>-0.28^{*}</td>
</tr>
<tr>
<td>Finding game upsetting vs. fun</td>
<td>Sig.</td>
<td>0.01</td>
<td>0.03</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Game being fiction made a difference</td>
<td>(r)</td>
<td>0.26^{*}</td>
<td>0.22</td>
<td>0.35^{**}</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>0.02</td>
<td>0.05</td>
<td>0.01</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>(r)</td>
<td>-0.27^{*}</td>
<td>-0.18</td>
<td>-0.15</td>
<td>-0.23^{*}</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>0.01</td>
<td>0.11</td>
<td>0.19</td>
<td>0.03</td>
</tr>
</tbody>
</table>

* Correlation is significant at the \(p < 0.05\) level (two-tailed).

** Correlation is significant at the \(p < 0.01\) level (two-tailed).
ference to them that they knew that the game was fiction. However, the weak nature of these correlations, together with the lack of correlation with other expected measures which would be in line with this (e.g. Spatial Presence measures, or GEQ Flow) may suggest other factors influenced the variability of these results; thus, this measure was perhaps not suitable for capturing a satisfactory picture of a players’ aesthetic attitude towards playing games through increasing interface mimesis. Therefore, these correlations lend further support to the hypotheses, as further explored in the discussion.

4.9.6 Integrating Qualitative Data

4.9.6.1 Analysis Procedure

Usable data was transcribed from 86 participants, using qualitative data analysis software NVivo 9 for Mac. These results included participants who had not played the game through to completion; therefore, while there was no data available for their thoughts on the featured morally significant decision, their subjective experiences of climbing and being in the game environment were nonetheless sought.

Subsequently, an analytic strategy was utilised, informed by the considerations by Schmidt (2004) for the analysis of semi-structured interviews, and the guidelines proposed by Miles, Huberman, & Saldana (2014). This holds that the guiding principle for semi-structured interviews is the “interchange between material and theoretical prior knowledge” (Schmidt, 2004, p. 253), which begins not only once the material has been transcribed, but in the pre-data collection phase as well. The process is hence an interplay between pre-existing considerations, and the data gathered in the field. Schmidt notes that in the course of this interchange process theoretical pre-assumptions may also be “refined, questioned, and altered” (p. 253).

Within this analysis, the questions and subject areas asked of the participants in the semi-structured interview were taken into consideration when forming analytical categories. In practical terms, these were assigned as top-level coding notes within NVivo. These questions broadly followed the following topics (though other topics of concern to the participant were also welcomed):

- Thoughts about the interface used in their assigned condition.
- Identification with the player character.
- Empathy with the climbing partner.
- Thoughts/feelings about the ‘cut the rope’ sequence.
- Attitudes towards playing games.

However, as also noted by Schmidt (2004), in an open semi-structured interview context, participants do not always provide answers in the direct context of the question that was asked. Instead, “the aspects that the interviewer introduces are frequently only taken up later in more explicit form,
or else they turn up (again) in response to a different question within a quite different context” (p. 255). Therefore, as suggested by Bazeley (2007), building up familiarity with the data through coding is important in identifying key themes, which may be refined as the coding process progresses.

As a first step, the usability of these top-level analytical categories was tested and evaluated upon a small number of interviews. Once this was satisfied, open, indigenous coding (i.e. those derived directly from the data) was undertaken, while keeping the category nodes in mind, and creating variants were applicable, while also being open to any other unexpected themes that may arise from the data. The formation of these nodes were the result of “intensive and repeated reading of the material”, as suggested by Schmidt (2004, p. 254). Where appropriate, the codes were analysed for patterns under which they could be concatenated; this is so that the cases could be compared with regard to dominant tendencies. As noted by Schmidt, this involves accepting some loss of information; though this is correspondingly less the more differentiated the categories and their variants are in their formation. Often, multiple codes were applied to the same sentence or passage where appropriate, even (or especially) when the participant displayed contradictory attitudes.

4.9.6.2 Themes Emerging from Data

Through this process, the following themes emerged from the data (Figure 4-20):

<table>
<thead>
<tr>
<th>Name</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climbing Partner</td>
<td>47</td>
<td>49</td>
</tr>
<tr>
<td>Disengaged</td>
<td>20</td>
<td>31</td>
</tr>
<tr>
<td>Limited Time and Interaction</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Tendency to Ignore</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Invested</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Just a Game Attitude</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>Cut the Rope Sequence</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Amusement or Detachment</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td>Curiosity or Exploration of Game Possibilities</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Duality</td>
<td>31</td>
<td>37</td>
</tr>
<tr>
<td>Viewing as Moral Decision</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Emotional Response</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Feelings of Guilt</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Reflections on Plausibility</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Identification with Player Character</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Double Awareness</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>Nonbinary Sense of Identification</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Extension of Hands</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Interface</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Contribution of Head-tracking</td>
<td>31</td>
<td>34</td>
</tr>
<tr>
<td>Successful Mimesis</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>Incongruent or Incomplete Embodiment</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Monitor and Headtracking</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Graphical Fidelity as Barrier</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Trait Game Attitudes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Focus on Exploring Possibilities or Outcomes</td>
<td>40</td>
<td>44</td>
</tr>
<tr>
<td>Double Awareness, Duality, and Dichotomy...</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>Acting Based on Real-Life Values</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Focus on Escapism or Roleplay</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Tendency for Absorption and Investment</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Tendency for Detachment</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Focus on Fulfilling Objectives</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Concerns about Other Games</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 4-20: NVivo Codings
4.9.6.2.1 Thoughts About The Interface Used

Significant themes that emerged about the climbing mechanism and interface were as follows, in order of prevalence.

a. Contribution of head tracking

Several participants in the "HMD and Head Tracking" condition commented specifically on the importance of the head tracking to their experience, stating, “Turning my head and the graphics changed… I’d never experienced that before, and it was bizarre” (Participant 013, “HMD and Head Tracking”). Alternatively, that “It was cool that you could turn around and see your climbing partner” (Participant 001, “HMD and Head Tracking”).

Indeed, for some participants, the head tracking was central to the diegetic experience, stating, “When the thing [‘cut the rope’ sequence] happened, I was in a state of shock and panic. Like, looking down to see my partner, and she was shouting ‘Just cut the rope’” (Participant 002, “HMD and Head Tracking”).

b. Successful mimesis

Another topic that large numbers of participants noted was the success of the controls in mimicking the action of climbing, “In terms of the controls they were brilliant, my arms are actually hurting at the moment, so it felt like I was going out for a climb” (Participant 063, “Fixed Display and Head Tracking”). Indeed, several participants relayed a similar experience, “I actually felt like I was using my strength, ‘cause I was climbing higher and higher and it got tougher and tougher as my muscles got tired” (Participant 042, “HMD and Head Tracking”).

The mapping of the movement of the players’ hands to the virtual hands also felt novel to some participants, “You just move your hands and then you see it on the screen. I liked that! Yeah it was good, it was quite easy to get a grip of how to control it” (Participant 025, “Fixed Display and Analogue Stick”).

Several other participants also commented on the ease of understanding the controls, such as: “The controls were really good. They were genuinely intuitive. It makes sense, rather than using a conventional controller, which always feels artificial anyway” (Participant 028, “Fixed Display and Analogue Stick”).

c. Incongruent or incomplete embodiment

Some participants did, however, note that some elements felt incongruous however, due to their awareness of their incomplete sense of physical embodiment, and commented as such: “It felt weird because it was weightless the entire time, and I know that in real life, it'd be a lot more strenuous. The visual experience, it felt real, but it was weird when you thought about it as a real
experience, because it didn’t physically feel like a real experience” (Participant 004, “HMD and Head Tracking”).

Another participant noted “It looked like I was there, but it didn’t feel like it. Because I was sat down, and I wasn’t climbing. Even though it didn’t look realistic, it was real enough, you know?” (Participant 026, “HMD and Head Tracking”)

However, for some participants, simply the visual representation of the hands and their lack of realism was enough for the experience to feel slightly jarring, stating, “The lack of arms was weird” (Participant 073, “Fixed Display and Analogue Stick”), or “The hands were weird” (Participant 088, “Fixed Display and Head Tracking”).

Furthermore, for a participant in the “Fixed Display and Head Tracking” condition, head tracking did not serve as a positive addition to the experience, noting the way in which it felt incongruous: “With … the head tracking, it felt really limiting, and I’d have preferred to just have an analogue controller than that” (Participant 053, “Fixed Display and Head Tracking”).

4.9.6.2.2 THOUGHTS ON IDENTIFICATION WITH PLAYER CHARACTER

During the semi-structured interview, participants were asked (if they did not express it themselves already) how far they felt like they themselves were climbing, as opposed to feeling as though they were controlling a character. During the discussion that resulted from this question, the significant themes that emerged (in order of prevalence) were as follows:

a. Double awareness

Participants noted a sense of double awareness, of feeling a sense of realism in the experience of playing the game, while at the same time, being aware that it was separate from reality, stating things like “[It’s] more like you’re in it, but knew it’s not real.” (Participant 078, “HMD and Head Tracking”).

Other participants noted the difficulty of maintaining the double awareness: “Obviously that was in my head, that it wasn’t real, but it was very hard not to become engaged in it, and absorbed into it, especially with the headphones as well” (Participant 012, “HMD and Head Tracking”).

Indeed, one participant noted this ‘dissonance’: “Still felt the sort of dissonance between me feeling like I was actually there and also actually knowing that it’s not actually real and somebody had designed it that way” (Participant 054, “HMD and Head Tracking”).

For some players, this experience was seemingly more intense than for others: “It was weird because you felt like you were there but you weren’t, you were here and oh man, it was weird!” (Participant 036, “HMD and Head Tracking”)
b. Non-binary sense of identification

Many participants, in answering the question, asserted that they felt their sense of identification with the player character was not a binary either/or, but instead, a “bit of both.” Therefore, they did not feel solely as if they were controlling a character, or solely as if they were the one climbing themselves, but somewhere in-between. For example, one participant stated, “I think a bit of both, but it felt a bit like it was me” (Participant 071, “HMD and Head Tracking”), while another stated, “Bit more towards controlling a character, but still some sense of I’m climbing” (Participant 056, “Fixed Display and Head Tracking”).

c. Extension of own hands

Contrary to the comments about the ‘weird’ hands by some participants, others felt that the hands were an extension of their own, thanks to the naturalness of the interface, “At the start, I felt really strange, and then once you got into it I was proper felt like I was actually doing it with my hands.” (Participant 036, “HMD and Head Tracking”). Another participant said, “It’s like baby steps really, you had to get used to it, then it’s easy and quite natural in a sense -- it’s kind of like an extension of your hands.” (Participant 002, “HMD and Head Tracking”)

4.9.6.2.3 Thoughts/Feelings About the ‘Cut the Rope’ Sequence

Significant themes or categories that were emerged when analysing interview data about participants’ thoughts and feelings when presented with the decision to cut the rope or not, and their feelings and thoughts afterwards. These themes are presented here in order of prevalence:

a. Amusement or detachment

This category encapsulated participants who reported outright amusement at the decision to cut the rope (and/or the subsequent ‘falling’ sequence), or a high level of detachment from it. For example, one participant said, “When she went to fall, and when I cut the rope, and she started screaming I thought that was quite funny. I could hear the fear and distress in her voice, but I didn’t really mind.” (Participant 005, “HMD and Head Tracking”)

Other participants did not report humour, but instead emotional detachment due to awareness of it being a game; such a ‘just a game’ attitude is further reflected on (Section 4.9.6.2.5). “I was emotionally removed from it, because I was aware it was a game. I didn’t have any qualms about doing it, there was no thought process about there being consequences about doing it.” (Participant 090, “Fixed Display and Head Tracking”)

b. Double Awareness

Similar to the ‘double awareness’ with respect to their thoughts on the player character as explored previously (Section 4.9.6.2.2), participants also displayed this kind of double awareness in their
emotions and thoughts about the ‘Cut the Rope’ sequence. This participant sums up such a conflict well: “Yeah, I felt really bad about when I cut the rope. It was um, difficult to deal with that. But, I play a lot of games, and the part of my brain that deals with that said, ‘You’re going to have to do this to progress’” (Participant 041, “HMD and Head Tracking”)

Similarly, even those who reported having a detached stance due to being aware it was a game noted that this did not stop them from finding themselves to be emotionally invested. For example, “I did feel like she was ‘just another character in the game’, but that didn't stop me from caring. If there were a second option rather than cutting her off, I would have liked to do that.” (Participant 047, “Fixed Display and Head Tracking”)

c. Curiosity or exploration of game possibilities

Participants across all conditions reported an attitude of curiosity about the way the game would respond to their decision to cut the rope or not, rather than feeling invested as a moral decision, “I think it was more ‘what’s going to happen as an in-game consequence?’ – I mean, you do feel, looking down, like you get a gut feeling of ‘ooh, what am I going to have to do?’” (Participant 019, “HMD and Head Tracking”).

Some other participants reported feeling more explicitly detached along with this attitude, “I just wanted to see what would happen. I was feeling detached.” (Participant 092, “Fixed Display and Analogue Stick”)

Indeed, such an attitude of being interested in the possibilities of the game also seemed to come with an acknowledgement of the experience being a game (such a ‘just a game’ attitude is further reflected on in Section 4.9.6.2.5). “Because I knew it was a game, and because she kept on talking, if she hadn't kept on talking then I might have cut it straight away, but because she kept talking I thought maybe she might come up with another possibility for an action to take. So I thought I’d wait to see what happens before I kill her.” (Participant 058, “Fixed Display and Head Tracking”)

d. Viewing as moral decision

However, contrary to the previous attitude, some participants did also report feeling that they had a moral decision to make, either by stating this outright: “It was quite like a moral issue” (Participant 003, “HMD and Head Tracking”), or by reflecting on the ways in which they thought deeply about the decision they were faced with: “I definitely took a while to decide what to do. I was going through the thought process of what I should do.” (Participant 009, “HMD and Head Tracking”)

e. Emotional response

Indeed, for some participants, the ‘Cut the Rope’ sequence was overwhelmingly an emotional one. One participant reported being in a “state of shock and panic” (Participant 002, “HMD and Head Tracking”) when the sequence was occurring. Once the sequence had ended, participants reported
feeling sadness, e.g. “The ending was kind of sad” (Participant 030, “Fixed Display and Head Tracking”)

For some participants the intensity of the sequence was particularly notable. One participant report-
ed finding the decision to cut the rope “Difficult to deal with”, and noted that they “Could have used another moment” (Participant 041, “HMD and Head Tracking”) once the game was over, rather than the experience ending so abruptly.

f. Feelings of guilt

Related to this were the feelings of guilt felt by participants who cut the rope to kill the climbing partner.

“I felt terrible… quite… I don’t know. I was hooked, especially near the conclusion, it really drew me in. And yeah, I felt terrible!” (Participant 011, “HMD and Head Tracking”)

For the above participant, the feeling appeared to be particularly pronounced and extreme, but for others, they reported simply ‘feeling bad’ about the decision, e.g. “I felt really bad about when I cut the rope” (Participant 041, “HMD and Head Tracking”) and “I got on with it, but still felt quite bad” (Participant 081, “Fixed Display and Analogue Stick”).

g. Reflecting on plausibility

The ways in which participants reflected on the plausibility of the ‘Cut the Rope’ sequence was particularly interesting due to the ways in which participants appear to have interpreted ‘plausibility’ in a number of different ways. While, for example, one participant appeared to directly make the connection to real-life plausibility, saying:

“The last bit was really good, and I didn’t expect it to happen, and it’s one of those situations that could actually happen, and you feel quite immersed in it…” (Participant 002, “HMD and Head Tracking”)

Other participants meanwhile appeared to relate the experience not just to real life, but to plausible situations in other fiction:

“I was concerned but I think I knew that was the right thing to do. Watching films like that, they tell you to cut the rope, so I knew it was right, to save at least one person. But, the build up to that was like, ‘what am I actually going to do to solve this?’ It felt quite realistic.” (Participant 007, “HMD and Head Tracking”)
However, it appears that for some participants, the question about plausibility was interpreted to be about how they themselves could possibly end up in that situation: “I wouldn’t go rock climbing in real life, so the question about plausibility I wasn’t sure about.” (Participant 074, “Fixed Display and Analogue Stick”)

4.9.6.2.4 ATTITUDES TOWARDS PLAYING GAMES

During the semi-structured interview, participants who reported playing games regularly, or at least occasionally, were asked about their attitude towards playing games in general, in so far as how they make decisions in games, or behave in games, where multiple options are presented, or where the game is story-driven. The themes that emerged from this discussion are presented below, in order of prevalence.

a. Focus on exploring possibilities and outcomes

A very high number of participants who answered reported that they act according to their own values in games (explored in point c below) during a first playthrough, and then, during subsequent plays, they focus on exploring what the other possible outcomes might have been. For example, “First time I play something, I do the right thing, and then I go back and mess around” (Participant 018). For some participants, who reported being more comfortable with acting according to their own values on a first playthrough, appeared to abandon this attitude during following plays of the game: “I like games with different options, and doing all the different ones… yes, even if it means doing the ‘mean’ option!” (Participant 074)

For many participants, they explicitly reported a curiosity about what possibilities exist in the game, and how they are able to behave within it, saying, “I think it’s more about pushing the game to its limits and exploring systems.” (Participant 029), or, similarly, “Explore what the game will let me get away with, see all the different features of it.” (Participant 020)

Other participants made the explicit link between their affinity for exploring the possibilities a game had to offer, and being able to see the ‘meaningful impact’ of their actions:

“I guess I like games with a choice. Like Fallout, or those sorts of games. Being able to see the meaningful impact of your actions.” (Participant 003)

b. Double awareness and duality

Many players appeared aware of the ways in which they switch between two dichotomous modes of reception while playing a game – again, reminiscent of the ‘double awareness’ or ‘duality’ as exhibited previously.
“I go between two modes. Either you drop in and just kill things, and that’s fun – or… but I do like following the story.” (Participant 003)

When asked about their attitude towards playing games, and how they make decisions in games, and whether or not they are inclined to take games seriously and relate them to their own real world values, or if they prefer to explore the various possibilities, even if they conflict with their own values, many participants claimed that it was “a bit of both”, or that “Depends on my mood, really” (Participant 051). For example, one participant said:

“Sometimes I feel like playing it ‘right’, and other times I play it just to see what would happen” (Participant 068)

While another related their general attitude towards playing the game in this study:

“Sometimes, depending on what mood I’m in, I’ll just play a ‘shooty’ game and I’ll go on a rampage and I won’t really care. I’ll just think ‘Haha, this is really funny’ just shooting everyone. And other times, I’ll feel very heroic and refuse to do friendly fire…. So this time, I thought, ‘Ooh, I’ll try the naughty route the first time” (Participant 076)

Alternatively:

“I’d never act the way that I act in Grand Theft Auto. And then, with some games, it’s hard to say.” (Participant 013)

c. Acting according to own real-life values

Related to the above, however, many participants did acknowledge that they often acted according to their own real-life values, though acknowledged that this often “Depends on the game.”, and again, some players would play a game multiple times so that they could complete it according to their values the first time, then explore alternatives thereafter:

“Whenever I play games, I try to play them how I act, so generally, I play them twice.” (Participant 009)

However, contrary to this, some participants acknowledged that their attitude was more rigid than this, and that they are more inclined than not towards solely acting according to their own values: “I always act like I would in real life. I’m morality-driven, it’s quite annoying sometimes. I have to do what is ‘right’” (Participant 014), while another said, “I think ‘what would I do?’ – like with the Walking Dead game, I get quite upset about stuff.” (Participant 049)

Another participant acknowledged that their ability to act according to their own values was limited by the affordances of the game, “I try to push the game to its limits, and once I’ve found the limits,
I work within those. I generally try to stick with what I’d do, but I know it’s limited by what the game can do.” “Yes, it annoys my wife very much!” (Participant 063)

One participant related their tendency to act upon their values to whether or not they felt the behaviour was ‘deserved’:

“It depends on the game. Like with GTA, everyone plays that just to go around and cause crime everywhere you go. You play the Lara Croft games though – overall, she’s a good character. You don’t feel as kind of... it’s not that you feel bad, but in GTA you go around killing innocent old people in the game, whereas with Lara Croft, you feel like it’s a lot more deserved.” (Participant 029)

d. Focus on escapism or role-play

However, other participants also explicitly did not act as they would do in real life, and instead, preferred to equate playing games to escapism, or as role-play; a space in which they can “escape from the real world for a little while” (Participant 032).

One participant did acknowledge that while their own real-world values factor in to a small degree, overall, the experience is one of role-play, saying “My own moral compass goes into it somewhat, but it’s more like ‘what would this character do?’” (Participant 061), while another explicitly said that they “Tend to focus on not being myself, especially role-play games. (Participant 077).

“Gaming is almost a bit of escapism, it’s doing something that you wouldn’t get to do normally, so you see what you would do, and also how much fun you can get away with.” (Participant 027)

Also, other players more strongly identified with explicitly not acting according to their own values, and explicitly doing the opposite, where the game called for it:

“I tend to do the opposite of what I’d do in real life. I think Grand Theft Auto is a prime example of that. You do horrible things just to push the limits of the game and see what you can get away with. Things you’d never do in real life.” ( Participant 062)

e. Tendency for absorption or investment

Whether or not players acted according to their own values, or the imagined values of their character, some players showed a tendency for deep, often conscious, involvement. For example, for one participant this experience was explicitly intentional: “I try to invest in it. It makes the game more entertaining that way.” (Participant 004), whereas for others, it is a factor for the quality of the story they are presented with: “I do get involved if there’s a really good story” (Participant 002)
f. Tendency for detachment

However, on the other end of the spectrum, for other participants, playing games is reported to be a universally detached experience: “To be honest I just try to win. I don’t think about it too much” (Participant 025). Furthermore, when asked if they tend to form attachments to characters in games, another participant responded, “Really not. I don’t find that I do.” (Participant 095)

“I don’t really develop emotional attachments in games, not the same way I would do in a movie. I tend to play a game for a games’ end and to get through it.” (Participant 062)

Therefore, for this player, detachment within games is more prominent than that within movies, as a focus on objectives appears to be more important.

g. Focus on fulfilling objectives

Some participants were more explicit about this focus on fulfilling objectives above all, even if this meant acting not according to their own real-life values:

“I think I look at the objectives of what I’ve got to do in a game, and if a character need to be more violent to achieve objectives, that’s what I do.” (Participant 046)

Similarly, another participant stated that they “Play towards the more favourable outcome, rather than what I’d personally do” (Participant 043).

On a similar note, though at the other end of the spectrum of moral actions, one player described their experience playing a game in which they had the choice to play as a super hero, or a super villain, and stated, “My ethical choice was only to become a super hero because I thought it’d make the game easier.” (Participant 062)

h. Concerns about other games using HMD and Headtracking

Finally, although not a question of general attitude when playing existing games, some participants themselves initiated discussion about imagining their favourite games being played using “HMD and Head Tracking” with a device such as the Oculus Rift, and reported their lack of ease with the hypothetical result. For example, after talking at length about Hitman, and their detachment from it, they then mused, “If Hitman had something like this… I don’t know!” (Participant 039, “HMD and Head Tracking”)

Similarly, another participant stated:

“I just do what the game tells me to do. Like, if I were playing GTA [Grand Theft Auto]… you go around doing whatever in the world. But I
don’t know if I could do it using the Oculus Rift, ‘cause you’re actually like, stabbing somebody. I don’t know if I could do that. But I probably would, because yeah, it’s just a game.” (Participant 026, “HMD and Head Tracking”)

It appeared this participant was at first troubled by the idea of kinaesthetically acting out their usual behaviour in *Grand Theft Auto*, but then appeared to remind themselves that it would be just a game. In order to confirm this, they were then asked “But you’d have to remind yourself of that?” to which they answered affirmatively.

4.9.6.2.5 OVERALL ‘IT’S JUST A GAME’ ATTITUDE

Indeed, such a ‘just a game’ attitude seemed pervasive, with many participants suggesting, “I knew it was just a game” (Participant 005, “HMD and Head Tracking”) or similar. Regarding the ‘Cut the Rope’ sequence, and the decision to be made, one participant remarked, “Knowing it was a game probably made me make a different choice than I would do in reality” (Participant 063, “Fixed Display and Head Tracking”).

