Exploring Game Aesthetics

Hanna Sommerseth
University of Edinburgh
School of LLC, 19 George Square, Edinburgh,
EH8 9LD, UK
h.m.sommerseth@sms.ed.ac.uk

ABSTRACT
This paper explores an approach to understanding player experience and immersion through aesthetic theory. It should be noted that the paper limits itself to a consideration of single-player, avatar-based games with a narrative element.

This paper will argue that the experience of immersion is intrinsically tied in with the body and its spatio-temporal positioning within a fictional or constructed space. Seeing immersion from the point of view of the body makes it possible to see a dichotomous relationship between text-based and audiovisual media. When a reader is immersed in fiction, the 'transportation' from one space to another is purely cognitive -the readers body is still and the construction of the fictional world takes place in the readers mind. For a player of games to experience immersion, various technologies exist that act directly upon the player's perceptive systems in order to create an experience.

Author Keywords
aesthetics, body, senses, immersion

Any paper looking at computer games from the point of view of aesthetics quickly faces the problem of justifying its object of study as being worthy of such treatment. For the benefit of the intended audience of this paper, I will not do so here. As Alexander Galloway challenges in the introduction to his collection of essays on game culture; "Our generation needs to shrug off the contributions of those who view this as all so new and shocking. They came from somewhere else and are still slightly unnerved by digital technology. We were born here and love it. Short attention spans, cultural fragmentation, the speeding up of life ... -these are neuroses in the imagination of the doctor, not the life of the patient."[9]

There is perhaps a danger in using theories of aesthetics and artistic practice to understand a medium that is usually seen as having no artistic value, left out of most discourse on contemporary digital culture and digital art. Any analysis may seem forced, and determined to push computer games into a category of 'worthy' cultural production. Is not my intention here to 'prove' that computer games can be 'art'. If we adhere to Bourdieu's notion of art as social and cultural category and construction, such a venture would be inherently meaningless anyway. Computer games are currently not recognized as art, and thus, they are currently not art. Nevertheless, I contend that computer games are objects of expression, storytelling and imagery. An understanding of the aesthetics of computer games should be informed by both the wider world of entertainment media as well as the contemporary realm of digital art and aesthetics in which computer games exist.

Despite the problem of using the category of 'art' in relation to computer games, the notion nevertheless provides an entry point to the concerns of this paper. Art features frequently as a term in the production of computer games, as well as in wider discourse on their cultural merits, and notably, the focus when the notion of art is used is always on the visual. A computer game artist is someone who creates the graphics for a game, the images a player will encounter on her screen. Nic Kelman's book V*ideo Game Art* is typical in that it considers the visual, representational art of computer games, placing it within the context of other historical representational art forms.[13] The book is full of lavish illustrations of various visual styles, divided into chapters featuring protagonists, environments, antagonists and allies, inanimate objects and imitations of reality. Many of the images are stunningly beautiful. But are games essentially visual media? What exactly is the 'art' of computer games? At first glance it appears natural to refer to the surface, or interface, where the game presents itself to the player on the screen as the place where the art of the game occurs. We are after all used to thinking of 'art' in visual terms. Yet, on closer consideration there are other, related, features that I believe are more appropriate starting points for an inquiry into the aesthetic qualities of computer games, namely their status as software, or as digital electronic objects, and their intrinsic interactivity.

For some writers on digital culture and games, the electronic art movements that emerged in the 1990s, often labeled under the moniker of *net.art*, offer a starting point for considering the aesthetics of the game medium. This

Breaking New Ground: Innovation in Games, Play, Practice and Theory. Proceedings of DiGRA 2009

was work that, in the time-honoured tradition of modernist art, explicitly used the technologies and languages of new media to provide a commentary on its own mode of existence. The name *net.art* was given to this new work after an email sent to the artist Vuc Cosic which had been jumbled to an unrecognisable degree by a technical glitch, the only legible words being 'net.art'.[12] The artists usually named in connection with net.art include Olia Lialina, whose html frames-based work *My Boyfriend Came Back From the War* (1996) is an oft-cited early example of net.art. The work is a simple romantic narrative of text and black and white images seen through a number of frames in a browser window, and one of the first works allowing a user to influence the direction of narrative through her choice of links to activate.[12] Other notable artists from this period are Alexei Shulgin, Heath Bunting, the aforementioned Cosic and the collaborative Jodi (consisting of artists Joan Heemskerk and Dirk Paesmans).

The main preoccupations of early digital artists were usually the medium itself; experiments with software, code, protocols, operating systems and collaboration. An example is Jodi's *http://wwwwwwwww.jodi.org* (1995), a functioning website that when visited appears to be consisting of meaningless green symbols blinking on a black background. Viewing the source code, however, reveals text written to appear as visuals, shaping various machine-like images. Playfully rendering source code in a pictorial way to create an absurd browser-read end result, Jodi's website can be seen as a comment on the layers that exist beyond the visible interface of a computer screen, questioning where the actual core text is located.

More recently, net.art and computer games have merged in various forms through hacking, modding and machinima, the latter being the art of using footage captured in-game in order to create short animated films. From the original *net.art* movement, Jodi in particular has frequently used computer game source code and computer game graphics in their artwork, most recently in their work *Max Payne Cheats Only* (2006) which featured modified code from the game *Max Payne 2*.

As Lev Manovich argues, the focus on experimentation with the form of the medium echoes the avant-garde art movements that appeared in Europe at the turn of the last century.[16] Although one should always be careful in drawing historical parallels, there are many similarities between the art movements of the early and late 20th century. Both appear at a time of rapid social and technological change, and are characterised by an interest in the creative medium itself; its formal features and established conventions, and the desire to playfully subvert such said features. Also, art in both periods is willingly embracing new technologies, whether photography and cinema or software and electronic networks, in order to develop new means of artistic expression. Similarly, an interest in the established realm of art and the explicit goal of destroying its foundations can be found both in Dadaist writings and in digital artists' focus on the net as a democratic, immaterial space for the creation, dissemination and consumption of art, rendering the sanctioned space of the art gallery unnecessary.

Where then, do computer games feature in relation to this field of new digital art? To answer that, I would like to move on to the second aspect of computer games mentioned above; their interactivity. Interactivity is a complicated term, to an extent so over-used, over-hyped and undefinable that several prominent academics interested in the study of computer games have rejected its use.[1] Nevertheless, I believe it is central to an understanding of new media.

Interactivity, however problematic, is intrinsic to the computer gameplay experience, and thus, central to an understanding of computer games. Often, so far, the discussion around interactivity in gameplay has revolved around the notion of choice, control and effort, centred around a presumption that the computer game is a form of text. As Marie-Laure Ryan argues, “whereas the reader of a standard print text constructs personalized interpretations out of an invariant semiotic base, the reader of an interactive text … participates in the construction of the text as a visible display of signs.”[20] Espen Aarseth's 'ergodic literature', meaning text which requires effort on the part of the reader in order to traverse, also invokes the notion of interactivity.[1]

The importance of interactivity and the problematic relationship between games and digital art is expressed by Alexander Galloway in a short essay titled *Countergaming*.[9] The text forms the last chapter of his collection of loosely related essays; *Gaming, essays in Algorithmic Culture*. In this essay, Galloway calls for