Similarly, another said:

“I was emotionally removed from it, because I was aware it was a game. I didn’t have any qualms about doing it; there was no thought process about there being consequences about doing it.” (Participant 090, “Fixed Display and Head Tracking”)

Regarding plausibility, one participant felt that “It’s one of those things where you appreciate it could be a real life scenario, but you also know it’s just a game.” (Participant 027, “Fixed Display and Analogue Stick”-only)

Of course, there appeared to be varying degrees to which participants felt that remembering it was a game was a valid strategy in order to detach themselves from the experience, with one participant saying, “I sort of remembered that it was a game, but you’re looking down and you can see her dangling, and I was thinking, ‘Is there really no alternative to doing this?’” (Participant 051, “HMD and Head Tracking”). Another said:

“There was a question that asked if I felt bad about cutting her down – to a very, very, minimal extent I’d say. You realise it’s just a game and everything, and it’s either you wait there and see what happens or you cut her down.” (Participant 048, “Fixed Display and Head Tracking”)

However, for others this was much starker:
“When she said, ‘You’ll have to cut me loose’, that’s when I thought ‘Oh, this is a game’, I’ll just cut her loose, and I didn’t wait for her to say anything else.” (Participant 038, “Fixed Display and Analogue Stick”)

4.9.6.2.6 Factors Influencing Level of Empathy with Climbing Partner

Of 47 participants who discussed their feelings of investment (or lack thereof) from the climbing partner character, a majority of participants (29) discussed reasons why they felt mostly disengaged from the character, while fewer participants (18) discussed their investment in the climbing partner character.

a. Invested

Those who were invested in the climbing partner felt that there was enough implied backstory that they found themselves caring, saying “It kind of felt like she was your best friend in a sense, you’re climbing with your best friend.” (Participant 002, “HMD and Head Tracking”)

“… even though you only played for a little while, it felt like there was a deeper background story between the characters, sort of like friends and stuff like that,” continuing, “I had a bit of backstory and got quite into it as well. There was an emotional connection there. The voice actor was really good.” (Participant 006, “HMD and Head Tracking”)

Another participant stated, “I cared about her. I tried saving her, but it didn’t work” (Participant 076, “Fixed Display and Analogue Stick”-only), whereas another was surprised by the extent to which they cared about the climbing partner given the short play time, stating in response to being questioned about whether they cared about the character, “Surprisingly so, considering how briefly the experience went on for. It was only a few lines of dialogue, but I felt quite affected by it in the end” (Participant 041, “HMD and Head Tracking”).

b. Disengaged

Those who were disengaged from the climbing partner overwhelmingly cited the short amount of time and limited interactions with the character as the factor which caused this, acknowledging that “If there were more background to the characters I might have cared more” (Participant 068, “Fixed Display and Head Tracking”).

“If I was to play it as an actual story, and had a chance to get to know the climbing partner better, ten I’d probably find cutting the rope to be a harder decision. But there wasn’t enough time to build up a relationship.” (Participant 016, “HMD and Head Tracking”)
“I didn’t care about her obviously, since I cut the rope, but I think that’s probably due to the fact that there was such limited exposure to her? I think if there were more of a backstory, played over a period of time, I would have become more attached to the character, and more upset when she died.” (Participant 012, “HMD and Head Tracking”)

However, for other participants, it appeared to be indicative of a general tendency not to engage with characters in games, stating, “It was alright, but I tend to ignore that sort of thing” (Participant 020, “Fixed Display and Analogue Stick”-only). Again, overlap with the other codes and categories defined within this section can be seen here, due to both a ‘just a game’ attitude, and an overall attitude of detachment from characters in games:

“It’s a game, isn’t it? It’s my view on games usually. I don’t get attached to characters.” (Participant 025, “Fixed Display and Analogue Stick”)

4.10 RESULTS: STUDY 2B

4.10.1 Analysis Procedure

Usable data had been transcribed from the participants (Section 4.9.6.1), using qualitative data analysis software NVivo 9 for Mac. Overall, there were 55 participants who played the game in their original condition, and also in the “HMD and Head Tracking” condition.

As in part A of this study, an analytic strategy was utilised, informed by the considerations by Schmidt (2004) for the analysis of semi-structured interviews, and the guidelines proposed by Miles, Huberman, & Saldana (2014). This holds that the guiding principle for semi-structured interviews is the “interchange between material and theoretical prior knowledge” (Schmidt, 2004, p. 253), which begins not only once the material has been transcribed, but in the pre-data collection phase as well. The process is hence an interplay between pre-existing considerations, and the data gathered in the field. Schmidt notes that in the course of this interchange process theoretical pre-assumptions may also be “refined, questioned, and altered” (p. 253).

Within this analysis, the questions and subject areas asked of the participants in the semi-structured interview were taken into consideration when forming analytical categories. In practical terms, these were assigned as top-level coding notes within NVivo. Broadly, the categories sought concerned any difference that the participant may mention between the two experiences of playing the game.

However, as also noted by Schmidt (2004), in an open semi-structured interview context, participants do not always provide answers in the direct context of the question that was asked. Instead, “the aspects that the interviewer introduces are frequently only taken up later in more explicit form, or else they turn up (again) in response to a different question within a quite different context” (p.
255). Therefore, as suggested by Bazeley (2007), building up familiarity with the data through coding is important in identifying key themes, which may be refined as the coding process progresses.

As a first step, the usability of these top-level analytical categories was tested and evaluated upon a small number of interviews. Once this was satisfied, open, indigenous coding (i.e. those derived directly from the data) was undertaken, while keeping the category nodes in mind, and creating variants were applicable, while also being open to any other unexpected themes that may arise from the data. The formation of these nodes were the result of “intensive and repeated reading of the material”, as suggested by Schmidt (2004, p. 254). Where appropriate, the codes were analysed for patterns under which they could be concatenated; this is so that the cases could be compared with regard to dominant tendencies, which was particularly of interest in this analysis, as it is the within-participants differences between conditions that are to be explored.

4.10.2 Open Coding Results

The data was subsequently coded and counted (Table 4-12):

<table>
<thead>
<tr>
<th>Code</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closer sense of identification with or ownership of player character using HMD</td>
<td>42</td>
</tr>
<tr>
<td>Greater sense of “being there” using HMD</td>
<td>39</td>
</tr>
<tr>
<td>Greater reported “immersion” using HMD</td>
<td>29</td>
</tr>
<tr>
<td>Greater sense of emotional or diegetic absorption using HMD</td>
<td>22</td>
</tr>
<tr>
<td>Greater feelings of guilt using HMD</td>
<td>11</td>
</tr>
<tr>
<td>Explicit emotional or diegetic indifference using HMD</td>
<td>2</td>
</tr>
<tr>
<td>Difference in awareness of interface</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 4-12 Table Showing Codings for Study 2B

Efforts were made to identify diegetic immersion (coded here as ‘absorption’) from spatial presence (coded here as ‘being there’). Where this could not be distinguished, the term was left as “immersion”.

In the following section, some of the coding decisions are explained with examples, and participants are identified in parentheses after any quotes by their ID number and their original condition prior to playing the “HMD Display and Head Tracking” condition too.
4.10.3 Exploration of Codes

a. **Closer sense of identification with or ownership of player character using HMD**

During the semi-structured interview, participants were explicitly asked whether they felt there was any difference from their primary condition in terms of how far they felt they themselves were climbing, or if they were very consciously controlling a character. Interviews were thus coded according to these answers, and according to any other indication given by the participants during the interview about their comparative sense of identification between conditions.

For example, one participant stated, “Both times it felt like controlling a character, but with the Oculus, it felt more close.” (Participant 029, “Fixed Display and Analogue Stick”-only), and similarly, “I felt like I more was the character… with the “Fixed Display and Analogue Stick”, it felt like controlling some hands” (Participant 025, “Fixed Display and Analogue Stick”).

Aside from feelings of identification, participants also reported a greater sense of ownership of the virtual hands when using the *HMD and Head Tracking*. For example, one participant stated, “It definitely felt like I was [the character]… because at the start, I felt really strange, and then once you got into it, it proper felt like I was actually doing it with my hands” (Participant 036, “Fixed Display and Analogue Stick”).

When asked whether they found themselves more emotionally invested in the climbing partner when playing using the *HMD and Head Tracking* rather than their original condition, one participant replied, “I wasn’t so concerned about her, but more concerned about myself” (Participant 095, “Fixed Display and Analogue Stick”). Therefore, this once again implies a greater sense of closeness and identification and ownership of the player character when playing using the *HMD and Head Tracking*.

b. **Greater sense of “being there” using HMD**

During the semi-structured interview, many participants, without being asked, volunteered conversation about how they felt a strong sense of being in the environment of the game when playing using the *HMD and Head Tracking*, rather than in their original condition. Interviews were thus coded according to any such indication given by the participants during the interview about their comparative sense of “being there” in the environment between conditions.

For example, a typical response is exemplified by one participant’s statement that “Using Oculus Rift is drastically different. You actually feel like you’re in it” (Participant 078, “Fixed Display and Analogue Stick”), often, for participants, this resulted in a vertiginous feeling:

> “Looking down gave me a bit of vertigo. I felt like I was really there! I was that high.” (Participant 074, “Fixed Display and Analogue Stick”)
Indeed, some participants attributed this directly to the lack of being able to see their real-world surroundings, and having their entire vision encompassed by the HMD: “With the monitor, you can see the outside… but with the Oculus Rift, you’re literally in the game, and you can focus on it.” (Participant 032, “Fixed Display and Analogue Stick”-only)

The result, for participants, was that this also meant a greater ‘attachment’ for some participants. One reported feeling more ‘entwined’:

“I was slightly more attached – it’s like you’re… it’s literally closer to you. There were moments of feeling a bit more… more entwined, if you will.” (Participant 033, “Fixed Display and Analogue Stick”)

For others, this entwinement was particularly pronounced, with one participant reporting, “You do have moments where you stop realising you’re in a game” (Participant 064, “Fixed Display and Head Tracking”). This also had an effect, for some participants, on how they related to the climbing partner character, stating that “She did feel a bit more real, you’re a bit more in there – there’s something a bit more there when they’re talking to you” (Participant 076, “Fixed Display and Analogue Stick”).

c. **Greater sense of reported “immersion” using HMD**

During the semi-structured interview, many participants, when asked to reflect on the differences between the two conditions they had played, reported stronger feelings of ‘being immersed, or finding the experience ‘more immersive’ when using the HMD and Head Tracking. Often, it was difficult to ascertain whether participants were referring primarily to diegetic immersion (or ‘absorption’) or spatial presence (or ‘being there’), thus the word was left as-is, and is assumed to be a mixture of both. Interviews were thus coded according to any such indication given by the participants during the interview about their comparative sense of reported “immersion” in the environment between conditions. Examples of such uses are given below:

“I always like listening to story, so I’d listen to what the climbing partner was saying, and at times I’d move the camera to look at her. I think that kind of thing always makes me more immersed.” (Participant 033, “Fixed Display and Analogue Stick”)

“The second time it was definitely more immersive, I didn’t feel as much of an objective to the game… and when it came to the decision at the end, I feel like it took me longer to decide what to do.” (Participant 035, “Fixed Display and Analogue Stick”)

“I felt just as invested, but perhaps even more immersed.” (Participant 081, “Fixed Display and Analogue Stick”)

“More immersed with Oculus Rift on. I know it’s a game in my head, I know I’m in a game, but there were moments where my stomach lurched. It felt quite realistic!” (Participant 089, “Fixed Display and Head Tracking”)

d. Greater sense of emotional or diegetic absorption using HMD

During the semi-structured interview, many participants, when asked to reflect on the differences between the two conditions they had played, reported stronger feelings of emotional absorption, or absorption in the story, using the HMD. Interviews were thus coded according to any such indication given by the participants during the interview about their comparative sense of reported emotional or diegetic absorption in the environment between conditions. For example, participants reported feeling “More involved” when playing with the HMD and Head Tracking, rather than in their original condition.

Diegetic or emotional absorption were noted in a variety of ways by participants, whether it was general feelings of being ‘into it’, or ‘more connected’:

“I was really into it, and really thought it was me climbing the rock in the second one. The first one I knew wasn’t that real, so I wasn’t that into it, and the second one, I was into it.” (Participant 055, “Fixed Display and Head Tracking”)

“There was a clear difference between using the headset and looking at the monitor. I did feel more connected with the game.” (Participant 086, “Fixed Display and Analogue Stick”)

Or whether it was an explicit acknowledgement of thinking ‘more emotionally’ when using the HMD and Head Tracking:

“The first time, it felt more functional and in the second instance, I was thinking more emotionally” (Participant 092, “Fixed Display and Analogue Stick”)

Another participant relayed their closer involvement with the climbing partner when playing using the HMD and Head Tracking, and how this caused them to be more emotionally invested in the ‘cut the rope’ sequence, saying, “The second time, I actually felt like she [climbing partner] was actually with me. Because she was actually up there, and you look up and see her, and then I felt awful cutting her. I just didn’t know what to do! Do I cut it?” (Participant 036, “Fixed Display and Analogue Stick”)

Indeed, other participants too expressed this closer attachment to the climbing partner specifically when playing using the HMD and Head Tracking, with another saying, “I was more connected to
the [climbing partner] in the Oculus Rift, not the first time.” (Participant 037, “Fixed Display and Analogue Stick”)

A few participants specifically speculated that if they had experienced the HMD and Head Tracking version the first time, they would have felt “more strongly” and would have answered the post-exposure questionnaire differently:

“The first time round, I felt quite immersed. I think it I had played it first time round with the Oculus Rift on, it would have been a bit more intense and I would have felt more strongly. The first time round I felt more detached.” (Participant 048, “Fixed Display and Head Tracking”)

“All the answers would be moved up in the scale if I were to do the questions again – everything, immersion, visuals, emotions.” (Participant 091, “Fixed Display and Head Tracking”)

e. Greater feelings of guilt using HMD

Related to stronger sense of emotional attachment, participants also reported greater feelings of guilt when cutting the rope using the HMD and Head Tracking, versus their original condition. Interviews were thus coded according to any such indication given by the participants during the interview about their comparative sense of reported guilt between conditions. While one participant explicitly offered that they would have changed their answer on the post-exposure questionnaire if they were to complete this a second time, saying, “Now I’ve completed it [again], I’d change my answer on the questionnaire – when it asks if you felt like it was your fault, I’d say yes, it was my fault.” (Participant 030), other participants simply reported ‘feeling bad’, such as the following examples:

“The second time, I felt proper bad. It was more emotionally affecting.”

(Participant 039)

“Part of me hoped there was going to be another way… I felt bad.”

(Participant 044)

f. Explicit emotional or diegetic indifference using HMD

During the semi-structured interview, while many participants, as explored above, reported greater feelings of identification, absorption, being there, and emotional attachment. However, during the coding process it was found that a small number of participants (2) explicitly expressed that they felt no greater sense of emotional involvement between the two conditions they had played.

“The controls felt a lot more natural [in HMD and Head Tracking version]. The gameplay felt quite immersive even with looking at the moni-
tor because your motions translate onto the screen. I'm not sure about the story part of it, it didn’t feel that engaging.” (Participant 022, “Fixed Display and Analogue Stick”)

Thus, while for this participant, they felt their experience was ‘more natural’, though they had still felt ‘immersed’ in their original condition. However, these ‘more natural’ controls did not translate into greater engagement with the story for this participant, though (as previously acknowledged), this may have been due to a repeated-exposure issue.

Similarly, another participant spoke of their feelings of ‘engagement’ when playing using HMD and Head Tracking, saying, “With Oculus Rift it was definitely more... engaging. More sort of personal. I couldn’t see anything except what was going on [in the game].” (Participant 043, “Fixed Display and Analogue Stick”). However, when asked about their feelings about the climbing partner, they responded:

Participant: No, she was a bit irritating.
Interviewer: What about when you played a second time, [using the Oculus Rift?]
Participant: No, I wanted to cut the rope quicker and kill her.

Therefore, this participant displayed an extreme attitude towards the climbing partner, and did not feel more attached to her when playing using the HMD and Head Tracking, unlike other participants.

g. Difference in awareness of interface

During the semi-structured interview, participants also volunteered discussion about their thoughts on how it felt to use the interface in general, removed from the experiential effects as explored previously. Interviews were thus coded according to this discussion, and according to any other indication given by the participants during the interview about their comparative feelings about the interface between conditions.

For the following participants, these comments followed how far they felt like they were consciously thinking about using the interface:

“With the Oculus Rift on, I much preferred that, because I stopped thinking about the idea of ‘using’ it, and it just became much more natural.” (Participant 053, “Fixed Display and Head Tracking”)

Similarly, for another participant, this meant they felt more ‘connected’: “I was thinking about movement rather than physically holding on the same way, so it felt more connected.” (Participant 087, “Fixed Display and Analogue Stick”-only), and this experience was repeated for the following participants:
“I was paying more attention to everything around me, not on the act of climbing in the OR.” (Participant 056, “Fixed Display and Head Tracking”)

“There was one point where I looked around because I just wanted to look around... on the monitor, you're solely focused on the aim of the game. On the Oculus Rift, you're more enjoying what's around you.” (Participant 025, “Fixed Display and Analogue Stick”)

Finally, for just one participant, they felt that their original condition, “Fixed Display and Head Tracking”, was ‘more immersive’ than the “HMD and Head Tracking” condition, stating that “the Oculus Rift didn't draw me in as much, the headset felt very immersive” (Participant 067, “Fixed Display and Head Tracking”).
4.11 DISCUSSION OF STUDY 2A AND 2B

This two-part empirical study explored the player’s experience of aesthetic distance from a morally significant videogame in the context of enhancing interface mimesis. It examined how this mimesis, together with a player’s Trait Empathy and Trait Aesthetic Attitude, affects their sense of aesthetic distance from a morally significant videogame. The quantitative results (Section 4.9 and 4.10) are summarised, triangulated with the qualitative data (Section 4.9.6 and 4.10.3), and are subsequently discussed together in this section. Contributions from the results of Study 1 (Section 3.10) are also discussed and integrated here where appropriate.

In this study, aesthetic distance was once again operationalized through its resultant experiential effects: that is the moral and aesthetic judgements the player makes of the game (Section 3.2.1). This is an example of the “theoretical reductionism” that Cupchik (1986) notes should be acknowledged regarding the constructivist realist framework through which this research takes place. That is, “the explanation of processes at one level of explanation in terms of processes at a more fundamental level” (p. 363). Therefore, having analysed the resulting quantitative and qualitative data, this section discusses and synthesises these findings through this lens of constructivist realism.

In beginning this discussion however, the limitations of the study are discussed, in order to contextualise these findings.

4.11.1 Methodological Limitations

A number of methodological limitations were identified, which does not affect the reliability of the study, but may be improved for better validity (applicability to the general population) in designing future work. These were as follows:

Steps were taken to mitigate the gender balance issue from Study 1 (Chapter 3.10.5), and was slightly improved for Study 2 (n=95, 61 male, 32 female, 2 non-binary), though did not achieve gender parity. Steps were also taken to account for a wider range of game-playing habits, with 57.9% reporting playing a digital game (of any format) ‘every day’, and 8.4% reported playing ‘less than once a month’. The population also remained skewed towards higher levels of education, with 75.8% of participants reportedly undertaking an undergraduate degree or higher.

It was suggested that, although the goal of the qualitative, semi-structured interview was to gather data regarding the ludic-aesthetic attitude, and the factors contributing to this, it may be helpful, for future work, to also add a quantitative questionnaire item exploring this ‘just a game’ attitude, in the style of Hartmann et al. (2010). In this case, this may have contributed to the quantitative analysis, and may have better explained those null hypotheses that could not be refuted at this stage.

Furthermore, Study 2B was not a true experiment, as the order of exposure was not randomized. However, this yielded valuable qualitative interview data. It is suggested that in order to further
support these results, a true within-subjects study should be performed, in which the post-exposure questionnaire should be completed after each treatment condition.

Participant feedback for Study 1 had noted that there were too many questionnaire items, which could have contributed to respondent fatigue (Ben-Nun, 2008) and thus affected the responses. Therefore, the number of items was reduced for Study 2A, though this potentially contributed to a loss of precision in the data. For example, the shortened 8-item Empathy Quotient (EQ-8) showed poor reliability, with a Cronbach’s score of $\alpha = 0.56$, as opposed to the longer Empathy Quotient (EQ-S) in Study 1, which generated a Cronbach’s score of $\alpha = 0.86$. Although, as with all empirical work, there were limitations to the results, while these caveats have to be noted, it did find useful reliable and valid results. Standard tests of reliability, such as Cronbach’s alphas (Section 4.9.2) were performed, and yielded satisfactory results overall.

Thus, this, when combined with the results of the previous study and prior work, forms a consistent picture which has contributed to the current understanding of videogames.

4.11.2 Sense of (Physical) Embodiment

Altering the designed interface mimesis was intended to operationalize points along the increasing spectrum of progressive embodiment (Section 1.3.3.3). It was expected that as more mimetic modalities were added across conditions, going from “Fixed Display and Analogue Stick”, to “Fixed Display and Head Tracking”, to “HMD and Head Tracking”, a player’s perceived sense of controller naturalness (Perceived Controller Naturalness) would increase, as would their self-location (SP: Self-Location), agency (SP: Agency), and body ownership (Body Ownership).

However, these experiential measures were only partially manipulated in the order expected (between “Fixed Display and Analogue Stick” and “HMD and Head Tracking”), indicating that the goals of interface mimesis were not successfully enhanced across these conditions. This is suggested to be due to a sense of incongruence; a “dissociation of sensory experience” associated with such incongruence (Gregersen & Grodal, 2009, p. 76) (Section 1.3.3.8), in the “Fixed Display and Head Tracking” condition. This idea is further corroborated by findings from the follow-up interviews. Here, some participants who played the game using the “Fixed Display and Head Tracking” stated that they would have preferred to use the (less mimetic) analogue stick to control the camera, as the head tracking, together with the fixed display felt “really limited” (Section 4.9.6.2.1c).

It was found from the qualitative analysis that the most common reflection made by participants regarding their feelings about the interfaces used was the significance of head tracking to their diegetic experience. The ability to, for example, ‘look down to see the climbing partner dangling’ appeared to be an important contribution. However, the quantitative data suggests that it is head tracking combined with the HMD, and not combined with the fixed display, that yielded such feelings of ‘being there’. It is suggested that within the “Fixed Display and Head Tracking” condition, the head tracking had a range of motion that felt artificially limiting.
Although Skalski et al. (2011) state that the nature of perceived controller naturalness is such that variation should occur “depending on the extent to which an interface is ‘mapped’ to real-life or in-game actions,” they also concede “that some users may be conditioned through repeated use over time to find certain interfaces highly natural, like keyboards and gamepads”; this effect is suggested to have resulted in the Low Interface Mimesis conditions in the previous study (Chapter 3) to elicit greater Perceived Controller Naturalness than the High Interface Mimesis condition.

Thus, the results show that “the extent to which an interface is ‘mapped’ to real-life actions” is not a complete picture of the mechanism through which a player’s perceived controller naturalness increases. Indeed, such a concept does not consider the suggestion by Gregersen & Grodal (2009) that a “less is more” strategy may be useful for creating a sense of spatial presence and body ownership, as a sense of incongruence may be otherwise elicited. As previously suggested, (Section 1.3.3.8), where this incongruence applies, increasing interface mimesis may not necessarily increase spatial presence along a linear spectrum, and this was supported by the pattern in these findings.

![Figure 4-21: Means plots for SPSL, SPA, PCN and Body Ownership](image)
Instead, the model may be akin to that of Mori’s (1970) uncanny valley as proposed previously (Figure 4-22) (Section 1.3.3.8), and, as with the results of Study 1 (Section 3.10.1), it is suggested that the results of Study 2A (Figure 4-21) (Section 4.9) support such a conceptualisation.

Further to this, it was found that Spatial Presence: Self-Location, Spatial Presence: Agency, and Body Ownership all correlated strongly with one another; these measures are in line with the definition of Sense of Embodiment by Kilteni et al. (2012) (also referred to as physical embodiment, Section 1.3.3.2.1), which proposes that this is a construct comprising of the three subcomponents: sense of self-location, sense of agency, and sense of body ownership. Therefore, it is asserted (due to the statistically significant differences between all of these scales) that the “Fixed Display and Head Tracking” condition afforded the lowest Sense of Embodiment across the conditions, consistent with the shape of the means plots (Section 4.9.3.1) (Figure 4-21).

Furthermore, Perceived Controller Naturalness is also suggested to be a subcomponent of Sense of Embodiment, and this was also evident in the statistically significant differences across Perceived Controller Naturalness in the study. It is thus also proposed that the inclusion of Perceived Controller Naturalness to the consideration of Sense of Embodiment may account for any feelings of incongruence for the player, as described above, but further work would be needed to explore this fully.

Therefore, in this study, there were successful differences in Sense of Embodiment (to be termed embodiment) across these measures, though not in the order expected, due to the apparent incongruence of the “Fixed Display and Head Tracking” condition.

Within this context, there was a successful increase in Sense of Embodiment between the “Fixed Display and Analogue Stick” condition and “HMD and Head Tracking” condition, as well as be-
between the “Fixed Display and Head Tracking” condition and “HMD and Head Tracking” condition. Furthermore, these findings are further supported by the results of Study 2B, in which, the overwhelming reported difference between the conditions was that participants felt a greater sense of ownership or identification with the player character (their avatar) and felt a greater sense of being there (spatial presence), both components indicating Sense of Embodiment.

It is therefore proposed that for future work, the paradigm of progressive embodiment may be better understood as “the steadily advancing immersion and coupling of the body to advanced communication interfaces” (Biocca, 1997), while a sense of embodiment is successfully elicited.

4.11.3 Moral Judgement

Having established increasing Time Taken to Cut the Rope as an indicator of acting virtuously (through positive correlation with subsequent increased feelings of guilt), it was found that this varied significantly across conditions, with participants in the “HMD and Head Tracking” condition taking longer to cut the rope than those in the “Fixed Display and Head Tracking” condition, in which participants took longer to cut the rope than in the “Fixed Display and Analogue Stick” condition. As Sense of Embodiment was lowest for the “Fixed Display and Head Tracking” condition, it was expected that this also would correlate to a lower Time Taken to Cut the Rope for this condition. However, it appears that in this case, the addition of head tracking alone made the difference to the participants, as the statistically significant increase in Time Taken to Cut the Rope occurred between “Fixed Display and Analogue Stick” and “Fixed Display and Head Tracking”, as well as between “Fixed Display and Analogue Stick” and “HMD and Head Tracking”.

Therefore, participants using an interface designed to be more mimetic (i.e. the addition of head tracking to the Fixed Display, and then the addition of the HMD to the Fixed Display and Head Tracking) appeared to act more virtuously, taking longer to cut the rope. Indeed, the post-exposure interview revealed that for a number of participants, this decision-making process was very explicitly a moral one.

While interface mimesis condition alone did not significantly affect feelings of Guilt, when condition was regressed against spatial presence: self-location (thus accounting for the unexpected variation in one of the Sense of Embodiment subcomponents), and against Trait Empathy, these were together able to significantly predict feelings of Guilt. Therefore, while condition alone accounted for differences in how long it took players to cut the rope, it was Trait Empathy, along with Spatial Presence (Self-Location and Agency) and condition, which accounted for the Guilt that players felt doing so. More empathetic players felt guiltier using interfaces which increased their feeling of ‘being there’.

Therefore, it is both interface mimesis (particularly when feelings of ‘being there’ are elicited) and Trait Empathy that contributed to players acting virtuously within a game. This is in line with findings by Hartmann et al. (2010), who found that unjustified virtual violence elicited stronger feelings
of guilt in players than justified virtual violence, especially when those players were more empathetic.

While interface condition alone did not result in differences in feelings of guilt in the between-participants Study 2A, by contrast, the within-participants Study 2B found that players reported feeling greater emotional or diegetic absorption, and also, to a smaller extent, greater guilt, as self-reported in the follow-up interview, when playing in the “HMD and Head Tracking” condition; that is, when they were experiencing a more mimetic experience over their original conditions. It is suggested, however, that feelings of guilt were not successfully manipulated over all the participants due to the limitations of repeated-exposures. However, further study is required to explore this fully.

Overall, these findings suggest that players were more likely to be more emotionally engaged in the moral decision-making process when using a more mimetic interface, particularly when their Sense of Embodiment was successfully manipulated. Therefore, as aesthetic distance defines the extent to which a player is able to critically frame their experience as a game or artwork, as opposed to a ‘real’ experience, this altered decision-making is, indicative of the decreasing aesthetic distance the player feels from the game. It is suggested that they do not engage with the “Cut the Rope” decision as a practical one, but instead as an emotional one.

As established earlier (Section 1.3.4.2), moral and aesthetic judgements are connected, and thus, these findings were echoed by the aesthetic judgements made by the participants.

4.11.4 Aesthetic Judgement

Statistically significant differences were found across interface mimesis conditions for focus on thoughts vs. feelings (AS8), consistent with the prediction game experience being a more emotional one for participants in the “HMD and Head Tracking” condition, rather than an intellectual one, as it was for those who played the game in the “Fixed Display and Analogue Stick” condition only. Consistent with the theory that aesthetic distance removes an artwork from ‘everyday reality’ (Section 1.3.1), this indicates reduced aesthetic distance for players using a more mimetic interface, as it is posited that participants were, more likely to treat the morally significant scenario as if it were happening in real life (Section 2.2.2), or happening to a real character, consistent with identification, rather than alienation (Section 2.5.1).

Furthermore, these findings were further corroborated through analysis of the other aesthetic experience questionnaire items: participants who played the game in the “HMD and Head Tracking” condition were less detached (AS1), felt more empathy with the player character’s actions (AS3), felt more tense (AS7) than those in the “Fixed Display and Analogue Stick” condition. Furthermore, participants in the “HMD and Head Tracking” condition experienced greater stylistic beauty (AS4) than those in the “Fixed Display and Head Tracking” condition.
While there were also other statistically significant differences across these Aesthetic Experiences for the “Fixed Display and Head Tracking” condition, these did not follow a consistent pattern of scoring higher or lower in relation to the other conditions. As noted (Section 4.11.2), this can be attributed to the incongruence and subsequent lack of Perceived Controller Naturalness (as well as Body Ownership and Spatial Presence) felt by participants who played in the “Fixed Display and Head Tracking” condition. However, once Perceived Controller Naturalness was regressed against the aesthetic experience scores in addition to just the interface mimesis condition, it was found to be a predictor of the extent to which being aware of the game as fiction made a difference to players, and, additionally, a predictor of how plausible players found the game to be. Indeed, strong, significant correlations were found between Sense of Embodiment subcomponents, and these measures of aesthetic experience (Section 4.9.5).

Similarly, statistically significant differences were found across interface mimesis conditions for Sensory and Imaginative Immersion, and Flow. Although the order in which interface mimesis was successfully enhanced was unexpected, it was found that as Sense of Embodiment increased (Section 4.11.2) so too did Sensory and Imaginative Immersion, and Flow. As explored (Section 4.6.8), Sensory and Imaginative Immersion is an additional operationalized measure for spatial presence (self-location and agency) and diegetic involvement, or absorption. Therefore, as the experiential effects of interface mimesis increased (in this case, between the “Fixed Display and Analogue Stick” condition, and the “HMD and Head Tracking” condition), not only did this mean an increase in spatial presence, but also diegetic involvement. This means that as Sense of Embodiment subcomponents increased (as is the goal of progressive embodiment, Section 1.3.3.3, 4.11.2) so participants also felt more engaged, more empathy with the climbing partner, more empathy with the player character’s actions, greater experience of stylistic beauty, and more focus on the events in the game, rather than the graphics. They also found the game to be more plausible, felt greater tension, found the experience to be a more emotional one rather than an intellectual one, found that the game was fiction made little difference to them. All of these measures are therefore consistent with decreasing aesthetic distance as Sense of Embodiment increased.

However, in addition to this, increasing Sense of Embodiment also meant an increase in the extent to which players found the experience to be more fun, rather than upsetting. It was expected that as aesthetic distance decreased, the experience would remind them more of real life, thus would result in a more upsetting experience. However, such a result is consistent with findings about reading literature, by Koopman et al. (2011), who found in their study of fictional stories about rape that the more absorbed readers were in the narratives, the greater their experiences of unsettled emotion; at the same time, absorption in the narrative diminished any negative appraisal of the text. Thus, readers in the study by Koopman et al. (2011), despite feeling more negative emotions, enjoyed the fact that these emotions were elicited. It is suggested that this, therefore, also explains
player’s experience of fun in these results. Furthermore, it is proposed that these findings lend support to the Waltonian (1990) theory that emotions elicited by our engagement with representational art are fictional (Section 4.2.3). The ways in which these findings support this concept from a double awareness are discussed further (Section 4.11.5.1, 0).

Additionally, through analysis of the post-exposure interviews, it was found that variation in experiences of plausibility of the situation may also have been due to individual interpretations of the question (i.e. some participants interpreted this as a question about how plausible it was that they themselves could possibly end up rock climbing in real life) (Section 4.9.6.2.3.g). Similarly, disengagement with the climbing partner may have been due to limitations in the game used, in that there was not enough time to build up a significant emotional investment in the character. However, participants also varied in how far they indicated their tendency to become emotionally attached to characters in videogames, as well as their tendency for absorption in game narratives (Section 4.9.6.2.4).

Indeed, Guadagno & Blascovich (2007) suggest that the perceived behavioural realism and social presence of computer-controlled agents, or virtual humans (in this case, the climbing partner) increases along with spatial presence (which, in their paper, they term immersion, but define as “when the virtual environment perceptually envelopes an individual such that the individual perceives him-or-herself to be interacting within that virtual environment”). This is therefore consistent with the quantitative findings in this study.

Overall, these findings suggest that, over a number of aspects of the aesthetic experience of gameplay, players felt a closer sense of identification with the characters and situations in the game when using a more mimetic interface, particularly when their Sense of Embodiment was increased successfully. Therefore, these findings are suggested to be indicative of a player’s reduced sense of aesthetic distance from a game as interface mimesis is successfully increased.

4.11.5 Players’ Aesthetic Attitude

The operationalized measures of player’s disposition towards the game were Trait Empathy and Trait Aesthetic Attitude, though there were limited findings related to the contribution of these measures to the player’s experience. Only Trait Empathy was shown to contribute to increased Guilt as (congruous) interface mimesis increased, and there were weak correlations between Trait Aesthetic Attitude and limited Aesthetic Experience measures (Section 4.9.5). Though the quantitative data offers only limited insight into the player’s attitudes regarding their experience as interface mimesis increased, the qualitative interview analysis instead begins to illuminate this. It captures not only reactions to the ‘Cut the Rope’ sequence, which offer insights into player attitude for that particular sequence, but also, into players’ general attitudes towards playing games, particularly those featuring human narratives.
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### Codes from Study 2A Qualitative Analysis

<table>
<thead>
<tr>
<th>Attitudes towards the “Cut the Rope” sequence</th>
<th>Attitudes towards playing games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curiosity or exploration of game possibilities</td>
<td>Focus on exploring possibilities and outcomes</td>
</tr>
<tr>
<td>Double awareness</td>
<td>Double awareness and duality</td>
</tr>
<tr>
<td>Viewing as moral decision</td>
<td>Acting according to own real-life values</td>
</tr>
<tr>
<td>Feelings of guilt</td>
<td></td>
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<tr>
<td>Emotional response</td>
<td>Tendency for absorption or investment</td>
</tr>
<tr>
<td>Amusement or detachment</td>
<td>Tendency for detachment</td>
</tr>
<tr>
<td></td>
<td>Focus on fulfilling objectives</td>
</tr>
<tr>
<td></td>
<td>Focus on escapism or role-play</td>
</tr>
</tbody>
</table>

### Table 4-13: Codes from Study 2A Qualitative Analysis

Indeed, it is possible to link the coding categories that arose from discussion of players’ attitudes towards the ‘Cut the Rope’ sequence with those that arose from discussion of players’ attitudes towards playing games in general (Table 4-13).

While Dow, MacIntyre, & Mateas (2008) offer an analysis of play styles in immersive and interactive story, these categories offer an insight into the types of attitudes towards gameplay that players may adopt while reflecting upon the experience of a morally significant game. It should be noted that these are not necessarily discrete categories, and indeed, the “double awareness” categories denote the blending of multiple conflicting attitudes.

The “‘just a game’ attitude”, as denoted in the previous study (Section 3), was also prevalent, and appeared to be consciously used by players as a strategy to detach themselves from the experience, to varying degrees of reported success (Section 4.9.6.2.5). The “‘just a game’ attitude” appeared to be linked to double awareness or duality (Section 3.10.4) – often used as an apparently mediating (or distancing) statement between reflecting on different attitudes towards playing the morally significant game. For example:
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“I sort of remembered that it was a game, but you’re looking down and you can see her dangling, and I was thinking, ‘Is there really no alternative to doing this?’” (Participant 051, “HMD and Head Tracking” condition)

Although the qualitative data showed participants to be very positive about the mimetic nature of the Razer Hydra motion controller for climbing (Section 4.9.6.2.1b), with many participants feeling as though the virtual hands were an extension of their own (Section 4.9.6.2.2c) it also highlighted issues of incongruous or incomplete embodiment (Section 4.9.6.2.1c). Indeed, it appeared that often the experiential effects of these incongruities were further feelings of duality, such as:

“It looked like I was there, but it didn't feel like it. Because I was sat down, and I wasn't climbing. Even though it didn't look realistic, it was real enough, you know?” (Participant 026, “HMD and Head Tracking” condition)

However, feelings of duality or double awareness were also the result of even successful manipulation of feelings of being there, as players reported remaining aware, to varying degrees, that the experience “wasn’t real” or “was just a game”. This double awareness also presents itself with respect to the participants’ identification with, or ownership of, the player character (Section 4.9.6.2.2a). While the quantitative data shows differences across interface mimesis conditions for how far players empathised with the player character’s actions and motivations (AS3), the qualitative data illustrates the extent to which the player’s identification with their character was not binary, but instead, appeared to exhibit duality (Section 4.9.6.2.2b). Thus, participants reported that they did not feel solely as if they were controlling a character, or solely as if they were the one climbing themselves, but somewhere in-between.

Therefore, it is proposed that the findings here are in line with the conception of Double Awareness as suggested previously (Section 2.4.2), and that is consistent with the framework of Waltonian ideas of make-believe in representational art (Section 4.2.3).

Thus, such a Waltonian conception of participation in representational arts, applied to videogames, helps to elucidate these findings in Study 2A and 2B. While it was found that interface mimesis, when successfully supported by underlying Sense of Embodiment, narrowed the aesthetic distance between a player and a game, the qualitative results suggest that this still occurs within the framework of Waltonian make-believe. It is further proposed that this may have contributed to the failure to reject some of the null hypotheses (Section 4.9.4), since, it is possible that this double awareness was more prevalent in player’s recollection of their experiences when answering the post-exposure questionnaire. However, this would need to be verified through future work.
4.11.5.1 **The Ludic-Aesthetic Attitude**

This potentially indicates a contradictory account of the player’s experience with a morally significant game, and also one that perhaps undermines the suggestion by Grau (2003) that “the more intensely a participant is involved, interactively and emotionally, in a virtual reality, the less the computer-generated world appears as a construction: Rather, it is construed as personal experience.” However, if a player is aware that they are playing a game, then it is arguable that they are not construing this as personal experience. Furthermore, his reflections on the political ramifications of the “dissolution of the interface” are thrown into question. His suggestion that participants in such a virtual reality system (i.e. the ultimate realization of *sense of embodiment*) are unable to maintain any distance from what they are experiencing is only partially supported by this study, which found decreased aesthetic distance (and therefore, all that entails) as spatial presence increases. However, it is problematized by participants having a sense of double awareness, of feeling fully spatially present in a system, and yet, still being aware that what they are playing is just a game. Such an attitude is, according to Kirkpatrick, widespread:

“Players do not approach games with anything like the ‘willing suspension of disbelief’ that applies to theatre-goers or even modern film audiences. Their guiding intention is to understand how the game works, perhaps even to take it apart (in both senses of this phrase), and this is informed by their awareness that it will pretend or purport to be one thing (its fiction, if you will), while actually holding out affordances and sensations that are discrepant with this. Herein lies the cynicism of the gamer and it is here too that we find the kind of ‘fun’ that is characteristic of video gameplay” (Kirkpatrick, 2011, pp. 41–42)

Kirkpatrick defines this as the *lusory* attitude, whose specific definition, originating with Suits (2005) was rejected earlier (Section 4.2.1) as not being applicable to videogames. The reason for rejection was Suits’ definition focuses on a player’s seriousness in play; of being *unwilling* to disregard a more efficient means of reaching their goal in favour of respecting a game’s rules. However, in normal videogame play, in which the rules are enforced by the computational system, this does not apply.

Therefore, in order to capture the attitude of “it’s just a game” observed throughout the studies in this research programme, which also supports Kirkpatrick’s statement, it is proposed that an alternate conception of a *ludic-aesthetic attitude* is instead more relevant here, referring specifically to an attitude of Waltonian make-believe, as it applies to videogames. This supports Flanagan’s statement that for Huizinga, “play activities tend not to be serious in and of themselves, but shape culture nonetheless through ritual and social custom” (2009, p. 5).
Of course, such a *ludic-aesthetic attitude* and awareness of ‘it’s just a game’ is part of the ‘disposition of the player’, which, together with the formal, stylistic qualities of the game, give rise to the aesthetic distance experienced between the player and the game.

However, despite a *ludic-aesthetic attitude*, this study (Chapter 4) shows that congruously increasing interface mimesis yields the experiential effects of reduced aesthetic distance. The time taken for players to make their decision was also increased as interface mimesis was enhanced, and they reported altered feelings of aesthetic measures, such as how engaged vs. detached they felt, how far they identified with their player character, feelings of plausibility, and feelings of tension. They also reported differences in whether they focused on feelings rather than thoughts, and whether knowing that the game is fiction made a difference to their feelings. *Trait Empathy* contributed to player’s feelings of *Guilt* as their embodiment increased.

It is prudent to ask, then, how players may simultaneously exist in both states, to have increased interface mimesis narrow the aesthetic distance between themselves and the game, resulting in higher emotional, rather than intellectual involvement, while still being aware that they are still playing a game.

It is proposed that, as a first step, framing videogames as Waltonian fictions provides the answer. There are limitations with this approach as described previously (Section 2.5.2), however, it is proposed that the Waltonian model explains how player experience in morally significant games functions, through the lens of increasing mimesis and subsequent narrowing of aesthetic distance, while framed by a number of different factors, from *ludic-aesthetic attitude*, or *Trait Empathy*, or their mental model (Section 1.3.3.6, 1.3.3.7, 2.3.1.1) of the game. In this way, it is further proposed that the model of aesthetic distance in videogames is essentially a nuanced conception of the workings of the magic circle (Section 4.2.2). Both such propositions are expounded in this conclusion, by synthesising the concepts discussed (Chapter 2), with the empirical findings (Chapter 3, 4).

### 4.12 Interface Mimesis as Make-Believe

Walton, in his seminal book *Mimesis as Make-Believe* proposed a wide-ranging theory of participation in the representational arts, and it has been proposed (Section 4.2.3) that this applies also to videogames. However, prior to this research programme, such a concept had not been empirically explored, nor had the concept of aesthetic distance in videogames been framed through the lens of Walton’s theory.

This conception of “The appreciator’s perspective [as] a dual one” is paramount in understanding what happens as aesthetic distance in videogames narrows through increasing *Sense of Embodiment*, even though the player may still consider the experience to be “just a game”. This claim is supported by the qualitative data indicating the players’ double awareness, or duality, as they play a morally significant videogame.
Walton makes the case that it is “only fictional that we feel sorrow or terror” when we purport to find something sad or scary in representational fiction (Section 4.2.3), which is why we enjoy engaging with it, no matter how much we get “caught up” or “emotionally involved” in the fiction. Of course, Walton does note cases where this may remind us of real life, and spill over into “actual” emotions (Section 4.2.3). Crucially, for Walton, the fact that it is still participation is what “remains fundamental” (p. 274). This is the reason why proclaiming our emotions, when engaging with works of representational fiction, to also be fictional does not necessarily mean to denigrate their status; just because an emotion might be fictional should not carry the connotation that it is ‘only fictional’. Walton states:

“Perhaps fictional lives do not matter in the way real ones do; we do not regret merely fictional suffering, and we feel no obligation to prevent it. But this flies in the face of the psychological links that we do seem to have to fictional characters, the fact that we sometimes do, apparently, care very much about them.” (Walton, 1990, p. 193)

Here, Waltonian make-believe is permissive of even very high levels of engagement with a fictional work; indeed, empirical research into entertainment media, as noted by Hartmann et al. (2010), has shown that people see fictional characters as social entities. This applies even when these characters are computer generated; “the perception of video game characters, thus, may be similar to the perception of television or movie characters” (p. 342). In Walton’s view, the participants were playing a game of make-believe in their answers, too. “Charles is participating psychologically in his game of make-believe. It is not true but fictional that he fears the slime. So of course, he speaks of himself as being afraid of it. His speaking thus may itself constitute participation – verbal participation – in his game. It is fictional that he is afraid, and it is fictional that he says he is” (p. 242), though again, this fictionality does not necessarily trivialise the experience.

Hartmann et al. (2010) note through empirical study that videogames are “capable of inducing moral responses” in players and hence inducing feelings of guilt. They assert that this stands in contradiction to the idea that what they are engaging with is “just a game”, as they assert that “the same factors affecting people’s guilt responses to real-world violence also affect their guilt responses to virtual violence” (p. 340).

Elsewhere, Hartmann & Vorderer (2009) state:

“Video gamers, however, strive for entertainment, and heightened involvement or transportation into the mediated world increases their enjoyment (e.g., Sherry, 2004; Skalski, Lange, & Tamborini, 2006). If users continuously reminded themselves that “this is just a game,” the game would hardly be enjoyable (cf., Sheppes & Meiran, 2007, p. 1522)” (Hartmann & Vorderer, 2009, p. 867)
Therefore, the work of Hartmann & Vorderer (2009) and Hartmann et al. (2010) offer a theoretical position in which players see a morally significant (in this case, violent) videogame as analogous to real life, and do not remind themselves that “this is just a game”; such a position is refuted here, as is Hartmann & Vorderer’s (2009) implication that engagement with video games operates under a paradigm unlike any other engagement with art, media, or the history of non-digital games. It is not true, for example, that book readers, moviegoers, and gallery-afficionados do not also seek to be entertained by their chosen media after all, nor that they are not ‘involved’ with a piece that they are engaging with. Similarly, awareness of the fictionality of the media does not hinder the enjoyment of someone reading a book, though they may be ‘caught up’ in this fictionality. Indeed, Walton posits all of our interactions with representational artworks as participation in its fiction for this reason.

“Therefore, because video gamers may be motivated to maintain belief in an apparent reality for self-serving reasons (unless strong aversive experiences urge them to do distance themselves…), they may also be motivated to perceive video game characters as real social entities rather than artificial objects” (Hartmann et al., 2010, p. 357)

Thus, in addressing the ‘it’s just a game’ attitude, Hartmann et al. (2010) suggest the opposite conclusion to this work, suggesting, “It seems unlikely that, while playing a video game, users constantly engage in the effort necessary to remind them that “this is not real” and that “these are not characters but just pixels on a screen.” They argue that such an effort is likely to lead to psychological detachment (Cupchik, 2002), diminishing the player’s affective responses, including enjoyment (Sheppes & Meiran, 2007, p. 1522). Certainly, the studies performed (Chapter 3 and 4) indicated responses showing a low level of aesthetic distance; however, it is asserted that the reason that such responses are not diminished is not because players experience the game as akin to real events, but instead because, within the framework of Waltonian make-believe, such engagement – though fictional engagement – is permitted. Walton notes, “We have a strong inclination to think of fictionality as a species of truth even though we know better.” (p. 205); thus, to the player, their emotional engagement may feel entirely ‘true’, but is nonetheless underscored, on some level, by their participation.

It is further proposed that such a framework (Figure 1-2) also allows for a mediating experience for the player, in line with the comments by Hartmann et al. (2010):

“Based on the present findings, we may speculate that those players who feel that they are doing something wrong begin to regulate the noxious experience (Schramm & Wirth, 2008). They may therefore enter a more critical and distanced reception mode, which may also serve to
diminish the aggressive effects of the displayed virtual violence” (p. 357).

This speculation posits a conscious distancing effect taken by an empathetic or ‘virtuous’ player who is subjected to unjustified violent gameplay. As discussed earlier, Walton concedes that fictional emotions may be just as salient as real ones (Section 4.2.3), thus, it is proposed that a heightened emotional experience in a game may produce feelings of discomfort, to be mediated. As Walton notes, “We are beginning to see how fictional worlds can seem to us almost as ‘real’ as the real world, even though we know perfectly well that they are not” (p. 249).

Thus, a more nuanced conception of a player’s engagement with a morally significant videogame is offered here, allowing for both the ludic-aesthetic attitude (“it’s just a game”) and the ability for videogames to evoke moral responses in the player. Waltonian make-believe, therefore, fits into the previously proposed visual model for how aesthetic distance in videogames works (Section 2.7) (Figure 4-23). Indeed, this previously proposed model may be further modified as a result of the findings of this study (Figure 4-24).
These findings refute the work of Norgard (2011, p. 10), who explicitly criticises the idea of player identity in videogames as make-believe, instead framing it as direct embodied experience. It is argued instead that while players of video games may invest in the apparent fiction of a character, and that this level of investment is variable and mediated by aesthetic distance, at the same time, there is an awareness of their fictional status. Indeed, Hartmann et al (2010) also concedes that “The knowledge that virtual characters are mediated and do not really exist is not completely forgotten.” As Walton (1990) asserts, such a duality “is no ordinary instance of mixed motives, of conflicting interests or desires” (p. 194). Therefore, the Waltonian framework, at the same time as being make-believe, also allows for serious moral judgement. It is a concept that allows for critical play (Flanagan, 2009), which occurs through the magic circle. This, as termed by Sutton-Smith (1997), is the ambiguity of play.

4.12.1 Aesthetic Distance within the Magic Circle

Therefore, with respect to games, Walton’s conception of make-believe can be compared to Bogost’s nuanced description of the magic circle (Bogost, 2006) as a space apart from reality, yet one which is not necessarily hermetically sealed from it. Zimmerman (2012), in a defence of the magic circle for its utility in designing games, also clarifies that the concept also has room to be informed by social contexts, and identity, and other real-life factors.
Therefore, it is suggested that aesthetic distance in videogames follows the conventional Bulloughian model of aesthetic distance as being an emergent property of both the salient stylistic qualities of the medium, and the disposition of the player. However, even when distance is reduced, it is done so within the confines of make-believe and playfulness. In short, aesthetic distance, as it applies to videogames, can be thought of occurring within the confines of the magic circle.

The ambiguous sense of identity in games (Section 4.9.6.2.2b), of this *double awareness* (Section 4.9.6.2.3b), is also supported by Dovey & Kennedy (2006):

“Computer games can be seen as ‘transitional phenomena’ which facilitate exchange between the subject and the mediated environment. This allows us to contemplate the relationship between watching and doing, and to grasp the psychic significance of play as a crucial part of our experience of culture. This notion of transitional phenomena also allows us to see how the fact that computer games require a manipulation of technology underpins our adoption of technology as an ‘extension’ of ourselves.” (Dovey & Kennedy, 2006, p. 33)

Therefore, the findings within this research programme provide *empirical* support to existing theories about our engagement with videogames as being informed by the double-consciousness (Salen & Zimmerman, 2003) of play. However, it also *extends* such theories, suggesting that aesthetic distance is still a concept that exists *within* the magic circle. Therefore, the nature of the player’s experience of distance within the magic circle is variable, leading to various levels of emotional engagement, or *identification*, as influenced by the ‘salient stylistic properties’ of the game. In this case, one such property of interest was *interface mimesis*.

Crucially, however, within the Waltonian framework, it can be understood that these varying levels of emotional engagement remain fictional.

**4.12.2 Implications for the Immersive Fallacy**

It would appear at first that the quantitative data actually supports the Immersive Fallacy, of creating “an illusory, simulated reality” which “the player truly believes that he or she is part of”. This was an idea that Salen and Zimmerman (2003) had criticised, describing the idea thus:

“The immersive fallacy is the idea that the pleasure of a media experience lies in its ability to sensually transport the participant into an illusory, simulated reality. According to the immersive fallacy, this reality is so complete that ideally the frame falls away...” (Salen & Zimmerman, 2003) (Section 1.1)
However, the qualitative data gathered offers insight into how the experience is not in fact one where “the frame falls away”, but instead, how player’s attitude remains one of explicitly framing the experience as “just a game”. This frames the game in terms of the magic circle of play, a games-specific conception of Waltonian make-believe.

Salen and Zimmerman pointed out that the “danger” of the immersive fallacy is the way that it “misrepresents how play functions… and game design can suffer as a result” (2003) (Section 1.1). Thus, the immersive fallacy refers to the idea that the more ‘realistic’ a game, the allegedly ‘better’ it is, and that such an idea, according to Salen and Zimmerman, is mistaken. Such a position by Salen & Zimmerman is a statement about questioning what is valuable about videogames; that is, about the aesthetics of videogames. For Salen & Zimmerman, ‘immersion’ (spatial presence) is not what is valuable about videogames.

However, given that the findings support that increasing (congruous) interface mimesis, supported by body ownership, as well as spatial presence (self-location and agency), led to higher emotional involvement for players, as well as a greater sense of identification with their character, it should be questioned whether the idea of increasing spatial presence in this way should indeed be disregarded.

It can be argued that rather than being experiences which are about enhancing spatial presence for the player, videogames are valuable due to their potential for expressing ideas through interaction with their systems (Khandaker-Kokoris, 2015a, 2015b). This is the idea that Bogost (2007b) terms procedural rhetoric (Section 1.3.3.7), “the art of persuasion through rule-based representations and interactions”, and “the act of using processes persuasively”.

It was argued earlier (Section 1.3.3.7) that such an idea of procedural rhetoric could be further extended to include the control interface; Bogost (2009a) thus posits the persuasive potential of the interface in discussing Manhunt 2, stating “the game's coupling of gestures to violent acts makes them more, not less repugnant by implicating the player in their commitment... It is a game that helps us see how thin the line can be between madness and reason by making us perform abuse.” Indeed, Penny (2004) also suggests that the “persuasiveness of interactivity” is in the fact that “bodily behaviour is intertwined with the formation of representations” (Section 1.3.3.7). Therefore, Penny’s suggestion is supported here, and built upon to propose that as the extent to which “bodily behaviour” is more mimetically represented, the more potentially persuasive the representation becomes.

This combination of the contributing factors to aesthetic distance, that is, the salient stylistic qualities of a game, together with the disposition of the player, is the way in which games can allow for a space in which “context is defamiliarized”, such that it may give rise to meaning being created through play:
“Games... imprint our culture with the motives and values of their designers. Above all, a game is an opportunity, an easy-to-understand instrument by which context is defamiliarized just enough to allow what Huizinga famously refers to his ‘a magic circle’ of play to occur.” (Flanagan, 2009, p. 262)

While this may raise the question of what happens when the context created by the salient stylistic qualities becomes too familiar, it is argued that for virtuous players (Section 2.5.1), this sense of double awareness still exists. An example of when the experience of interacting with a game matches real life can be found in Call of Duty 4: Modern Warfare (2007).

Like the other games in the series, Call of Duty 4: Modern Warfare (2007) is a first person shooter in which the player assumes the role of soldier characters during missions, moving around the 3D environment with their gun. However, one mission in the game (entitled “Death from Above”) places the player in a Lockheed AC-130 gunship, in the role of an American soldier operating a thermal-imaging monitor, tasked with using this interface (Figure 4-25) to fire at ground targets, using an extremely powerful cannon, with a large blast radius. This scene thus disconnects the player from first-person action in the rest of the game, and, for some players, creates a striking sense of imbalance in power (Lugton, 2010).

![AC-130 Mission Screenshot, Call of Duty 4: Modern Warfare (2007)](image)

**Figure 4-25: AC-130 Mission Screenshot, Call of Duty 4: Modern Warfare (2007)**

Of course, while this sequence in Call of Duty 4: Modern Warfare does not engage the player’s body in the way that has been discussed in the context of this research programme; it is still argua-
bly a very highly mimetic interface. The images on the screen during this sequence, together with the ‘alienated’ interactions using classic control mechanisms (keyboard-and-mouse or gamepad), very closely mirror the experience of a real-life “AC-130 thermal imaging TV operator” (a job title which, in itself, appears to provide ‘distance’ from the task being carried out).

Therefore, the “Death from Above” mission, through hypermediating the interface (Section 2.5.4), actually enhances interface mimesis. This is arguably very effective, therefore, in providing a commentary on the titular concept of ‘modern warfare’ as being disconnected and framing war, ironically, as a videogame.

The example of the “Death from Above” mission is, of course, technically outside the remit of videogames explored within this thesis, as there is no avatar representation, nor a 3D space to move through. This is because the player, instead of extending their sense of body ownership to some represented avatar, has an interaction model similar to that of Boom Blox (2008) (Section 1.3.3.2.1) in which they have participative and physical embodiment. Indeed, the reticule acts as the player’s physical embodiment in the ‘world’, matching with the physical embodiment of a real “thermal imagining TV operator”.

The research thus supports how interface mimesis is not simply about increasing bodily verisimilitude, but instead, is effective when a player’s mental models of how to interact with a system are matched, as suggested by McGloin (2011).

In terms of 3D, avatar-driven morally significant games, such as The Climb (Chapter 4), this interface mimesis should, it is suggested, be increased to match up with a player’s expectations of interaction; as The Climb is a game depicting ‘physical’ interactions, these would need to be supported by the interface and matched up with the in-game character action.

Another example is Hush (2008), a game about the 1994 genocide in Rwanda, in which the player is a young mother, trying to keep her baby quiet so it does not cry and alert the soldiers about their whereabouts. To achieve this, the baby needs to be calmed by rhythmically ‘matching’ falling letters. Flanagan (2009) notes that the game’s “matching, timed game mechanic” requires “full attention”, thus creating an experience which is “immersive” (p. 242). She claims, making note of the inherent ambiguous and multi-layered nature of play, that Hush provides “an emotionally complex slice of an experience, and present a layered, ‘nomadic’ perspective’ by shifting from player, to character, to world citizen” (p.243). This addresses the double awareness that exists during gameplay, the capricious sense of identity, and the way in which this works to build meaning for players. It is also in this way that “the control of objects becomes an act of imaginative creation or recreation of self… serving to collapse the boundary between fantasy and reality” (Dovey & Kennedy, 2006, p. 33).
It is proposed that these ideas may, therefore, be considered by game designers when developing games that aspire towards morally significant gameplay, in order to create an experience which may be more compelling, more convincing, and serve to further confront the player with their own embodied actions. It is in this way that designers may use the double awareness, the simulation fever between a player and the game through which meaning is created.

4.12.3 Proposing Embodied Critical Play

Thus, a designed sense of alienation, as with the Call of Duty 4: Modern Warfare mission “Death from Above” of the interface, or a designed sense of identification may be effective at creating embodied critical play. This is a design goal, proposed by synthesising the findings from this research programme, and contextualising them in terms of a framework of Waltonian make-believe. It is proposed that in order for embodied critical play to be supported, a morally significant or socio-political videogame must elicit a strong Sense of Embodiment. Therefore, it must support feelings of body ownership, agency, self-location and, it is proposed, perceived controller naturalness (Section 4.11.2).

In this study (Chapter 4) the resulting heightened emotional involvement of players and their increased feelings of guilt, as interface mimesis was successfully enhanced, supports the idea of The Climb (Section 4.5.1.2) communicating more effectively the moral and emotional difficulty of finding oneself in the depicted situation. The ‘meaning’ of the game therefore remained intact across all the interface conditions of course; however, the extent to which players engaged with this was altered through “the persuasiveness of interactivity”.

It is proposed that, applied to other morally significant scenarios in games, or even games representing socio-political issues, aspiring towards embodied critical play may be effective in communicating a game’s message. Such a conception is not permissive of the ideas of the immersive fallacy (Salen & Zimmerman, 2003) as it is not suggested that spatial presence is what is most valuable about games, but instead, suggests that there is room within this concept for an increased sense of embodiment and effective procedural rhetoric to coexist, particularly when dealing with subject matter that is morally significant.

Thus, in designing for embodied critical play, games with increasingly mimetic interfaces, and which deal with morally significant issues, are considered as being within the framework of Waltonian make-believe, though one that allows for heightened emotional involvement, though which the procedural rhetoric may be supported. However, it must also be understood that not all games aspiring towards embodied critical play require interfaces that are increasingly ‘physical’ in order to increase interface mimesis; the Call of Duty 4: Modern Warfare mission “Death from Above” is a prime example of this, illustrating an example where the context created is “too familiar”. Therefore, increasing (congruous) interface mimesis is not necessarily always a matter of increasing perceptual immersion to embody players through a 3D avatar, but instead, increasing the extent to
which an interaction mirrors the equivalent real-life interaction. Therefore, such a scenario does not require a representation of a virtual body for identification to occur. Thus, it is proposed that designing for embodied critical play allows for exploration of morally significant games, as it acknowledges that player’s heightened involvement remains one of double awareness, where their understanding of the procedural rhetoric of a game arises through the gap between what the system tells them (simulation resignation) and their own subjectivity (simulation denial) (Section 2.4.3).

Another example of this is Redshirt (2013); a large component of the game involves using a parody social network, using the same interactions and comparable interface as in a real social network. Through replicating the experience of social networking, this game analyses the phenomenon. Therefore, as the game is played on a tablet, or using a mouse and keyboard, the ways in which people would normally interact with a social network, this is an example of a game designed for embodied critical play.

Furthermore, in designing for embodied critical play, a ‘virtuous player’ is assumed (Section 2.5.1); there is some support for this concept suggested by the finding that a player’s Trait Empathy contributed to their feelings of guilt as (congruous) interface mimesis was increased. However, continuing to explore this idea and the implications of how far the goal of embodied critical play is applicable for a non-virtuous player is an area for further study (Section 5.4).
Therefore, *embodied critical play* as a design goal arises out of the empirical data presented here, and also supports previous suggestions and theories of the aesthetics of interactivity (Bogost, 2009a; Penny, 2004) (Section 4.12.2).

**4.12.3.1 COMPARISON WITH EMBODIED NARRATIVE ENGAGEMENT**

Dow (2008) proposed a framework of *embodied narrative engagement* (Section 2.4.1), which he defined as “the feeling of being physically transported into a fictitious world, transformed into a story character, and able to influence the unfolding events.” This is also conceptualised as being at the intersection of spatial presence, agency, and dramatic involvement (the feeling of being caught up in the plot and characters of a story, termed *diegetic immersion* here). Thus, Dow (2008) suggests that this is a framework, in which these are components, which a creator can manipulate to create “immersive and interactive stories”.

There are overlaps between *embodied narrative engagement* and *embodied critical play* as proposed here, though the latter is offered as a design goal, rather than a framework. Indeed, developing embodied critical play as a framework is suggested as an area for further study (Section 5.4).

It is proposed that embodied critical play, rather than a focus on supporting interactive stories, focuses on supporting games in terms of their *procedural rhetoric*: that is, through supporting interaction with a game’s expressive rules, to understand its ideas. Thus, embodied critical play is suggested to be a goal underpinned by increasing interface mimesis insofar as it supports *Sense of Embodiment*, meaning body ownership, self-location, agency, and perceived controller naturalness. As discussed, this interface mimesis does not need to be defined by matching an avatar’s movements with a player’s gestural actions, as there are cases, such as *Call of Duty 4: Modern Warfare*, in which the interface is mimetic because it so closely resembles real life, even when played using a ‘classic’ controller. In this way, there are similarities between *embodied narrative engagement* and *embodied critical play* in that they both offer a “nuanced view of [spatial] presence” (Dow, 2008, p. 28) in which it “may need to be sacrificed to produce the desired effect” (p. 28).

There are also overlaps between *embodied critical play* and Murray’s (1997) model of inducing spatial presence via three possible strategies, which she posits as being achieved by structuring participation through an avatar, by structuring participation as a visit, or, by making the interface mechanics seamless. Mateas (2004) instead revises this (Section 2.4.1), reviewing how these different strategies can ensure a balance of formal and material constraints, and instead frames such a balance as what is required for a player to first experience agency, thus allowing for spatial presence. “Providing a clean, transparent interface”, for example, “ensures that agency (and thus [spatial presence]) will not be disrupted” (Mateas, 2004, p. 27).

Thus, in designing for *embodied critical play*, where it is appropriate due to the design goals of a game, the mimetic interface may instead be a 360-degree treadmill and head-mounted display. It is the goal of the game creator, it is proposed, to design for such *embodied critical play* depending on
the interactions in the game for which mimesis would be effective to create a morally significant experience, or, even, as with *Hush* (2008), express socio-political ideas.

### 4.13 Summary

These studies examined aesthetic distance in videogames, through the lens of enhancing interface mimesis. *Study 2A* examined how interface mimesis affects a player’s sense of aesthetic distance from a morally significant videogame, and how the resulting experience of guilt is affected by not only the interface mimesis, but also a players’ *trait empathy*.

Although weak, but still significant, correlations were found between *Trait Aesthetic Attitude* and only a small number of the experiential measures, qualitative analysis revealed reported player attitudes towards morally significant human narratives. Thus, these resulting categories were suggested as a proposed alternative model of trait *aesthetic attitude* towards games.

Most notably, a ‘just a game’ attitude and a sense of double awareness or duality were found directed towards all parts of the experience of the game: from being in the environment, to character identification, to feelings and thoughts about the morally significant content in the game, to the ‘Cut the Rope’ sequence. This is in line with the concept of *Double Awareness* (Section 2.4.2) and videogames as Waltonian fictions (Section 4.2.3), and it is through this mechanism that the design goal of *embodied critical play* is proposed.
5 Conclusion

“Hey, tell me the truth... are we still in the game?”


5.1 Introduction

Exploration of the socio-political anxieties associated with the ever-increasing technological fidelity of mimetic interfaces was exemplified by the media panic regarding Manhunt 2. Dovey & Kennedy (2006) acknowledged that “the same tensions have existed relation to earlier cultural and media forms, including, but not limited to, literature cinema, and television… yet each is provocative of particular kinds of anxiety around readers/viewers/users/players who are too immersed” (p. 9). The identification of these socio-political anxieties around mimetic videogame interfaces therefore raised the question:

Does interface mimesis affect aesthetic distance when playing a physically embodied, morally significant videogame, as assessed through a player’s moral and aesthetic judgements? Furthermore, is this experience of aesthetic distance affected by a player’s aesthetic attitude?

As an exploratory question, instead of a methodology-orientated approach, this was addressed through a framework of constructivist realism (Section 1.6); a pragmatic approach encompassing mixed methods, which focuses on the most appropriate approaches to questions being asked, rather than following a paradigm’s established methodology. This is due to the nascent nature of the concepts being explored, and the lack of empirical player studies, which provide insight into the experience of distance that a player feels from a videogame.

Therefore, a model for the aesthetic distance between a player and a videogame was established (Section 2.7), defined by both the nature of interface (as a ‘salient stylistic quality’ of a videogame) and the aesthetic attitude of the player. This was established through an exploration of the ways in which aesthetic distance has, throughout the history of the arts, been central to the way in which art creates meaning for its participants. However, it also resolved the ways in which interactive arts, including videogames, have previously been represented as seemingly problematic for such a model. The suggested model of aesthetic distance in games was informed by both Bulloughian (1912) and Brechtian (1978) conceptions of distance and included two possible states; alienation from a game (being distanced) and identifying with the experience (empathy). However, it extended their concepts by proposing that these states are not necessarily mutually exclusive, and are instead connected via a mechanism of Double Awareness (Section 2.4.3.1).

Following the Empirical Aesthetics approach (Section 1.6), aesthetic distance was investigated via formal controlled experiments to assess the effect of interface mimesis on moral and aesthetic...
judgements for a morally significant gameplay sequence. It was found that enhancing designed interface mimesis increased feelings of spatial presence and also decreased aesthetic distance. The effect of increased interface mimesis was, of course, not straightforward, and secondary findings about the nature of increasing the designed property of interface mimesis, and what this means for socio-technological trend identified as progressive embodiment, are recounted later in this conclusion (Section 5.2.1). Thus, aesthetic distance was empirically found to be mediated by interface mimesis, when supported by physical embodiment. The time taken for players to make a morally significant decision was also increased as interface mimesis was enhanced, and they reported altered feelings of aesthetic measures, such as the extent to which they felt immersed, how engaged vs. detached they felt, how far they identified with their player character, how plausible it was, and feelings of tension. They also reported differences in whether they focused on feelings rather than thoughts, and whether knowing that the game is fiction made a difference to their feelings. Player’s trait empathy also contributed to how guilty they felt as their physical embodiment increased.

However, this was not a straightforward picture: qualitative data found that players experienced feelings of double awareness, even as their sense of physical embodiment in the game decreased their aesthetic distance. An attitude of “it’s just a game” still existed, despite their ‘closer’ involvement. Kirkpatrick had previously theorized such an attitude:

“Gameplay involves an attitude that is cynical and humorous, which says: ‘Yes, it’s a beautiful image, but you’d be wrong to take it seriously.’” (Kirkpatrick, 2011, p. 41)

However, this idea does not take into account games which are either morally significant, or which enhance interface mimesis, and Kirkpatrick does not explore this empirically. However, the findings from Study 2 (Chapter 4) suggested an attitude closer to Walton’s theory of representational art as make-believe. Contextualising the empirical findings in such a theoretical framework allows the integration of video games not only not the history of art but the history of play as well. At the same time as being capable of evoking moral and aesthetic judgements in response to a morally significant scenario, videogames are also make-believe, even through the lens of increasing interface mimesis.

While such a conception of the duality of a player’s experience of playing a morally significant game may seem ambiguous, this is not due to a lack of clarity in the concept. Instead it is due to the inherent ambiguity of play (Sutton-Smith, 1997). Indeed, Dovey & Kennedy (2006) state that:

“… Through the experience of gameplay there is simultaneously a proliferation of heterogeneous subject positions, playful experimentation and boundary exploring” (p. 118).
While there have existed theories about the way in which experience in videogames may involve such an attitude of double awareness, this concept had not been significantly explored empirically, in order to understand what happens as interface mimesis increases. These findings therefore contribute original knowledge to support such a conception of games as being emotionally engaging, and even troubling for the player (as their feelings of Guilt increased in the findings), but also, while still framing the experience as a playful, experimental one, maintaining this double awareness. Therefore, the findings within this research programme not only provide empirical support to existing theories about our engagement with videogames as being informed by the double-consciousness of play (Salen & Zimmerman, 2003), but it also extends such theories, suggesting that aesthetic distance is still a concept that exists within the magic circle. Therefore, the nature of the player’s experience of aesthetic distance within the magic circle is variable, leading to various levels of emotional engagement, or identification, yet crucially, within the Waltonian framework, it can be understood that these varying levels of emotional engagement remain fictional.

Indeed, it is suggested that enhancing, through interface mimesis, a player’s Sense of Embodiment may be specifically a design goal for a game creator aspiring towards creating an experience of embodied critical play (4.12.3), in which the game’s underlying procedural rhetoric is supported and enhanced by implicating the player in meaningful, physical action.

Contrary to the Brechtian idea of aesthetic distance as a pre-requisite for critical thinking and reflection about the meaning of an artwork, Walton presents a playful frame, which may yield high emotional engagement, through which meaning may still permeate. Indeed, such an idea is reflected in the work of social activist game designers such as Flanagan & Lotko (2009), for whom empathy is the explicit goal, in order to ensure players care about the socio-political issues being addressed.

Therefore, in the context of 3D, avatar-driven, morally significant videogames with increasingly mimetic interfaces, it is posited that the “just a game attitude” leading to a sense of double awareness does not necessarily erase seriousness from play, as suggested by Kirkpatrick (2011, p. 41); at least not in terms of the potential for the game to evoke meaning for the player. Instead, the findings from Study 2A and 2B suggest this meaning, via moral judgement, may be evoked through a game experience which is nevertheless one of this aforementioned “playful experimentation and boundary exploring” (Dovey & Kennedy, 2006, p. 118).

Thus, the goals of this research programme were successfully attained; aesthetic and moral judgements are not only established as a valid indicator of aesthetic distance, but interface mimesis is established as a contributor to the aesthetic distance between a player and a morally significant game. Furthermore, through the framework of this Waltonian theory, the nuances of how a player experiences this altered aesthetic distance were also suggested. Additionally, in exploring this research question many other individual contributions to our understanding of videogames theory and practice have been established.
5.2 Contributions to Knowledge & Implications of the Work

5.2.1 Contributions to Theory and Empirical Findings

This work contributes, empirically, and through theory, to the understanding of aesthetic distance as it applies to videogames, through the lens of altering interface mimesis. Although the concept of aesthetic distance in videogames has been the object of theoretical inquiry, this has not previously been explored empirically or indeed through the lens of increasing interface mimesis. Thus, this research firstly contributes to the knowledge of aesthetic distance as it was empirically shown to be applicable to videogames, therefore establishing games alongside other artistic media, as aesthetic objects.

A theoretical model for aesthetic distance in games (Figure 5-1) was synthesised from the literature using Brechtian (1978) and Bulloughian (1912) concepts of distance, presenting aesthetic distance as an emergent phenomenon, mediated through the interaction between the formal properties of a game (in this case, the interface mimesis) and a player’s attitudes. It was posited that this interaction defines the extent to which a player feels distanced (alienated), or feels empathetic (identification), with respect to a game and its avatar, characters, and environment (Figure 5-1).

Therefore, through empirical means, aesthetic distance was shown to be mediated by interface mimesis, and this was measured through the fact that players reported altered subjective feelings of
aesthetic measures such as time taken to perform a morally significant action (Section 4.9.3.2), and also the extent to which they felt imaginative and sensory immersion (Section 4.9.3.3b), greater flow (Section 4.9.3.3c), engagement vs. detachment from the game (Section 4.9.3.3d), empathy with their avatar’s motivations (Section 4.9.3.3f), stylistic beauty (Section 4.9.3.3g), plausibility of the scene (Section 4.9.3.3i) and feelings of tension (Section 4.9.3.3j). Furthermore, they also reported differences in whether they focused on feelings rather than thoughts (Section 4.9.3.3k), whether feeling like knowing the game is fiction made a difference (Section 4.9.3.3m). Furthermore, this quantitative data regarding altered aesthetic distance was supported, and triangulated by qualitative data (Section 4.9.6), thus tentatively suggesting how this may be experienced by players and offer future areas to consider for the concept of aesthetic distance in videogames.

However, this aesthetic distance was decreased not simply through increasing interface mimesis, as expected from the literature review (Section 2.3.1), but only where this increased interface mimesis was successfully naturally mapped, eliciting a player’s Sense of Embodiment (Kilteni et al., 2012). Therefore, interface mimesis (when successfully naturally mapped, eliciting a player’s Sense of Embodiment through spatial presence, agency, and body ownership) affects aesthetic distance from a videogame (Section 4.11.2).

Thus, simply increasing interface mimesis through perceptual immersion does not result in the expected experiential effects associated with the socio-technological trend of progressive embodiment (i.e. increased spatial location) because some increases in mimesis may feel incongruous for a player (Section 4.11.2, 4.9.3.1).

Therefore, this work contributes to Biocca’s (1997) understanding of the socio-technological paradigm of progressive embodiment, suggesting it does not refer simply to enhancing interface mimesis through perceptual immersion, but instead should be focused on increasing Sense of Embodiment, which is a concept denoting self-location, agency, and body ownership, as defined by Kilteni, Groten, & Slater (2012). Furthermore, the research contributes to an understanding of this concept of Sense of Embodiment as also being underpinned by perceived controller naturalness. This may undermine the naturalness of a mimetic interface in favour of alternatives that are inherently simpler to use, or are simpler to use due to prior exposure, or due to matching a player’s existing mental model (Section 1.3.3.6, 4.11.2). Indeed, research thus supports how interface mimesis is not simply about increasing bodily verisimilitude, but instead, is effective when a player’s mental models of how to interact with a system are matched, as suggested by McGloin (2011). Therefore, additionally, it is proposed that the visual model of increasing interface mimesis against spatial presence may represent this concept (Figure 5-2). The model may be understood as being akin to that of Mori’s (1970) uncanny valley, but would require future work to explore further.
Figure 5-2: A Suggested Model of Increasing Interface Mimesis vs. Spatial Presence

In addition, the theoretical model (Figure 5-2) further contributes to an understanding of aesthetic distance in games. It shows that **the player’s states, of being distanced versus empathetic, are linked via a mechanism of double awareness** (Section 2.4.2) and as such, players are simultaneously **looking through** and **looking at** a medium. Thus, specifically with respect to videogames, this is **simulation fever** (Bogost, 2006), contributing to the two extreme states of aesthetic distance as being linked by the meaning-making tension that exists between identifying closely with a simulation and being critical and distanced from it.

To further support this theory, it was found through qualitative exploration that **players indeed experience double awareness while playing a morally significant game**: experiencing a conflict, or oscillation, between ignoring the interface (or game), and being aware of it, and expressing feelings of duality about their experience. Such double awareness manifested not only in terms of expressing ambivalence about their spatial location (sitting in a chair, playing a game vs. being in the game world), but also in terms of player’s non-binary sense of identification with their avatar (feeling as if they are the avatar vs. they are simply directing the avatar.) **Therefore, this contributes to the establishment of double awareness and simulation fever by empirically supporting these concepts.**

Thus, this research programme contributes to our theoretical understanding by proposing that, even though a player of a morally significant game experiences reduced aesthetic distance when using a mimetic interface that maximises Sense of Embodiment, their heightened emotional involvement still occurs within the context of Waltonian make-believe. Even when reporting increased empathy with the characters in the game (Section 4.11.4), or displaying a higher tendency to act ‘virtuously’ when presented with a morally significant game scenario (Section 4.11.3), there is still a double awareness that they are interacting with a videogame. This is consistent with the literature suggesting that videogames happen within a ‘magic circle’, and **contributes to the theoretical understanding**
by establishing the magic circle as a games-specific instance of Walton’s theory of mimesis, as make-believe in representational art.

Therefore, the findings within this research programme provide empirical support to existing theories about our engagement with videogames as being informed by the double-consciousness (Salen & Zimmerman, 2003) of play. However, it also extends such theories, suggesting that aesthetic distance is still a concept that exists within the magic circle. Therefore, the nature of the player’s experience of aesthetic distance within the magic circle is variable, leading to various levels of identification, yet crucially, within the Waltonian framework, it can be understood that these varying levels of emotional engagement remain fictional.

Therefore, varying levels of aesthetic distance, whether reduced, or increased, between a player and a game, occurs within the framework of Waltonian make-believe. This aesthetic distance is mediated both by interface mimesis and by the ‘disposition of the player’. Through qualitative study, it was suggested that this disposition is defined in large part by a player’s ludic-aesthetic attitude. This is a newly defined term, referring to the extent to which a player believes that they are interacting with “just a game”. This, together with the formal, stylistic qualities of the game, give rise to the aesthetic distance experienced between the player and the game. This research also contributed to the theoretical and empirical work by suggesting that the ‘disposition of the player’ is also determined by trait empathy (Section 4.11) along with increasing Sense of Embodiment. This contributed to how guilty a player felt performing a morally significant action (Section 4.9.3.2a(1)(b)), though trait empathy did not contribute to any other quantitative aesthetic measures, thus further research is required (Section 5.4).

Furthermore, playing a morally significant game, players appeared to contextualise their actions in terms of “it’s just a game”; this did not change when this morally significant game concerned either violent or non-violent scenarios (Sections 3.10.4 and 4.11.5). However, through the interview data, it is proposed that the effect of the ludic-aesthetic attitude in players was further pronounced in terms of violent games (more players tended to identify themselves as playing “just a game” with a violent game), but further empirical data is required for this (Section 5.4). However, there is some suggestion for this in the literature (Section 3.1, 4.2.3), with findings that players engaging in games that are more violent may think more about the consequences of their actions, thus indicating the prosocial potential of violence (Grizzard et al., 2014; Hartmann & Vorderer, 2009), particularly where players are more empathetic (‘the disposition of the player’) (Hartmann et al., 2010). Therefore, the qualitative studies’ results contribute to the contextualisation of the ludic-aesthetic attitude when framed in a violent (Chapter 3) and non-violent (Chapter 4) context.

Exploring the boundaries of aesthetic distance can tell us more about what games are to players and how they function, which has implications for game design practice. The established idea of the immersive fallacy (Salen & Zimmerman, 2003) criticized the notion that the pleasure of a game lies
in maximizing spatial presence and diegetic immersion, offering a reality which is “so complete that ideally the frame falls away so that the player truly believes that he or she is part of an imaginary world.” (p. 451) Indeed, the results of this research programme lend support to Salen & Zimmerman’s position that this is not the case. It was found that the frame does not fall away completely but, instead, the increasing Sense Of Embodiment imbues the player with an uncomfortable sense of double awareness (simulation fever) when performing a morally significant action. However, it is suggested, the extent to which this is the case is a matter of a player’s aesthetic attitude. Further work is required to examine the contribution of player’s aesthetic attitude (Figure 5.4).

Thus, this work contributes to a re-examination of the claim by Hartmann et al. (2010) that the player perceives morally significant videogames as akin to real life, and does not adopt an attitude of “it’s just a game”; it is instead proposed that both of these are true at once. This is the inherent ambiguity of play. Thus, the work also contributes to the refutation of the idea, as exemplified by Norgard (2011, p. 10), that the player-avatar relationship is one of simple direct identification, rather than make-believe. While it is true that the relationship may not be one of direct role-play either (as exemplified by the non-binary nature of a player’s identification, as found here through the player studies), it is nevertheless one of fictional participation, in the tradition of not only representational art, but also the history of play.

5.2.1.1 TOWARDS A PHILOSOPHY OF EMBODIED CRITICAL PLAY

Therefore, this research contributes to a nuanced conception of a player’s relationship with a morally significant game through aesthetic distance, framing the experience as occurring through the lens of Waltonian fictionality. This is a fictionality that does not trivialise the experience, but instead allows the space for a player to experience the double awareness of simulation fever, which is the meaning-making process by which they learn and grow. This supports Flanagan’s (2009) conception of critical play. In defining what it means to ‘play critically’, she asserts, “Critical play means to create or occupy play environments and activities that represent one or more questions about aspects of human life.” This is particularly salient in which games feature morally significant content about which, as shown through this research programme, players may make aesthetic and moral judgements.

Thus, if play is brought into the everyday, this research contributes to our understanding of what happens when the everyday (i.e. a player’s own increasing physicality and Sense of Embodiment) is brought into play. Thus, it was suggested that this concept of critical play still applies through the lens of increasing interface mimesis (where supported by Sense of Embodiment) and offers support to the notion of the “persuasiveness of interactivity” (Penny, 2004), a paradigm in which “bodily behaviour is intertwined with the formation of representations.” This was a concept also proposed by Bogost (2009a), claiming that gestures may create meaning, such as with the example of Manhunt 2 (Section 1.1), in which the mimetic nature of the player’s morally significant actions “makes them more, not less repugnant by implicating the player in their commitment”.

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Therefore, embodied critical play is suggested as a design goal supports previous conceptions of the aesthetics of interactivity (Bogost, 2009a; Penny, 2004) (5.2.2). Although the research was initiated in the context of possible antisocial attitudes and the ethical issues arising thereof, the implications of this research are equally applicable to pro-social games such as Project Syria (2014), an Oculus Rift HMD game about experiencing life in Aleppo, and navigating the streets as a mortar shell explodes. Thus, the research also has contributions to the field of games design and development.

5.2.2 Contributions to Game Development Practice

The significant contribution to the practice of game design and development is an understanding of how players think about their experience in the light of increasing interface mimesis, showing aesthetic distance to be reduced for players, but still remaining through the lens of double awareness, or Waltonian make-believe; that is, the magic circle of games. With the revival of interest in virtual reality technology for games in the mid-2010s, this is extremely salient. It is proposed that these ideas may, therefore, be considered by game designers when developing games that aspire towards morally significant gameplay, in order to create an experience which may be more compelling, more convincing, and serve to further confront the player with their own embodied actions. It is in this way that designers may use the double awareness, the simulation fever between a player and the game through which meaning is created. This was proposed as a theory of embodied critical play, which is a design goal proposed from the findings from this research programme. In order for embodied critical play to be supported, a morally significant or socio-political videogame must elicit a strong Sense of Embodiment. Therefore, it must support feelings of body ownership, agency, self-location and, it is proposed, perceived controller naturalness. This interface mimesis does not need to be defined by matching an avatar’s movements with a player’s gestural actions, as there are cases, such as Call of Duty 4: Modern Warfare, in which the interface is mimen because it so closely resembles real life, even when played using a ‘classic’ controller. Indeed, in designing for embodied critical play, where it is appropriate due to the design goals of a game, the mimetic interface may instead be a 360-degree treadmill and head-mounted display. It is the goal of the game creator, it is proposed, to design for such embodied critical play depending on the interactions in the game for which mimesis would be effective to create a morally significant experience, or express socio-political ideas. In such scenarios, aspiring towards embodied critical play may be effective in communicating a game’s message. Such a conception is not permissive of the ideas of the immersive fallacy (Salen & Zimmerman, 2003) as it is not suggested that spatial presence is what is most valuable about games, but instead, suggests that there is room within this concept for an increased sense of embodiment and effective procedural rhetoric to coexist, particularly when dealing with subject matter that is morally significant, or socio-political.

Furthermore, there are implications for designing mimetic interfaces in terms of usability; developers must be careful not to invoke a sense of incongruence. Simply increasing the modalities of interface mimesis in isolation from one another is not enough, as the experience may be one in which
“what you feel and what you see do not add up”, such as in the case of the “Fixed Display and Head Tracking” condition in Study 2 (Chapter 4).

5.2.3 Contributions to Research Processes

From the contributions to knowledge as detailed (Chapter 5.2.1), it can be established that the mixed-methods, pragmatist, constructivist realist methodology (Section 1.6) is a viable one. Indeed, the quantitative data regarding altered aesthetic distance was supported, and in some instances explained, by the qualitative data, thus strengthening the concept of aesthetic distance in videogames, as well as indicating the benefits of a mixed-methods approach (Section 1.6).

This research programme also contributes to understanding of research processes by establishing the viability of using moral and aesthetic judgements in order to indicate aesthetic distance, as these measures correlated with one another.

Furthermore, due to the lack of established theory within the intersection between player experience studies, empirical aesthetics, media psychology, and play theory, this mixed-methods approach established the exploratory measures used to operationalize aesthetic distance. For example, guilt was measured both through questionnaire data and through timing how long the player took to make a morally significant decision. It was found that these measures correlated, thus establishing the viability of measuring guilt by measuring the time taken to perform a morally significant action, and, through the lens of increasing interface mimesis (supported by Sense of Embodiment), as well as establishing guilt as an indicator of aesthetic distance.

5.3 CRITICAL ASSESSMENT OF WORK DONE

Whilst the studies presented through this research programme provide new contributions and insight regarding the effect of interface mimesis (when supported by Sense of Embodiment) on the aesthetic distance between a player and a morally significant videogame, there are, of course limitations to these findings. These limitations therefore require further work to validate and extend these findings.

5.3.1 Theoretical Limitations of the Work

Due to the nascence of player-orientated research on aesthetic distance in videogames, this research programme was conducted through mixed-methods, building upon theory through empirical exploration of aesthetic concepts, via the means of quantitative post-gameplay-exposure questionnaires and qualitative interview data to support these findings.

This pragmatic, constructivist realist worldview meant that while the limitations of empirical work is understood, it was deemed the best method through which to explore these nascent concepts.

The most significant of these limitations was deemed to be that the quantitative data was collected via means of retrospective self-report through questionnaires, this was potentially prone to bias, as
suggested by Schwarz & Oyserman (2001), especially when the data concerns the intensity of human experiences. Similarly, the qualitative interview data required retrospective reflection by the participants upon their experiences, and furthermore, the medium of a semi-structured interview introduces bias, on behalf of both the interviewer and participants.

The studies provided means for mitigating this kind of bias as reported by Schwarz & Oyserman (2001), by not simply measuring guilt, but also, measuring several other gameplay experience questions. However, the suggestion of process-based measures of guilt in addition to the questionnaire items (in order to complement the findings), should be heeded for future work.

However, the philosophical implications of the reductionism inherent in quantitative methods for measuring player experience is understood, and accepted within the frame of a constructivist realist worldview; as noted by Cupchik (2001), precision is gained, at the loss of subtlety. In order to mitigate this, it is noted throughout this work the ways in which the phenomenon of the lived, ‘natural’ world is ‘reduced’ or ‘transformed’.

Therefore, the limitations of the work lay not only in players reflectively self-reporting on their game-playing experiences, thus potentially skewing the data, but also in the fact that, through this often theoretically and thematically reduced work, the nuanced concepts of aesthetic distance and player experience are measured. Even in instances where quantitative measurements such as Number of Shots Fired at Civilians or Time Taken to Cut the Rope were taken, these are still an example of ‘precision at the loss of subtlety.’

The problems of exploring a concept such as aesthetic distance empirically, through player self-report, is exemplified by Hartman et al. (2009), who note that “players who feel that they are doing something wrong begin to regulate the noxious experience.... They may, therefore enter a more critical and distanced reception mode, which may also serve to diminish the aggressive effects of the displayed virtual violence.” This is also consistent with Koopman et al. (2011), who found in their study of rape literature that the more absorbed readers were in the narratives, the greater their experiences of unsettled emotion; at the same time, absorption in the narrative diminished any negative appraisal and consequent detachment from the text. Therefore, it may be that the qualitative results in Studies 1 and 2 were confounded by increased feelings of guilt, which may in turn have led some players to intellectualize their experience more upon reflection. This effect was potentially a contributing factor to some of the hypotheses in Study 2, which could not be proven at this point (Section 4.9.4).

However, the potential effects of intellectualization-upon-later-reflection were mitigated by the semi-structured interview in Study 2 (Chapter 4), which asked players to reflect upon this very concept, and cross-referenced the data gathered. Thus, it is suggested that as another original finding of this research, that this oscillation between alienation and empathy is an inherent component of the way in which aesthetic distance works for players engaging with a morally significant game
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

(Figure 5-1), and a crucial part of the double awareness (or simulation fever) which gives rise to a game’s meaning for a player.

Finally, it should be noted that while, as with all empirical work, there were limitations to the results, and this work adhered to standard tests of reliability, such as Cronbach’s alphas (Section 3.8.1, 4.9.2). Therefore, despite these reported limitations, which should be understood in context, useful reliable and valid findings have been reported.

5.4 RECOMMENDATIONS FOR FUTURE WORK

Empirical player research into the concept of a player’s aesthetic distance from a videogame, as mediated by interface mimesis, is a nascent area of research, with significant scope for future exploration. Meanwhile, it is also a complex area of study, involving nuanced psychological and philosophical concepts. In addition to the methodological recommendations identified as a result of each study (Sections 3.10.5, 4.11.1), there are a number of recommendations for further work exploring the relationship between interface mimesis and aesthetic distance in videogames. While the recommendations suggested in the previous section are improvements to the method employed in this research programme, the recommendations described here instead result from the findings and literature review, and are identified as areas that are salient for further study.

1. This research is contextualised in the move towards virtual body ownership encapsulated by progressive embodiment, by increasing interface mimesis (as supported by Sense of Embodiment). However, it is proposed that a wider range of mimetic interfaces should be explored, further mapping a player’s body to a game such that Sense of Embodiment is increased. Rather than simply interfaces that are kinaesthetically mimetic, it is proposed that this exploration should also cover biofeedback interfaces (termed affective games, Khandaker, 2009), such as mapping a player’s heart rate to their in-game avatar’s movement. While not featuring a morally significant scenario, an example of this is Deep (2015), which uses an Oculus Rift HMD, headphones, and a belt interface worn around the torso, which matches the player’s breathing patterns with on-screen movements. By breathing deeply, a reticule in the centre of the screen expands and contracts causing the player to ascend and descend respectively around an underwater scene, reminiscent of Char Davies’ Osmose (1995) as examined by Grau (2003).

2. Furthermore, perceived controller naturalness is also suggested to be a subcomponent of Sense of Embodiment, and this was evident in the statistically significant differences across Perceived Controller Naturalness in the study. It is thus also proposed that the inclusion of Perceived Controller Naturalness to the consideration of Sense of Embodiment may account for any feelings of incongruence for the player, as described above, but further work would be needed to explore this fully.
3. Related to this, it is proposed that a conception of increasing interface mimesis as being akin to the model of Mori’s (1970) uncanny valley (Figure 5-2) should be explored further, as suggested from the proposed theory, and from the pattern in the findings (Section 4.11.2).

4. Another significant area identified for further research is a more refined exploration of the concept of the ludic-aesthetic attitude, and other player trait factors, which may contribute to this attitude. Such work would help to identify exactly what mediates the attitude of double awareness.

5. Furthermore, this research concerned videogames that are ‘morally significant’. This was defined as single-player videogames featuring a human narrative, where the player assumes the role of a playable anthropomorphic avatar, and has agency over decisions that have consequences for depicted human non-player characters (NPCs). The game used in Study 1 (to establish the methodology) was a conventional, military first-person shooter in which the consequences involved ‘unjustified’ killing. However, a non-violent game was specifically developed for Study 2 (though still involving a scenario that results in the death of a familiarised NPC). This was due to concerns over players’ specific aesthetic attitude towards ‘conventionally’ violent games. Further work should additionally explore morally significant game scenarios that also do not involve the death of an NPC at all, but instead, other emotional consequences for the NPC. It is also proposed that the difference in aesthetic distance in violent vs. non-violent games, as mediated by interface mimesis, is further explored.

6. Having established an empirical basis for the exploration of aesthetic distance in videogames, it is proposed that the effect of other hypermediating interfaces (Section 2.5.4) be explored, still within the context of increasing interface mimesis; that is, those which purposefully enforce distanced interaction, and do not aspire towards mimesis. For example, there are a number of forthcoming games designed for HMD-and-head-tracking interfaces such as the Oculus Rift, which feature low-polygon artwork, aiming towards a “lo-fi” virtual reality aesthetic. It is proposed that an exploration of how a player’s aesthetic distance is affected by enhancing interface mimesis (as supported by Sense of Embodiment) would mean for games when these effects interact with graphical fidelity, or differences in audio, and so on.

7. Furthermore, for the concept of embodied critical play, a ‘virtuous player’ is assumed (Section 2.5.1); there is some support for this concept suggested by the finding that a player’s Trait Empathy contributed to their feelings of guilt as (congruous) interface mimesis was increased. However, continuing to explore this idea and the implications of how far embodied critical play is applicable for a non-virtuous player is an area for further study.
8. Finally, further development of embodied critical play beyond a proposed design goal, and towards establishing a framework, is suggested as an important area for further work.

5.5 **EMBODIED CRITICAL PLAY: REIMAGINING THE HOLODECK**

The opening statement of this thesis drew a link between the history of technology and playfulness as being the place where games emerge. It is prudent to return once again then, to play.

Huizinga’s (1955) magic circle of play has been applied to a wider conception of art, beyond games. While this work has primarily focused on issues of aesthetic distance by situating videogames in an art historical context, there is, however, an alternative conception of games – and indeed, of the history of art itself – through the history of play. Such a perspective is explored extensively in *Critical Play* (Flanagan, 2009), which also notes that connections between art and play have been prevalent in contemporary philosophy of art; thus echoing the contributions by Walton (1990). Through such a lens, art and play are the same, and it is here that we find videogames.

This is ultimately a work on videogame design, but the findings here have implications for how we play, and how we engage with all art. The discussion on aesthetics began with a definition of aesthetic studies as being concerned with what it is that is valuable about objects – be they art objects, or, in contemporary thought, the everyday. Through this study of aesthetic distance, the discussion has concerned itself with how videogames create meaning through interaction – particularly when the nature of this interaction changes through being progressively embodied. This follows Penny’s (2004) call for exploration of the aesthetics of interactivity. Thus, a significant aspect of the aesthetics of videogames is the question of what is valuable about interactivity.

This research programme has sought to contribute to this concept empirically, by demonstrating that mimetic interfaces, which successfully elicit a Sense of Embodiment through body ownership, spatial presence and agency, narrow the sense of aesthetic distance that a player feels from a morally significant game. This leads to a mixed outcome; the idea of the “immersive fallacy” suggests that what is valuable about interactivity is not necessarily transporting the player to an illusory world in which “the frame falls away completely” (Salen & Zimmerman, 2003), as proposed by the concept of the Holodeck (1987). Instead, games, as systems of rules express meaning through the simulation gap (Bogost, 2006) between those rules and the player’s subjective understanding; this is a concept for which a Sense of (Physical) Embodiment is not required, although there is always some degree of participative embodiment in such games (Section 1.3.3.2).

Interestingly, concerns like those about the immersive fallacy are not new; they are also reflected in the history of art (Section 2.2.1) with the ideas of Samuel Taylor Coleridge, who asserted that the goal of stagecraft (theatre) should not be to transport the viewer. This is a concept rooted in concerns about the narrowing of aesthetic distance such that a viewer cannot separate it from reality. However, the history of art and theatre also offers insight into how this narrowing of aesthetic dis-
tance may itself give rise to meaning; the anti-naturalist, anti-realist position on theatre was subverted in the early twentieth century by the avant-garde movement, who believed in the “crossing and erasing of the boundaries that had traditionally split and limited the effectiveness and influence of art” (Groys, 2011, p. 100). Therefore, contemporary trends in prioritising ‘immersion’ in videogames may be seen as part of the cyclical nature of the anxieties surrounding our engagement in art. Nevertheless, in line with the history of art, as technological improvements in videogame interfaces continue apace, this work contributes insight into what this means for the way players understand and engage with games as this happens.

The progressive increase in Sense of Embodiment results in reduced aesthetic distance, though it is still one in which the player experiences a sense of double awareness. It is not impossible of course, that one day the dream of transparent immediacy may be realised, and the frame may indeed fall away completely, leaving players at a kind of immersive apogee, only to begin the cycle again. However, in the meantime, players will inevitably mediate their experience through their ludic-aesthetic attitude, even as interface mimesis increases.

Such an exploration of the aesthetics of interactivity is also important, since, as suggested by Dovey & Kennedy (2006), “the separation between play and everyday life – which… is implied by the ‘it’s only a game’ response of those on the magic circle island – has all but broken down in the commodification of the play principle in consumer societies” (2006, p. 101). Videogames, as mass consumer products, often feature uncritical representations of hegemonic real-world systems spanning from troubling representations of gender and race (Dovey & Kennedy, 2006), to the military-industrial complex (Kline et al., 2003), to problematic interpersonal interactions (Khandaker-Kokoris, 2015a).

Therefore, this work calls for such innovations in interface technology to aim beyond such uncritical representations and instead towards the possibility for embodied critical play. As with the work of avant-garde theatre practitioners in the early twentieth century, this may provide the potential to use increasing mimesis to evoke meaning for the player by creating an experience aspiring towards a representation of reality, which the player may frame as a simulation through their double awareness.

Therefore, embodied critical play is a design goal for interaction with videogames, which refers to videogames that seek to address morally significant themes by explicitly evoking a strong Sense of Embodiment in the player. An increased sense of physical embodiment, it may be argued, may thus allow for procedural rhetoric that is perhaps more visceral and powerful, by committing the actions of the player to their real world, physical body. A nascent example of this is a game such as Project Syria (2014) (5.2.1.1), played using an Oculus Rift HMD, which addresses the difficulties of war.
However, as asserted by Sicart (2009), “a player has to have *ludic maturity* [emphasis added] to understand the reasons behind the simulation and the fact that she is interacting with a game world specifically designed to produce a ludic experience.” Where such ludic maturity – and further, systems literacy – exists, the concept of embodied critical play has the potential for players to not only understand a game *through* interacting with the systems, but also through their sense of embodiment *within* that system. *Embodied critical play* operates within the magic circle, through the double awareness that exists between a player’s own understanding of who they are, and who the game is asking them to be; although Baudrillard (1989) was referring to the concepts of gender and sexual liberation, he nevertheless stated: “It’s *always* the same: once you are liberated, you are forced to ask who you are.”
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How Games Can Touch You: Ethics of the Video Game Controller

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ABSTRACT

Novel kinesthetic and mimetic video game interfaces, such as the Wii Remote and instrument peripherals for Rock Band, are seeing widespread mainstream adoption. However, with games ranging from the banned Manhunt 2 to the family-friendly Wii Sports, this Section discusses the ethical implications of increasingly realistic interfaces, and thus offers a position from which to further consider the controller as an integral part of the overall game design.

KEYWORDS

interface, embodiment, cybernetic, cyborg, virtue ethics, phenomenology, aesthetic distance, simulation.

INTRODUCTION

In 2007, the British Board of Film Classification (responsible for regulating films and video games in the UK) issued a statement banning Rockstar’s Manhunt 2 (“BBFC Rejects Video Game Manhunt 2”, 2007)); this was the first game since 1997 to be thusly rejected. The statement claimed that the game “constantly encourages visceral killing with exceptionally little alleviation or distancing.” Additionally, four United States Senators at that time also wrote a letter to the Entertainment Software Rating Board (ESRB) to suggest it reconsider its ratings system in light of Manhunt 2. Notably, their concerns specifically addressed the fact that the game was available for the Nintendo Wii. The senators wrote (Tapper, 2007):

[The Wii] system permits children to act out each of the many graphic torture scenes and murders in Manhunt 2 rather than simply manipulating a game pad. This led one clinical psychologist to state that the realistic motions used with the Wii mean that ‘You’re basically teaching a child the behavioral sequencing of killing’. …we do believe that the ESRB should take the Wii Remote controller, and future advances in game controllers, which create more realistic gaming environments, into consideration.

These assertions are exemplary of the “moral panic” demonstrated by the “common media argument,” as observed by Sicart, “that games lead to violent behavior and desensitization in the face of violence” (2009). Of course, in the case of Manhunt 2 as above, it is seemingly the kinesthetic mimicry of the motion-sensing Wii Remote controller that raises ethical questions about the game. That is, the way in which the violent actions occurring onscreen must be physically acted out by the player, using the Wii Remote. The game provides a close mapping between the player’s real-world action, and the in-game action. We can therefore question whether the game would garner the same kind of controversy had it been developed solely for a classic, non-motion based controller, in which the player’s actions (pressing buttons) are abstracted from the character’s actions on-screen.

Of course, such “moral panic” regarding new technology is not new; Janet Murray, in her seminal text Hamlet on the Holodeck (1997), describes the cultural history of such adverse reactions and the “fear
with which we have greeted every new powerful representational technology.” (1997, p. 21) For example, Huxley’s Brave New World (1932) described a dystopian vision of the future, triggered by the advent of cinema, in which audiences could enjoy ‘feelies’; movies which pervade our bodily senses, and feature realistic, somatic representations of “arresting helicopter views, lots of sex, and characters who are constantly bursting into song.” (Murray, 1997, p. 20) Murray states that “for Huxley and Bradbury, the more persuasive the medium, the more dangerous it is... as soon as we open ourselves to these illusory environments, we surrender our reason and join with the undifferentiated masses, slavishly wiring ourselves into the stimulation machine at the cost of our very humanity.” (1997, p. 21)

This Section will explore the ethics of video game controllers; that is, the physical hardware interfaces by which a player may interact with a video game system. I will explore how interfaces which increasingly map a player’s real-life-body to the game system may increase the verisimilitude of “illusory environments”. If this does indeed create experiences which are more “persuasive”, I will explore the potential ethical implications of this, how much ethical responsibility lies with the player, and the designer respectively. An interdisciplinary approach, combining philosophy and interaction design, will inform this analysis. Where possible, empirical evidence will be referenced in this discussion; otherwise it will be made explicit that the statement is a hypothesis motivated by theory and/or experience as opposed to rigorous empirical observation.

The central thesis of this Section is that as this verisimilitude of experiences within games increases with innovations in controller technology, from a virtue ethics perspective, there may be potential for misuse by a non-virtuous player. Furthermore, it is proposed that abstract games and simulations lay on opposite ends along a spectrum. As controller technology evolves to more accurately accommodate our bodily inputs, the player’s game experience moves away from abstraction and towards simulation instead. It is argued that whilst in certain circumstances (such as training applications) this may be desirable, the sense of ‘aesthetic distance’ required to critically evaluate one’s actions within the game may be lost. Therefore, in terms of games designed for entertainment, any games which do not conform to what we would consider “ethical” in the real world, may have ethical implications if a non-virtuous person were to play them.

In this Section, I will first define establish terms. I will look at what is meant by the ‘controller’, and, importantly what is meant in this context by “ethics” and “ethical implications” in this context. I will also discuss the ethical framework to be used throughout this analysis.

Next, I will examine the notion of ‘aesthetic distance’, a concept central to this thesis; the way in which a degree of separation is required for a player to be able to appreciate a game as ‘art’. This will be discussed within the context of the cybernetic relationship between the player and the game. I will argue that games are defined by their capacity for interactivity, of which the control interface is a crucial component dictating the possibilities for physical action. I will also extensively discuss the notion of embodiment in order to highlight the possibilities narrowing the gap between the player and the game, and what this means when simulating games with unethal themes. Finally, I will use this analysis in order to draw conclusions about the ethical responsibilities of both the player and the designer as innovations in controller technology move forward.

This analysis will thus begin with by defining key terms; what is the controller, and what do we mean by ethics in this context?

**Defining the Controller**

The controller is a player’s crucial link to the game world and is a part of the game experience itself; it is the only component that is physical. These controllers may take the form of gamepads, joysticks, keyboards, computer mice, steering wheels, plastic instruments, dance mats, and so on. Interfaces which are kinesthetic or gestural (those which allow for movement or gestures respectively, such as the Nintendo Wii, Microsoft’s Project Natal, and Sony’s PlayStation Move), mimetic interfaces (those which closely resemble their real-life counterparts in appearance and/or their use, such as the Rock Band or Guitar Hero series), or indeed, the classic controller (the traditional joystick-and-buttons gamepad) are all, nonetheless, notable for the physicality of the interaction they offer. It is only video games that have maintained such obvious physical reliance on a ubiquitous mechanical controller, separating them from non-digital games (Myers, 2009). Gestural and kinesthetic control mechanisms, such as the Nintendo Wii, Microsoft’s Project Natal, and Sony’s PlayStation Move, have become increasingly notable for their commercial popularity. While the concept of gestural interfaces is not at all new
(earlier examples include the *Nintendo Power Glove*, the *Sega Activator*, and so on), these previous examples were generally commercial failures. However, due to improvements in sensor technology being able to more accurately reflect a player’s real-life bodily input within a game, novel interfaces of all types are becoming more prevalent. Such a paradigm is termed by Slater & Usoh (1994) as “Body Centred Interaction”, and they empirically show that a user’s sense of being there within a virtual environment is maximized with interaction techniques that match bodily proprioceptive (our sense of the different parts of our body in relation to one another) and sensory data.

**An Ethical Approach**

In beginning this line of inquiry, it is useful to first define what is meant by ethics and ethical in this context. The discussion in this Section takes place within the frameworks of normative ethics; that is, a consideration for the les. , or norms, for our moral behavior, and the way we assess what is right and wrong, in everyday life (Stewart, 2009). Normative ethics breaks every action down into three components, and three types of normative theory, or moral philosophies, are concerned with each of these: utilitarianism concerns itself with the consequences, deontological theories are concerned with the action itself, and their motives, and virtue ethics concerns itself with the agent, or doer. This applied approach offered by normative ethics, and each of these three moral philosophies, are useful tools in examining our always-physical component of our interaction with video games.

This Section considers the ethics of games, with respect to the controller, to consist of three ethical objects, to be explored throughout, using normative theories of ethics. These are thus:

1. The designed system of the game itself (including the controller) as a set of procedures, affordances, and mappings. Thus, from a consequential ethical approach (such as that considered by the mainstream media argument), the game may be deemed to have a certain “ethical potential” for consequences. This will be referred to hereafter as the game-object.

2. The role, from a deontological perspective, of the game designer in the “distributed responsibility,” as those that have given rise to a game with such “ethical potential.”

3. The ethical subject of the player themselves, and the ethical actuality of their experiences, as informed by virtue ethics, and the framework proposed by Sicart (2009). This will be referred to hereafter as the player-subject.

In this section, I will discuss what each of these ethical objects mean in terms of the central argument of this Section. Embarking upon this examination, we are initially faced with the same questions asked by Sicart in “The Ethics of Computer Games” (2009): “Is it the ethics of the game, or the ethics of playing the game? Is there such a difference?” and “do game designers have moral responsibilities?” (2009, p. 3).

Sicart (2009) defines an ethical game experience as one “in which the player, a body-subject that exists and experiences the game system, can interact with that system as a moral agent”; that is, that they are a being capable of reflecting on what is right and wrong. Thus, an ethical game is “an experience that allows for the player’s ethical behavior, interpretation, and, in the best possible case, contribution to the value system of the game experience” (p. 145). Furthermore, unethical content is posited as “the actions that are designed to simulate what we would consider unethical behavior outside the game, but also simulations that in themselves, can be considered unethical” (p. 191).

In line with this, the analysis in this Section will also place importance on this phenomenology of playing, due to the aforementioned physicality of interactions with controllers, a concept that will be further explored. Indeed, rather than being “a semantic quality of the game,” [ethics] have much more to do with “the ontological nature of the game, as well as with the phenomenological experience of games.” (Sicart, 2009)

This player-centric ethical framework uses virtue ethics to inform this approach, due to its concern with the agent, or doer. Virtue ethics is a moral philosophy assuming that what is ethical is defined not only by what “conventional morality requires,” but also by “what a virtuous person,” or in this case, a virtuous *player*, would do. This perhaps echoes Aristotle’s virtues as related to “what the man of practical wisdom would determine.” Thus, Sicart asserts that: “the virtue ethics approach is essentially player-centered. It defines players as virtuous beings who make game play choices informed by their practical
wisdom, guided by the presence (or absence) of a number of player-specific virtues.” Therefore, virtuous players are able to cognitively distance themselves from a game experience, in order to step back and critically reflect upon their actions; this will, in the context of this Section, be discussed alongside the notion of the ‘aesthetic distance’ of a given game and controller.

Additionally, the notion of “distributed responsibility” (Sicart, 2009) should be considered, referring to the fact that “in the game experience, there are a number of elements that share in non-proportional ways the responsibility for the game’s ethical content.” While we will use virtue ethics to inform our approach of the players in their experience of playing the game, a non-consequential, deontological perspective (one that is more concerned with intentions rather than consequences) will inform the consideration of the designer’s responsibility.

This is an approach more concerned with the intentions associated with the creation of ethically questionable games, rather than on its consequences. Arguably, such a consequentialist approach is taken by the aforementioned “common media argument”, purporting that games such as *Manhunt 2* lead to unintended behavior modification; for example, as the US senators stated, “teaching a child the behavioral sequencing of killing.” However, these frameworks of virtue ethics, (concerned with the player-subject) and deontological theory (concerned with the designer’s intentions) allow for discussion beyond the common media argument.

Considering these three ethical objects will inform the line of exploration in this Section, which is the extent to which the innovations in controller technology increase the verisimilitude of experience within games, and what implications this may have.

In the next section, I will discuss the notion of aesthetic distance, and, as we consider how improvements in controller technology may move a game experience from one of abstraction to one of simulation, why this notion is required for artistic appreciation of a game. I will also discuss the relationship between the player and the game, as mediated by the controller, and thus highlight the primacy of interactivity within games, and how such improvements in technology lead to an increased sense of player embodiment, as elicited by the controller itself.

**FROM ABSTRACTION, TOWARDS SIMULATION**

**Aesthetic Distance**

Game designer Greg Costikyan in advocates that, in one perspective, “games are a form of art in which [players] make decisions in order to manage resources through game tokens in the pursuit of a goal.” (2002) If we note this definition of games as a form of art, then we can propose that the concept of “aesthetic distance” should apply here. This is a literary term, defined by *Encyclopedia Britannica* as “the frame of reference that an artist creates by the use of technical devices in and around the work of art to differentiate it psychologically from reality.” (2010) Indeed, the term was coined by Edward Bullough in order to refer to the perspective with which one should contemplate a work of art. Bullough wrote:

*Distance ...is obtained by separating the object and its appeal from one's own self, by putting it out of gear with practical needs and ends. Thereby the 'contemplation' of the object becomes alone possible. But it does not mean that the relation between the self and the object is broken to the extent of becoming 'impersonal.'* (Bullough, 1912)

This notion of aesthetic distance is in line with German playwright Brecht’s techniques in order to ‘alienate’ the play, reminding the spectators that they were experiencing a representation. This arose from his criticism of Aristotelian theatre, which he saw as keeping the audience immersed without giving them a chance to take a step back and critically think about what is happening on stage. In contrast to this, Brecht forced them to think about what they were watching. Blackman (1998) describes similar critiques made by interactive artists, in which the user’s expectations were deliberately played around with by introducing into the electronic art works ‘bugs’ and ‘malfunctions’, in order to ‘disturb’ the choice offered to the user; these attempt to ‘force the user to reflect upon their own preconceived expectations and desires within virtual space.
Therefore, the use of the virtue ethics perspective is appropriate here, as there is otherwise a tendency to think of the player as a passive, “guilty victim,” who is “abandoned by her moral intuitions in a labyrinth demiurgically created by the game developers” (Sicart, 2009). Instead, we may consider a virtuous player, who is one who willingly and knowingly engages in the game; a moral user capable of reflecting ethically on the experiences they encounter in the game, and how it shapes their own values both within and outside of the game world. Therefore, the virtuous player is someone who is able to critically reflect upon their experience; this is comparable to the effect of enforcing a sense of aesthetic distance within an artistic experience, such as a game.

In this section, I will examine how the player relates the game, as mediated by the controller, and will also define and argue the concept of controller-evoked phenomenological embodiment as a mechanism by which the aesthetic distance is narrowed. By using philosophical and theoretical game design perspectives, I will argue that games played using classic controllers (such as the gamepad and keyboard) actually enforce a sense of aesthetic distance, allowing them to be more abstract experiences, which can be appreciated and evaluated as art by an ethically virtuous player. However, it is suggested that as controller technology evolves, and a sense of embodiment increases, the aesthetic distance actually narrows. This means that the player’s experience of the game moves away from abstraction, and instead towards simulation. What this means, and the ethical implications of this, will be discussed.

The Embodied Player

Throughout history, there has been a prevalent belief in the Cartesian duality of mind and body; that is, that the notion that the mind exists separately from our physical selves. Increasingly, however, philosophers, psychologists, scientists, and even interaction designers alike are conceding that our bodily perceptions are the “ultimate foundation of our knowledge about ourselves and the world.” As noted by Klemmer (2006), “direct physical interaction with the world is a key constituting factor of cognitive development during childhood.” Further, the neuroscientist Damasio (1994) states that “the body contributes more than life support; it also contributes a content that is part and parcel of the workings of the normal mind” (p. 226). In short, human experience is shaped by our very physicality and our presence in the world; we recognize the world through our ability to physically act within it.

The concept of embodiment is rooted in the phenomenological philosophies of the early 20th century. Phenomenology is a branch of philosophy that concerns itself with lived experience and has its roots in the work of philosophers such as Husserl, Heidegger, and Merleau-Ponty. Merleau-Ponty describes the task of phenomenology as ‘unveiling the pre-theoretical layer’ of human experience. That is, it is the study of how we each experience things. Dourish (2001), in his seminal text “Where the Action Is,” advocates the idea of embodiment as a sense of phenomenological presence, comparable to Biocca, who defines phenomenological embodiment as “being able to act through one's technologically enhanced body” (Biocca, 1997).

Steven Poole, author of Trigger Happy, a book about the aesthetics of video games, states that “the videogame is not simply a cerebral or visual experience; just as importantly it is a physical involvement—the tactile success or otherwise of the human-machine interface” (2000, p. 73), and describes this relationship between a player and game as a “cybernetic thing.” Westcott (2008) acknowledges that the classic controller presents a sense of abstraction between the physical actions of pressing the button and the visual happenings on-screen, thus it is tempting to equate the classic controller with a sense of Cartesian dualism; that the physical and the mental are separate.

However, even with a classic controller, there is still a sense of spatial compliance; moving an avatar left, for example, also generally involves pressing the thumb stick or directional pad to the left side. Thus, the space of play, including the body, has always been implicated in the game experience to some degree; in this way, perhaps, the classic controller does not, as discussed above, break the “relation between the [player] and the object… to the extent of becoming impersonal.” Simultaneously, Poole (2000) theorizes that the ‘distant mapping’ of the classic controller enforces a sense of alienation from the game world, which he terms as “cybernetic dissonance”; we can thus equate this to the notion of aesthetic distance. It is argued, then, that the verisimilitude of experiences offered by the classic controller are at the ‘abstract’ end of the spectrum, enforcing a sense of aesthetic distance required for a virtuous player to be aware of their actions.

Of course, we do not play with the controller, but rather with “representations of objects arbitrarily assigned to various controller buttons and sequences”. Of course, this assignment is not necessarily arbi-
trary, but rather a design decision (for a broad overview of this, see the text *Game Feel* by Steve Swink (2009)). For example, the closeness of this mapping between controller-and-game is variable, as is the nature of the mapping. This is a design decision, which varies from game to game. This concept of ‘closeness’ in interaction refers to how far an action on the controller relates to real-world action. For example, whilst using the drum peripheral to play *Rock Band* exhibits very close mapping to playing real drums (i.e. the action of drumming in Rock Band is the same as the action of drumming in real life), using a NES gamepad to play *Street Fighter* does not closely map to real fighting (i.e. pressing buttons is not the same as real life kicking or really performing a Dragon Punch). Gregersen & Grodal (2009) assert that the extent to which an embodied sense of agency, ownership, and personal efficacy is fostered is very much a question of overall design including interface design, and note how games may be designed to selectively target and activate the auditory, visual, and proprioceptive systems. Such design decisions also dictate the verisimilitude of the game, dictating where along the abstraction-simulation spectrum a game experience may lay.

Sicart notes that phenomenological experience of the game is what Salen & Zimmerman (2003) define as interaction, and asserts that to interact with a system is to create meaning. If interaction is the phenomenological experience of the game, then it follows that changing the nature of the interaction by altering the interface also changes the nature of the player’s phenomenological experience.

**Controller-Evoked Phenomenological Embodiment**

In aiding our thinking about the cybernetic connection of playing video games, and phenomenological embodiment, we may consider the technological degree to which a player’s physical self is mapped to a game, via the controller. We can define this hereafter as its cybernetic bandwidth. The cybernetic bandwidth is formed of information channels (such as tangibility, kinesthetic movement, and force feedback) and the varying resolutions of these channels (i.e. how accurate it is). Therefore, the classic controller, while tangible, has one input modality, and thus would have low cybernetic bandwidth (unless there is also a Rumble Pak), whereas the Wii Remote that affords tangibility and kinesthetic movement has higher cybernetic bandwidth. Conversely, Microsoft’s *Project Natal* control mechanism, which may have a higher resolution of kinesthetic movement (e.g., greater accuracy and more information sampled), does not afford tangibility, so has a different cybernetic bandwidth. This concept of the cybernetic bandwidth is therefore an abstract model, helpful in thinking about the degree of verisimilitude of the mapping between a player’s physical actions, and the resulting in-game output.

However, increasingly physical interfaces (with a higher cybernetic bandwidth), move us beyond the abstraction of the keyboard or classic controller, and bring a sense of phenomenological embodiment back to the game experience, via the very physicality of the interface. For example, in a game such as *Boom Blox* (on the Nintendo Wii), although the player is disembodied in the sense of lacking any kind of avatar representation, the Wii Remote helps to evoke a sense of phenomenological embodiment by being able to manipulate objects at hand naturally, by either using the grab tool (and being able to maneuver blocks as expected), or throwing the ball. Thus, the sense of embodiment and being able to act through one’s technologically enhanced body is strong, despite the lack of visual representation. The embodiment is elicited through a sense of kinesthetic and tactile agency via the particular designed mapping between the Wii Remote and the game.

Therefore, a higher cybernetic bandwidth, arguably leads to his increased sense of phenomenological embodiment. However, as this verisimilitude of experience continues to increase, the game experience becomes one of simulation; this may lead to problems where the game features ethically questionable content.

**Narrowing Gaps in Embodiment, Narrowing Aesthetic Distance**

When a real life physical action is performed, such as hitting an object with a stick, this will translate into “easily felt force dynamics”; the enactor will feel the effect on their muscle tension, as well as the dynamics of posture and touch. However, such crucial sensory inputs are missing when using an interface such as Wii Remote, Sony Eye, or indeed, Natal, to hit a virtual representation of the same object in a virtual space.
Therefore, the ‘cybernetic dissonance’ (i.e. the disjoint between the player’s physical action and the action that occurs in the game) remains, though somewhat narrowed by increasingly real interfaces. A lack of total phenomenological mapping every sensory sense may still, as mentioned by Gregersen & Grodal, yield a dissociation of sensory experience (2009); that is, there still remains a gap in the phenomenological embodiment granted by the interface. Even though the Wii Remote has some advantage over Natal in this capacity, as it is not only gestural but also tactile, there are still shortfalls in physical feedback.

Therefore, as asserted by Gregersen & Grodal (2009), this yields an incongruent motor realism – which essentially translates to “what you feel and what you see do not add up”. The sense of ownership of the real body is high in such a scenario because body schema processes are activated, as opposed to when than simply pressing a button on a classic controller, yet there is no visceral feedback.

Indeed, empirical research has shown multi-modal interfaces are potentially instrumental in reducing the problems associated with this incongruent motor realism (Barthelmess & Oviatt, 2009; Cohen et al., 1989); if a device such as the Wii Remote were, for example, augmented with a force feedback device, then during a tennis serve in Wii Sports, this could be activated, allowing for a greater sense of motor congruence than is currently elicited. There is thus a closer mapping between the player’s expectations, and the actual feedback granted by the game system, granting a greater sense of real-world validity to the system, important if we are to design interfaces which are ‘truly mimetic’.

Of course, this becomes increasingly problematic as we consider a violent gestural game such as Manhunt 2: if ecological validity through the addition of force feedback were applied to the interface of a game such as Manhunt 2, allowing a player to feel the physical, visceral sense of stabbing a human being, we may posit that the controversy surrounding this would be greatly heightened.

In the next section, I will explore the way in which, from a virtue ethics perspective, the issue of multi-modal interfaces is a potent one, for both the designer and the player-subject; narrowing the gaps in embodiment lead to a closer mapping between reality and the game. By contrast, I will discuss the way in which classic control mechanisms, with their proposed sense of cybernetic dissonance, do not carry the same weight of ethical implications due to the aesthetic distance they necessarily afford.

**Simulating Unethical Themes**

The ethical implications of ‘narrowing the embodiment gap’ become clearer once we apply this to a more morally questionable narrative, such as Manhunt 2.

We may, then, consider the ethics of employing a multi-modal interface in order to purposely heighten the sense of visceral violence in the game. It was asserted that some advanced type of force feedback technology could be employed in order to allow the player to feel the real, visceral sense of stabbing another human being.

Indeed, Slater & Usoh (1994) define interaction as “the ability of the participant to move through and change the world”, and divide this into two further categories: the mundane and magical. They assert that “mundane interaction is that which attempts to faithfully reproduce a corresponding interaction in everyday reality”, whereas “magical interaction involves actions that are only imaginable in everyday reality”. We can further extend this to mean interactions which are exaggerated or have an oversimplified sequencing.

A hypothetical version of Manhunt 2 as described above, which offers feedback corresponding to reality, would aspire to ‘mundane’ rather than ‘magical’ interaction in order to understand the reprehensible nature of these actions; creating an interface that is fully mimetic in order to more accurately reflect real-life outcomes. Such increased embodiment and agency may in fact heighten the artistic expression intended by a game; however, such a game would also be immensely ethically questionable from a virtue ethics perspective, and would strongly rely upon Sicart’s notion of a ‘virtuous player’, that is, “those player-subjects who have actually developed their ethical reasoning”. Further to this, as the aesthetic distance would have narrowed in such a situation, one may posit that the virtuous player themselves must be relied upon to cognitively distance themselves.
Certainly, Bogost (2009), in discussing *Manhunt 2* in a column entitled ‘*Gestures as Meaning*’, also claims, “the game's coupling of gestures to violent acts makes them more, not less repugnant by implicating the player in their commitment”. He asserts that “in *Manhunt 2*, we are meant to feel the power of Daniel Lamb's psychopathy alongside our own disgust at it. It is a game that helps us see how thin the line can be between madness and reason by making us perform abuse.” This line of argument, however, relies upon the assertion by Salen & Zimmerman that the way in which games create meaning for players is via a mechanism of “double-consciousness”, a “multilayered experience” that is “something separate from, but connected to the real world”. In this sense, the player is fully aware of their game character (where appropriate) as an artificial construct. This constant transfer of identity, which Steve Swink in *Game Feel* (2009) describes as “capricious”, is part of what makes games fun and engaging. However, the capricious flow of identity means that this extension can be “withdrawn” at an instant. Swink suggests that in this way, players avoid blame, but maintain engagement, “getting back to the pleasurable sensations of control more quickly”.

The capricious sense of embodiment and cybernetic dissonance elicited by traditional interfaces can be thought of as offering a similar sense of alienation to German playwright Brecht’s application in theatre, as described earlier in this Section.

In this context, one can consider the relationship between the player and the character within a game as one of a puppeteer-and-puppet; however, with an increase in controller-evoked phenomenological embodiment, this increasingly becomes a relationship of direct identification. Indeed, such a scenario, especially when taken to full technological extremes (full spatial immersion), would perhaps seem the ultimate realization of the ‘common media argument’ of a “murder simulator”. Thus, such a move away from cybernetic dissonance, and the aesthetic distance this grants, seems simultaneously powerful and problematic. Whilst an increased sense of embodiment may strengthen the rhetoric of a game seeking to highlight the reprehensible nature of violent action, it simultaneously creates a dangerous sense of close identification for those who would seek to misuse such an experience.

However, if we note that the games designer may selectively design a system to target and activate the auditory, visual, somatosensory, and proprioceptive systems, we can also consider that the feedback from such an action does not necessarily have to correspond to reality. If we consider instead that a multi-modal interface for *Manhunt 2* may instead aspire to ‘magical’ interaction, we can note the potential ethical implications for such a game which does not “differentiate [itself] psychologically from reality”, and yet is not intended for a player to understand the reprehensible nature of their actions. Such a hypothetical game would again, require not only an ethically virtuous player, but also one may consider the deontological intentions of the game designer, too. The latter concept is further explored in the next section.

Bogost asserts in *Persuasive Games* (2007), that ‘videogames have a unique persuasive power’, as they provide a systemic view of the world which can promote a certain mental model (Bogost, 2007). He defines procedural rhetoric as ‘the art of persuasion through rule-based representations and interactions’, and ‘the act of using processes persuasively’; this can, arguably, be extended to the nature of the controller. An increased sense of phenomenological embodiment, it is asserted, also allows for kind of procedural rhetoric that is perhaps more visceral and powerful, by committing the ‘forced actions’ of the player to their real-world, physical embodiment.

Indeed, in the context of virtue ethics, Sicart asks, “does the act of playing games reinforce moral desensitization?” While this is a perspective often reflected in the “common media argument”, it can be argued that the greater the sense of phenomenological embodiment, the more the notion of the “virtuous player” must be relied upon, as we will further examine.

However, the player-subject is not the only ethical object that must be relied upon; the following case study of a particularly morally reprehensible game, *RapeLay*, will highlight the need for considering the deontological intentions of the games designer too, and include the designer as an ethical object who has a part of the ‘distributed responsibility’ of the ethics of games.

**RapeLay: A Case Study in Unethical Simulation**

The PC game *RapeLay* (2006) has garnered much controversy for its content, which would rightfully fit Sicart’s definition of ‘unethical’; that is, “actions that are designed to simulate what we would consider
unethical behaviour outside the game, but also simulations that in themselves, can be considered unethical”. Indeed, the game is described thus:

“In RapeLay, gamers direct a character to sexually assault a mother and her two young daughters at an underground station, before raping any of a selection of female characters… RapeLay, which was released in 2006, encourages players to force the virtual woman they rape to have an abortion. If they are allowed to give birth the woman throws the player’s character under a train, according to reviews of the game. It also has a feature allowing several players to team up against individual women.” (Moore)

Despite the clearly morally reprehensible theme, a common supporting argument for RapeLay is equating the game with other media tackling similar themes. For example, if rape may be addressed in (once-banned) films such as A Clockwork Orange, then surely video games, a medium rightfully striving to show its ability to handle mature and complex themes, should also be able to portray this. In A Clockwork Orange, however, the audience is meant to feel repugnance at the protagonist Alex’s actions; we can equate this to Bogost’s assertions about ‘our own disgust at’ Daniel’s actions in Manhunt 2. Of course, these claims, as examined, remain valid as long as the player maintains a sense of ‘double-consciousness’, and if the player is ‘virtuous’.

It is, however, outside of the scope of this Section to discuss the ethics of games in respect to their content, though we can see that comparing RapePlay to A Clockwork Orange in this way however becomes blurrier when the interface is altered, creating a sense of increased embodiment. RapePlay is currently designed for a classic keyboard-and-mouse interface, though can claims of ‘artistic merit’ be maintained if the game were released, or modified, to be played via a kinesthetic interface, such as the Wii Remote, or even Natal, so that the game could be kinesthetically acted out? This therefore ventures further into the territory of a full ‘rape simulator’, with very real potentials for misuse by a non-virtuous player. Would the undoubted public outcry that would ensue be justified in such a case? Again, we may refer to Sicart’s assertion that “a designer is responsible for the object, but the players and their communities are ultimately responsible for the experience”, though also acknowledges that “designers also play a role, due to their duties in the distributed responsibility network”.

Furthermore, we can assert that it would be unethical, and non-virtuous for a game portraying rape with a kinesthetic interface to be purposely designed thus. Whilst such an assertion may depend on nuances of the game beyond the potential for interactivity and action, from a virtue ethics perspective, this is unethical to design or play such a game. Authorial intent is important here, and we thus consider the deontological perspective of the game designer’s decision process in creating games which may allow for this kind of interaction. As Sicart states, “a player has to have ludic maturity to understand the reasons behind the simulation and the fact that she is interacting with a game world specifically designed to produce a ludic experience.” (2009)

In the next section, we discuss another facet of the potential for misuse of the powers of simulation; one that is the ethical responsibility of the game designer-object. This is the power to misrepresent simulation, and grant a mistaken sense of virtuosity to players.

**MISREPRESENTING SIMULATION**

**The Problem with Magical vs. Mundane Mimicry**

*Rock Band* is often criticized for replacing teen’s interest in real instruments, and certainly Harmonix CEO Alex Rigopoulus is often questioned about this (Dubner, 2009). However, a study by Youth Music in the UK (2007) concluded that such games have in fact yielded more of an interest in ‘real’ music amongst young people as a result. The report noted that focus group participants in the study were “forthright in their view that how closely a game’s interface resembled a ‘real’ instrument was a vital part of its credibility, both in their eyes, and the eyes of their parents; it’s been noted of course, that games with instrument interfaces currently have a long way to go to make this leap – excepting, of course, the Rock Band drums and microphone, which exhibit the highest degree of mapping between the game interface and the real instrument. It does however remain to be seen whether players continue
to be interested if they do not achieve the same level of success with real instruments as their simulated counterparts.

Jarvinen, (2009) analyzes the emotional experience afforded by such music games, noting how pleasure is derived according to Kubovy’s notion of virtuosity; that is, from one’s own performance and ability. Juul (2009) suggests that players engaging with games such as Guitar Hero, Rock Band, Dance Dance Revolution, and Singstar are performing a choreographed scene, rather than playing music. These games support the display of virtuosity and creativity through specific motor and auditory skills; an example of something Slater and Usoh’s (1994) notion of ‘magical interaction’.

The real ethical issues however, perhaps rise in the lack of clarity presented to players about which of their embodied interactions are intended to be mundane, and to reflect reality, and which are exaggerated, magical interactions; and furthermore, the misconceptions in the media about this. For example, Wii Fit has effectively marketed itself as not a game, but as a utility for exercise. It follows then, that many consumers expect this as a replacement for gym membership or other exercise. However, empirical studies found that Wii Fit produced “underwhelming results,” in terms of exercise intensity, and in all cases, performing an actual exercise activity rather than Wii Fit's virtual approximation resulted in “significantly higher” caloric expenditure. The Rhythm Boxing activity, in particular, burned one-third of the calories expended per minute of traditional boxing, although overall, Wii Fit burns twice as many calories as a sedentary video game. (Cowan, 2009)

As a subset of considering the designer’s ‘distributed responsibility’ as an ‘ethical object’, an additional question of business ethics is thus raised here; just because it is conceded that Wii Fit is more efficient at burning calories than classic, sedentary interfaces, is it ethical to not make the game’s ‘magical’ interaction explicit, given the activities within Wii Fit are not suitable replacements for real activity?

This Section has largely discussed the potential for ethical problems which may arise when playing and designing games which offer an increased verisimilitude of experience due to the control mechanism. Of course, when played by a virtuous player-subject, such games, akin to simulation, have the potential for benefits, too; the most notable of example of this is in training applications for military and/or healthcare. Indeed, a study of 33 laparoscopic surgeons found that those who played video games were 27 percent faster at advanced surgical procedures and made 37 percent fewer errors compared to those who did not play video games. Indeed, advanced video game skill and experience are said to be “significant predictors of suturing capabilities, even after controlling for sex, years of medical training and number of laparoscopic surgeries performed”. Additionally, a second study of 303 laparoscopic surgeons (82 percent men; 18 percent women) also showed that surgeons who played video games requiring spatial skills and hand dexterity and then performed a drill testing these skills were significantly faster at their first attempt and across all 10 trials than the surgeons who did not the play video games first. (Association, 2008)

Sicart asserts that “game designers are ethically responsible for the ways they have created the formal system of rules; that is, according to the behaviors they want to encourage in players.” (2009) For the purposes of this Section, this ‘formal system’ includes, of course, the control mechanism. He further states that “games force behaviors by rules: the meaning of those behaviors, as communicated through the game world to the player, constitutes the ethics of computer games as designed objects.” With respect to controllers with higher cybernetic bandwidth, often these behaviors are kinesthetic and gestural, such as in the example of Manhunt 2.

**TOWARDS A CYBERNETIC HEGEMONY**

Poole theorizes that “in general, cybernetic developments [that is, innovations in controller technology] will always increase the possibilities of closer and more pleasurable interaction with a video game.” However, he also goes onto question how far this notion remains relevant as interfaces further evolve:

> “Will [total immersion], then become the dominant means of video game control? Perhaps; but if so, the spirit of Heidegger will rise again to warn that such cybernetic hegemony will necessarily narrow the field of possibilities.” (Poole, 2000)
He suggests that “the perfect videogame feel requires the ever-increasing imaginative and physical involvement of the player to stop somewhere short of full bodily immersion.” Thus, the ethical gamen Object, and how it relates to the experience of the player-subject requires a boundary.

Such an assertion is in line with Salen & Zimmerman’s (2003) concept of the immersive fallacy, which refers to the widely held, but seldom examined idea among gamers and developers alike that “the pleasure of a media experience lies in its ability to sensually transport the participant into an illusory, simulated reality” (p. 450). We can see the widespread nature of this immersive fallacy manifest itself in countless commercial games which promise more and more realistic graphics, and thus, greater immersion. This notion is something that “takes over all our attention, our whole perceptual apparatus” (Murray, 1997). As Salen & Zimmerman point out, the danger of immersive fallacy “is that it misrepresents how play functions... and game design can suffer as a result” (2003). In other words, the immersive fallacy is the mistaken idea that the more realistic a game, the better, or more worthwhile it is; the way in which games create meaning for players is not through an abundance of technologically-delivered sensory information that aspires to reality, but, as Salen & Zimmerman suggest, via a mechanism of “double-consciousness”; that is, it is “something separate from, but connected to the real world.”

This idea of a boundary between the player and the game is also one that is explored in the 1999 David Cronenberg movie, eXistenZ. In an analysis of this, Keane (2002) says that “much of the distinctiveness of the film lays in its deliberate resistance to similarities with prior videogame and virtual reality films. Part of that distinctiveness is exactly the fact that Cronenberg concentrates so much on the physical interface between player and game.” Keane cites Cronenberg speaking of the movie:

“It seemed to me that what people are really doing in computer and video games is trying to get closer and closer to fusing themselves with the game... So I went that little bit further – if I want to be the game, the game will also want to be me. [– David Cronenberg]” Keane (2002)

Indeed, eXistenZ presents three kinds of control systems: the first one that the viewer is introduced to are Meta-Flesh Game Pods, which are connected via an UmbyCord into a bioport (an opening in the player’s spinal cord). This highly invasive interface paradigm is further exacerbated in the game-within-the-game by the MicroPod, which disappears into the player’s spinal cord completely. Finally, at the end of the film, the non-invasive VR system worn by the players is revealed. Therefore, from VR system, to plugging into spines, to pods disappearing completely into spines, Cronenberg increasingly “fuses” the player with the game, making the technology used to do so more invisible, and more intrusive, each time. Indeed, one of the movie’s most iconic lines is its last, in which the protagonists ask: “Tell me the truth: Are we still in the game?”, thus suggesting the blurring of the boundaries; a warning, perhaps, about the dangers of virtual reality and simulation.

Of course, we may equate this to Janet Murray’s review of the early concerns about cinema and television, as mentioned in the introduction o this Section; the ethics of becoming absorbed in a passive technical medium manifested themselves in the cultural media of the time through works such as Huxley’s Brave New World (1932). Indeed, cultural theorist Steven Shaviro notes that “Each time we extend ourselves technologically, some part of the real gives way to the virtual. This is why every cultural innovation is attended by an ambivalent sense of loss.” (2003, p. 104) This idea of extending ourselves technologically, akin to the idea of phenomenological embodiment as already discussed, is also presented by Marshall McLuhan. Shaviro cites McLuhan’s assertion that “every technology is an extension of ourselves”, although “in each instance of technological change... we misrecognize the very extensions that we have created and see them as forces alien to ourselves.” (2003, p. 104)

Shaviro presents this notion of technological extension to being a cyborg, stating “I become a cyborg when some part of my actual body is taken over by the virtual.” My sensory apparatuses, and my organs, are always being replaced or extended by technological devices. This process is coextensive with the whole of human culture” (2003, p. 103), and he notes that the distinction lies particularly in the use of “electromechanical devices”. Therefore, “perhaps just wearing glasses doesn't quite make one a cyborg, but watching television certainly does.” (2003, p. 104)
Therefore, Shaviro presents a possible counter-argument to the central thesis of this Section: if we have always been cyborgs to some extent, as he suggests, then are concerns over the ethical implications of increased fidelity of simulation unwarranted? If the boundary (the aesthetic distance) between ourselves and the game are minimized, is this cause for concern about non-virtuous players? Or can this be equated to early dystopian concerns about cinema, as in Brave New World?

However, as we have discussed, games are defined by their capacity for interactivity, differentiating them from other mediums. Indeed, as Sicart argues, “there are some specific ontological properties of computer games that raise unique ethical challenges” (2009), namely the primacy of interactivity. Therefore, it is argued that games can potentially offer an enhanced sense of verisimilitude to reality, given a controller with a high cybernetic bandwidth. Therefore, whilst we can place other mediums on the ‘abstraction’ end of our proposed abstraction-simulation spectrum, games offer an unparalleled potential for simulation, greater than other forms of media.

Such an idea is akin to the notion of the aesthetic distance required in order to appreciate a game ‘as a game’, and thus for a virtuous player-subject to be able to critically evaluate their actions within a game. Thus, it is posited that an increased sense of aesthetic distance from a game, created by the controller, provides the player-subject with an abstract experience; it is suggested that such an abstract experience is required for players to be able to critically evaluate their actions as art. This is particularly salient when considering games which may feature “unethical content”, as examined earlier in this Section.

CONCLUSION

In this Section, I have argued that increasingly accurate controller input modalities strengthen the prosthetic cyborgian relationship between a player and a game. In other words, as controllers get closer and closer to mapping a player’s real-life, physical body, into a game, more and more parts of our experience are essentially replaced with this prosthetic relationship. Therefore, the experience no longer has as many mediating factors (e.g. abstraction from classic controllers) to help “differentiate it psychologically from reality”. This therefore, decreases the player’s sense of ‘aesthetic distance’ required for the player to critically evaluate a game experience as art.

Perhaps the only way in which we may be certain of ‘the capricious transfer of identity’ may be to maintain ‘cybernetic dissonance’, so one may argue this is appropriate for the aesthetic distance required for tackling controversial themes. Conversely, as pointed out, in order to portray the reprehensibility of certain themes, one may assert that an increased sense of embodiment as granted by kinesthetic, mimetic interfaces is useful, when aspiring to mundane rather than magical interaction.

However, this increased verisimilitude means that rather than being appreciating an experience as a game, the game moves along the spectrum from abstraction towards simulation. This does not have as many ethical implications if we hold the notion of the virtuous player, who is able to “understand the reasons behind the simulation and the fact that she is interacting with a game world specifically designed to produce a ludic experience.” However, if a non-virtuous player were to play the same game, this may be ethically problematic, as discussed in the analysis of RapeLay.

Sicart states that “games are powerful simulation tools that convey worldviews, messages, and values”, and this power becomes even more prevalent with increased controller-evoked embodiment. Sicart continues that “Emptying games of ethical reflection in their design and using unethical content for its shock value as a marketing resource means not only devaluing the possibilities of games as a means of expression, but also making products that are unethical objects.”

In the case of RapeLay, or indeed, Manhunt 2, we may also place ethical responsibility upon a designer not to create games which could be misused by an ‘non-virtuous player’, though simultaneously, we may also consider whether ethical concerns over the embodiment elicited in a game such as Manhunt 2 may be reactionary and sensationalist in a current cultural context.

However, as video game technology continues to evolve, including, but not limited to, the controllers, graphical fidelity, and other factors increasing the verisimilitude of game experiences, we can see this as an ongoing march towards the concept of the ‘Holy Grail’ of the Holodeck; a notion addressed by Salen and Zimmerman (2003) as the immersive fallacy. Such a concept is explored by eXistenZ in the
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

tradition of dystopian media regarding new technology, though can be considered a specific warning against control mechanisms and games which are unable to “differentiate [themselves] psychologically from reality”, if we are to consider the Bullough’s definition of aesthetic distance. Indeed, Cronenberg seems, in eXistenZ to present a dystopian scenario in which there is no boundary at all between the game and the player; a cybernetic hegemony. As stated by Cronenberg “it seemed to me that what people are really doing in computer and video games is trying to get closer and closer to fusing themselves with the game,” and eXistenZ is the ultimate extrapolation of this trend, in which any boundaries between the player and the game, and thus, any aesthetic distance, is eliminated.

Cultural theorist Jean Baudrillard states that “a possible definition of the real is: that for which it is possible to find an equivalent representation.” (2003) He asserts that “abstraction today is no longer that of the map, the double, the mirror, or the concept. Simulation is no longer that of a territory, a referential being or a substance. It is the generation by models of a real without origin or reality: a hyper-real which is henceforth sheltered from the imaginary, and from any distinction between the real and the imaginary.”(1988) Indeed, game designer Harvey Smith suggests that “we might, paradoxically, have a truer experience swimming together through simulacra; an experience almost exclusively focused on the things that make us human, on the things that separate us from bacteria, shrubs or insects” (Smith, 2010); that is, it is perhaps the abstract experiences which have the most to teach us.

It may also be argued that dystopian media, such as the movie eXistenZ is typical of the “describes the fear with which we have greeted every new powerful representational technology” (Murray, 1999) and revisit Shaviro’s assertion that “every cultural innovation is attended by an ambivalent sense of loss”. It may also be argued that the philosophical and theoretical game design perspective undertaken in the analysis in this Section has yet to be empirically proven. However, at the same time, in summing up the concerns and ethical implications highlighted within this paper, we may keep in mind this from Shaviro (2003):

“You may say that all this is merely science fiction. None of it is happening, not now, not here, not yet. But science fiction does not claim to be reportage, just as it does not claim to be prophetic. It does not actually represent the present, just as it does not really predict the future. Rather, it involves both the present and the future, while being reducible to neither. For science fiction is about the shadow that the future casts upon the present. It shows us how profoundly we are haunted by the ghosts of what has not yet happened.”

These epiphenomenal overviews of the ethical impact of the videogame control mechanism raise much uncertainty, and further questions as control mechanisms continue to evolve and mature. It is the ethical responsibility of game designers to explore the ethical issues raised by the decision to use a particular interface type in a game, and how the game uses the possibility space afforded by that interface. Indeed, Perron & Wolf (2009) question whether, as control mechanisms evolve, and new controllers and peripherals appear, there are universal statements and claims about interactivity that will hold up in the light of such future innovations. With this evolution, the scope of what games are able to achieve are also broadened. From this uncertainty, one conclusion can be drawn – the unethical course of action is then, perhaps, to not thoroughly consider the implications of the choice of technology and interface for games moving forward.
REFERENCES

- Bullough, E. (1912) Psychical Distance' as a Factor in Art and as an Aesthetic Principle.
## Appendix B – Study 1 Factor Analysis

<table>
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<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>10</th>
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<tbody>
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<td>Did it make a difference for your experience of the game that you knew that the events depicted were fictional?</td>
<td>0.77</td>
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<td>-0.38</td>
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<td>Positive Affect</td>
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<td>To what extent did you find the game primarily repulsive, versus primarily fun/arousing?</td>
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<td>Tension</td>
<td>-0.69</td>
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<td>After playing this scene, would you like to play more of the game?</td>
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<td>Disgust</td>
<td>-0.51</td>
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<td>0.41</td>
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<td>Spatial Presence: Agency</td>
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<td>To what extent could you feel the emotions of the victims?</td>
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<td>Did you find the game stylistically beautiful?</td>
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<td>0.63</td>
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<td>How plausible did you find the events to be?</td>
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<td>How tense did you find the events in the game?</td>
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<td>0.44</td>
<td>0.43</td>
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<td>Challenge</td>
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<td>0.68</td>
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<td>How often do you play First-Person Shooters</td>
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<td>Flow</td>
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<td>Shots fired at civilians</td>
<td>0.45</td>
<td>-0.47</td>
<td>0.36</td>
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<tr>
<td>To what extent did you feel detached or engaged with the game?</td>
<td>0.45</td>
<td>0.37</td>
<td></td>
<td>.42</td>
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An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

To what extent were you focused mainly on ‘style’ (e.g. gameplay, visuals, the controls etc) than events?

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Table B-1: Principal Axis Factor Analysis for Study 1
Appendix C – Study 1 & 2 Q-Q Plots

Study 1
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

Normal Q-Q Plot of SPATIAL PRESENCE: POSSIBLE ACTIONS
for GROUP= KeyboardAndMouse

Normal Q-Q Plot of SPATIAL PRESENCE: POSSIBLE ACTIONS
for GROUP= Gamepad

Normal Q-Q Plot of SPATIAL PRESENCE: POSSIBLE ACTIONS
for GROUP= MotionController
An Empirical Exploration Of Aesthetic Distance Through Mimetic Interface Design in Videogames

Normal Q-Q Plot of CONTROLLER NATURALNESS
for GROUP= Keyboard/AlphaNumeric

Normal Q-Q Plot of CONTROLLER NATURALNESS
for GROUP= Gamepad

Normal Q-Q Plot of CONTROLLER NATURALNESS
for GROUP= MotionController
Study 2

Normal Q-Q Plot of TIME TAKEN TO CUT ROPE
for Condition: Fixed Display

Normal Q-Q Plot of TIME TAKEN TO CUT ROPE
for Condition: Fixed Display and Head Tracking

Normal Q-Q Plot of TIME TAKEN TO CUT ROPE
for Condition: HMD and Head Tracking
PARTICIPANT INFORMATION SHEET:

Project Title: An Empirical Aesthetics Approach to Body-Centered Interaction & Aesthetic Distance: Playing Call of Duty: Modern Warfare 2 on Keyboard/Mouse vs. Motion Controls

Principle Investigator: Mitu Khandaker [mitu.khandaker@port.ac.uk]

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

What is the purpose of the study?
This research seeks to explore the common assumption that a greater sense of bodily verisimilitude is a desirable end goal for video games: a concept known as The Holodeck Fallacy or immersive fallacy. The research will explore how novel control mechanisms, such as motion control, affects a player’s aesthetic thinking; their ability to distance themselves and assess critically what is happening on-screen, as it is happening.

The study is running over two weeks, and will involve participants playing the 2009 PC game Call of Duty: Modern Warfare 2 under two different conditions; once using a traditional Keyboard/Mouse, and once using a special motion controller, a commercial Razer Hydra device.

Why have I been chosen?
You have been chosen because you have indicated an existing interest in playing video-games. In total, thirty participants will take part in this study.

Do I have to take part?
It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?
If you take part, you will be asked to complete a short questionnaire exploring your personality traits, your attitudes towards art, and also your gaming habits. Then, you will be asked to play Call of Duty: Modern Warfare 2 using either mouse/keyboard or motion controls for twenty minutes. After this, you will be asked to fill out an additional, post-exposure questionnaire, totaling 46 questions. Then, you will play the same scene from Call of Duty: Modern Warfare 2
again, but on the other console, and this whole process will be repeated. There will also be a short ten-minute interview in which we talk about your experience of playing the game using both control mechanisms. In total, the process should not take more than 60 minutes.

**What are the possible benefits of taking part?**
By taking part, you will help to better understand what happens when we play games using motion controls, and other novel video game interfaces. By furthering our understanding of the topic, it can help game developers to design more meaningful and varied games in future.

**Will what I say in this study be kept confidential?**
All information collected about individuals will be kept strictly confidential. Confidentiality, privacy and anonymity will be ensured in the collection, storage and publication of research material. At no point will your personal information be revealed to anyone.

**What will happen to the results of the research study?**
The results of the research will form part of a PhD thesis examining body-centred interaction in video games, and may form part of other research publications within academic video game journals. Please let the researcher know if you are interested in receiving a copy of the published research when it becomes available, or you are free to request a copy of the published research at any time in future by emailing mitu.khandaker@port.ac.uk.

**Who is organising and funding the research?**
The research is being conducted as a doctoral project, supervised by the School of Creative Technologies at the University of Portsmouth.

**Who has reviewed the study?**
The Technology Faculty Research Ethics Committee, University of Portsmouth, has approved the research.

**Contact for Further Information**
If you would like to request further information, please email the researcher, Mitu Khandaker at mitu.khandaker@port.ac.uk, or write to:

Mitu Khandaker  
School of Creative Technologies  
Eldon Building, University of Portsmouth

**Thank you for taking the time to read this information.**
Experimental Procedure: An Empirical Aesthetics Approach to Body-Centered Interaction & Aesthetic Distance: Playing Call of Duty: Modern Warfare 2 on Keyboard/Mouse vs. Motion Controls

Principle Investigator: Mitu Khandaker [mitu.khandaker@port.ac.uk]

Before Experiments Start:

1. Turn on computer and power up devices.
2. Check devices are working with the game.
3. Put "Experiments, do not disturb" sign on door.
4. (Optional) Prepare plastic cups and mineral water on a side table.
5. Print out informed-consent forms.
6. Print out photographic-release forms.
7. If you want to make video or audio recordings, check the recorders free space, eventually perform a backup of the data, do this well in advance!
8. Make a test recording and delete it from hard disk to save space.

Course of operation for each experiment:

1. Greet participant and introduce self if required. Cross participant off list.
2. Brief participant on the nature of the experiment. Inform participant that the experiment is to do with how we receive video games as art, depending on the controller type. According to Leder et al (2004), this is important for being in a ‘receptive’ state for art.
3. Ask participant if they are happy to proceed with the experiment. If they are, ask them to sign informed consent form and photographic release form.
4. Administer ‘personality’ questionnaire, assessing trait empathy and trait aesthetic experience, and experience of game playing.
5. Start video camera.
6. Begin the first condition, reminding participant that they are free to stop at any time.
   a. Start a new game, and ensure the appropriate device is working correctly.
   b. Participant should play the game for twenty minutes, or until No Russian level is completed, whichever happens first.
   c. Participant then fills out the 46-item post-exposure questionnaire.
7. Offer participant an optional drink of water and a quick break before continuing. Ask if they are happy to continue.
8. Begin the second condition, reminding participant that they are free to stop at any time.
   a. Start a new game, and ensure the appropriate device is working correctly.
   b. Participant should play the game for twenty minutes, or until No Russian level is completed, whichever happens first.
   c. Participant then fills out the 46-item post-exposure questionnaire.
9. Offer participant another drink of water, and begin semi-structured interview for 10 minutes. Also, ask for informal feedback on the experiment itself and log for future use.
10. Stop video recording.
11. Ensure participant has researcher’s contact details in case of any questions, or to follow up on the results.
12. Thank participant for their help.
13. Back up data after each experiment! Put all data in a recognizable folder structure, one folder per participant. Save this as the participant ID.
CONSENT FORM

Full title of Project:
An Empirical Aesthetics Approach to Body-Centered Interaction & Aesthetic Distance When Playing a First Person Shooter

Name, Position and Contact Address of Researcher:
Mitu Khandaker, PhD Researcher, School of Creative Technologies, University of Portsmouth. [mitu.khandaker@port.ac.uk]

Please Initial Box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.

3. I agree to take part in the above study.

4. I agree to the study and interview being video recorded

5. I agree to the use of anonymised quotes in publications

6. I acknowledge that the game content I am being asked to play is rated 18 certificate, and is violent in nature.

_________________________  ____________  ______________________
Name of Participant             Date              Signature

_________________________  ____________  ______________________
Name of Researcher             Date              Signature
APPENDIX E – STUDY 2 MATERIALS

Call for Participants

Study Title: Progressively Embodied: Investigating the Effect of Increasingly Mimetic Interfaces on Aesthetic Distance While Playing a ‘Morally Significant’ Videogame

Looking for participants to take part in a PhD research study at the University of Portsmouth. You would be asked to play a short videogame, and you are offered the opportunity to try out the Oculus Rift virtual reality headset.

Your overall time commitment will not be more than approximately 45 minutes overall. Your help would be appreciated, and a £10 gift voucher for either Amazon.co.uk or Tesco is offered in exchange for your participation.

The research will explore how interfaces that mimic our natural interactions with the world around us affect how we distance ourselves from a game, and how think about what is happening. The motivation behind this research is to help game developers more meaningfully design games with this in mind. The short videogame features a scenario in which you are rock climbing, and may feature a morally difficult decision to be made.

You do not need to be someone who usually plays video games, as I am actively seeking people with a wide range of experiences and backgrounds. All that is asked is that you are over 18 years old.

If you are interested in taking part, or have any questions, please email Mitu Khandaker-Kokoris at mitu.khandaker@port.ac.uk, or book a slot to take part at: https://gamestudy.youcanbook.me/

The research is being conducted within the School of Creative Technologies at the University of Portsmouth.
Study Title: Progressively Embodied: Investigating the Effect of Increasingly Mimetic Interfaces on Aesthetic Distance While Playing a ’Morally Significant’ Videogame

FEC Ref No: ...... FO 12/14 - 0085.......... 

I would like to invite you to participate in a PhD research study in which you are invited to play a short videogame. The research will explore how interfaces that mimic our natural interactions with the world around us (whether that is motion control, or head tracking, or 3D displays) affect how we distance ourselves from a game, and how think about what is happening. The motivation behind this research is to help game developers more meaningfully design games with this in mind. 

The short videogame features a scenario in which you are rock climbing, and may feature a morally difficult decision to be made. 

You do not need to be someone who usually plays video games, as I am actively seeking people with a wide range of experiences and backgrounds. All that is asked is that you are over 18 years old.

If you take part, you will be asked to play the short game and fill in a questionnaire, reflecting on your experience of playing the game, and asking about your usual habits when it comes to playing games or other media. I will also ask you some basic questions about your experience in a short interview afterwards. Your overall time commitment will not be more than approximately 45 minutes overall. 

Your help would be appreciated, and a £10 gift voucher for either Amazon.co.uk or Tesco is offered in exchange for your participation. 

If you are interested in taking part, or have any questions, please email Mitu at mitu.khandaker@port.ac.uk or book a slot to take part at https://gamestudy.youcanbook.me/
**Study Title:** Progressively Embodied: Investigating The Effect Of Increasingly Mimetic Interfaces on Aesthetic Distance While Playing a ‘Morally Significant’ Videogame

**FEC Ref No:** ...... FO 12/14 - 0085...........

We would like to invite you to take part in our research study. Before you decide, we would like you to understand why the research is being done and what it would involve for you. Talk to others about the study if you wish.

Ask us if there is anything that is not clear.

**What is the purpose of the study?**
This research explores the common assumption that a greater sense of your body being ‘part’ of how you interact with a game is a desirable end goal for video games: this is a concept known as *The Holodeck Fallacy* or immersive fallacy. The research will explore how interfaces that mimic our natural interactions with the world around us (whether that is motion control, or head tracking, or 3D displays) affect how we distance ourselves from a game, and how think about what is happening. The motivation behind this research is to help game developers more meaningfully design games with this in mind.

**Why have I been invited?**
You have been invited because you have indicated an interest in taking part in this study. You are under no obligation to proceed if you do not wish to, just let the researcher know.

**Do I have to take part?**
It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep. If you decide to take part, you will be asked to sign a consent form, but you are still free to withdraw at any time and without giving a reason.
What will happen to me if I take part?
If you take part, you will be asked to play a very short video game scenario that may contain a difficult moral choice. The video game involves using a motion controller called a Razer Hydra, which you do not need any prior experience in using. Some participants may be asked to wear a virtual reality headset (Oculus Rift) – please let the researcher know beforehand if motion sickness may be a concern for you, and we can accommodate you. If do you take part, you will be asked to complete a short questionnaire exploring your personality traits, your attitudes, and also your habits with regards to playing games and entertainment. Then, you will be asked to play the (non-violent) game, about a rock-climbing scenario, which may contain a potentially difficult moral choice. After this, you will be asked to fill out an additional, post-play questionnaire. There will also be a short ten-minute interview in which we talk about your experience of playing the game. In total, the process should not take more than 45 minutes.

Expenses and payments
If you take part, you will be offered a £10 gift voucher to a choice of two retailers (Amazon or Tesco).

What are the possible disadvantages and risks of taking part?
If you are prone to motion sickness, then there is a chance that you may feel nauseous during or after using the virtual reality headset (Oculus Rift). If you think this might be a concern for you, but you would still like to take part, please do let us know.

What are the possible benefits of taking part?
By taking part, you will help to better understand what happens when we play games using motion controls and virtual reality headsets, and other novel video game interfaces. By furthering our understanding of the topic, it can help game developers to design more meaningful and varied games in future.

Will what I say in this study be kept confidential?
If you join the study, data may be looked at by authorised people (such as the research supervisor), to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do their best to meet this duty. Confidentiality, privacy and anonymity will be ensured in the collection, storage and publication of research material. At no point will your personal information be revealed to anyone. All information collected about individuals will be kept strictly confidential, and an ID number will be assigned to you for any and all electronic storage of documents, rather than identifying you by name. The data will only be retained until the end of the PhD project, and then destroyed securely.

You have, at any point until the data is destroyed, the right to check the accuracy of data held about you, and correct any errors.

What will happen to the results of the research study?
The results of the research will form part of a PhD thesis examining body-centred interaction in video games, and may form part of other research publications within academic video game journals. Please let the researcher know if you are interested in receiving a copy of the published research when it becomes available, or you are free to request a copy of the published research at any time in future by emailing mitu.khandaker@port.ac.uk.
What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to the researcher or their supervisor, who will do their best to answer your questions. You will find their contact details at the top of this information sheet. If you remain unhappy and wish to complain formally, you can contact the Head of Department, Steve Hand, at steve.hand@port.ac.uk, or the University Complaints Officer, Samantha Hill, at Samantha.hill@port.ac.uk.

Who is organising and funding the research?
The research is being conducted as a doctoral project, supervised by the School of Creative Technologies at the University of Portsmouth.

Who has reviewed the study?
Research in the University of Portsmouth is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given a favourable opinion by Wendy Powell, Research Ethics Committee chair. If you have any concerns about the conduct of the study, please contact her at wendy.powell@port.ac.uk.

Further information and contact details
If you would like to request further information, please email the researcher, Mitu Khandaker-Kokoris at mitu.khandaker@port.ac.uk, or write to:

Mitu Khandaker-Kokoris, School of Creative Technologies, Eldon Building, Winston Churchill Avenue, Portsmouth PO1 2UP

Concluding statement
Thank you for taking the time to read this information sheet, whether or not you choose to continue and participate in the study. You are welcome to keep this information sheet.
**Study Title:** Progressively Embodied: Investigating the Effect of Increasingly Mimetic Interfaces on Aesthetic Distance While Playing a ‘Morally Significant’ Videogame

**FEC Ref No:** ...... FO 12/14 - 0085.........

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<tr>
<td>3. I understand that data collected during the study, may be looked at by individuals from the University of Portsmouth. I give permission for these individuals to have access to my data</td>
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<td>4. I agree to the study, interview, and gameplay footage being video recorded</td>
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</tr>
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<td>5. I agree to the use of anonymised quotes in publications</td>
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<td>6. I agree to take part in the above study.</td>
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**Name of Participant:**  
**Date:**  
**Signature:**

**Name of Person taking consent:**  
**Date:**  
**Signature:**
How to Play

- This is a game in which you are rock climbing.
- In order to climb, reach out, grab the rock (by pulling the trigger on the Hydra device), and pull yourself up.

The ‘trigger’ : use this to grab the rock face before pulling yourself up.

- Feel free to pause, look around, and take as much time as you need.
- Your goal is to climb towards these anchor points:

- If you cannot see where the next anchor point is, try leaning further back to look up!
- If you feel nauseous or dizzy and do not feel like continuing, feel free to take off the headset and stop.
APPENDIX F – MATERIALS FROM DESIGN & DEVELOPMENT OF STUDY 2 GAME

Figure F-0-1: Screenshots of Discarded Prototypes for Study 2 Game
VOICEOVER SCRIPT FOR “SARA”, NPC CLIMBING PARTNER IN THE CLIMB (STUDY 2 GAME)

INTRO:
01. *sharp exhale* Okay! This is the final stretch. It should be pretty easy till we get to that overhang up there.
02. Don't worry, you got this! Just one hand over the other. And don't forget to clip into those anchors!
03. *encouraging* Take your time, I'll be right here!

BANTER:
04. You're going to love the view from the top. My cousin did this route a few years back. She couldn't stop talking about it for months!
05. *with effort* Hey, remember that five-twelve we did near Vancouver? I can't believe that was almost three years ago. There's a crimp up here that's giving me flashbacks.
06. How'd you fancy going somewhere a little warmer next time? Like, bouldering in Thailand or something? Oh man, I could REALLY go for some nice Thai green curry right now.
07. We're making really good time! I'm just glad the weather held off during that last pitch.
08. It's alright if you need to slow down and take a break to warm up your hands! The stone is freezing up here.
09. Wooow, look at that view! This was definitely worth the trip.

IF THE PLAYER STOPS:
10. You alright there? Shake out your arms if you need to!
11. Don't stay still for too long! The last thing you want is to get cold up here.
12. You can do this! It's not much further to go.

IF THE PLAYER TRIES TO CLIMB WITHOUT CLIPPING INTO THE NEXT ANCHOR:
13. You won't get much further until you clip into the next anchor. Don't worry, I won't leave you behind!
14. Your rope's not going to reach any further than that! Try clipping into the next anchor first.

IF THE PLAYER FALLS:
15. *increasing intensity* Hey! Hey careful, CAREFUL!!
16. *reassuring* You're okay, the anchor held you! At least you didn't fall far.
17. Shake it out if you need to! The cold here really weakens your grip.
18. Ha ha, that looked fun! Don't think I really want to try that today, though.

NEAR THE TOP:
19. Alright, we're nearly there! This is the overhang I told you about. Just lean back a bit and you'll be fine.
20. I can see the summit! Okay, we can power through this. Just a little bit further!
WHEN THE GRIP BREAKS:
21. *panicking* Oh shit, watch your hand!
22. *various panic noises*

WHEN THE PLAYER IS HANGING:
23. *shaken, trying to stay calm* Oh god. Ooohhhh god. Uhhh. Okay. This is... this is really bad.
24. Uuhhh, you can't reach the cliff from there, can you? *nervous laughter* Ha. Haa, never mind.
25. Fuck fuck fuck! I don't know if that anchor's going to hold. That wasn't meant to hold two people. Oohhh god.
26. Okay, shit. Uhhhh, crazy idea. You have to trust me on this. That anchor's going to pull out if we both keep hanging like this. Umm. *trying to sound stoic* I think you have to cut me loose.
27. *trying to convince herself* I mean, if you don't, we're both going to die. It's not worth risking.
28. FUCK. I don't know what else to do. If we keep waiting, that anchor's going to break loose and then we're BOTH dead.
29. *panicking again* Ohh god oh god, not like this. Fuck, why now? Fuck!
30. *crying* Look, you have to do it! Just fucking cut the rope and get it over with!!

IF THE PLAYER CUTS THE ROPE:
31. *screaming* WAIT!!

IF THE PLAYER WAITS TOO LONG AND THEY BOTH FALL:
32. *screaming* No no no oh god no NOOOOOO!!

Figure F-0-2: Additional screenshot of Study 2 Game, “The Climb”
APPENDIX G – STUDY 1 & 2 MATERIALS [DIGITAL]

a. Electronic Copy of this Document

b. Study 1 Questionnaires, Data and Analysis

c. Study 2 Questionnaires, Data and Analysis


Note: Playing The Climb requires a Razer Hydra controller, and may optionally be played using an Oculus Rift HMD.

DVD also contains MP3 files containing voiceover files by the NPC “Sara”.
APPENDIX H – RESEARCH ETHICS REVIEW & APPROVAL
Form UPR16
Research Ethics Review Checklist

Please complete and return the form to Research Section, Quality Management Division, Academic Registry, University House, with your thesis, prior to examination.

**Postgraduate Research Student (PGRS) Information**

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</tbody>
</table>

If you are unsure about any of the following, please contact the local representative on your Faculty Ethics Committee for advice. Please note that it is your responsibility to follow the University’s Ethics Policy and any relevant University, academic or professional guidelines in the conduct of your study.

Although the Ethics Committee may have given your study a favourable opinion, the final responsibility for the ethical conduct of this work lies with the researcher(s).

**UKRIO Finished Research Checklist:**

(If you would like to know more about the checklist, please see your Faculty or Departmental Ethics Committee rep or see the online version of the full checklist at: [http://www.ukrio.org/what-we-do/code-of-practice-for-research/](http://www.ukrio.org/what-we-do/code-of-practice-for-research/))

a) Have all of your research and findings been reported accurately, honestly and within a reasonable time frame? **YES/NO**

b) Have all contributions to knowledge been acknowledged? **YES/NO**

c) Have you complied with all agreements relating to intellectual property, publication and authorship? **YES/NO**

d) Has your research data been retained in a secure and accessible form and will it remain so for the required duration? **YES/NO**

e) Does your research comply with all legal, ethical, and contractual requirements? **YES/NO**

*Delete as appropriate*
## Candidate Statement:

I have considered the ethical dimensions of the above named research project, and have successfully obtained the necessary ethical approval(s)

| Ethical review number(s) from Faculty Ethics Committee (or from NRES/SCREC): | FO 02/12 - 0055  
| | FO 12/14 - 0085 |

| Signed: (Student) | Date: 10th April 2015 |

If you have *not* submitted your work for ethical review, and/or you have answered ‘No’ to one or more of questions a) to e), please explain why this is so:

| Signed: (Student) | Date: |

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Dear Mitu,

I am pleased to inform you that the CCI Faculty Ethics Committee, based on the information you have provided in your initial application and your additional responses to our questions, has given your application for the study entitled 'An Empirical Aesthetics Approach to Body-Centered Interaction & Aesthetic Distance: Playing Call of Duty: Modern Warfare 2 on Keyboard/Mouse vs. Motion Controls' (application date 23/01/2012), a **conditional** favourable opinion.

The favourable opinion is based on the following conditions:

1. Making the changes recommended on the consent form (document *Mitu Khandaker consent form - WP*)
2. Making the changes recommended on the information sheet (document *Mitu Khandaker Participant Information Sheet WP*)
3. Sending any recruitment materials (emails / posters etc) to the ethics committee chair for approval before dissemination.
4. Notify the committee chair of the arrangements for secure storage of video footage.

This opinion has been given for this study only, and any changes in the conditions of the study may require you to re-apply for ethical review.

Although the Committee has given a favourable opinion, the final responsibility for the ethical conduct of this work lies, as always, with the researcher(s).

Please note that the Committee reserves the right to re-review this application should any concerns be raised about it in the future.

Your ethical review number is FO:02/12-0055

If you have any questions about this, please let me know.

Wendy Powell
Chair, CCI FEC)
03/12/2014

Dear Mitu,

I am pleased to inform you that the CCI Faculty Ethics Committee, based on the information you have provided in your initial application and your additional responses to our questions, has given your application for the study entitled 'Progressively Embodied: Investigating The Effect Of Increasingly Mimetic Interfaces on Aesthetic Distance While Playing a ‘Morally Significant’ Videogame' (application date 10/11/2014), a conditional favourable opinion.

This means that approval for the data collection phase of this study is conditional upon the following:
1. The VR lab risk assessment is read, and particular attention paid to the section relating to the Oculus Rift
2. The researcher is responsible for ensuring that any necessary permissions are obtained before collecting data from non-University participants

This opinion has been given for this study only, and any changes in the conditions of the study may require you to re-apply for ethical review.

Although the Committee has given a favourable opinion, the final responsibility for the ethical conduct of this work lies, as always, with the researcher(s).

Please note that the Committee reserves the right to re-review this application should any concerns be raised about it in the future.

Your ethical review number is F/O 12/14 - 0085

If you have any questions about this, please let me know.

Wendy Powell
(Chair, CCI FEC)

cc Brett Stevens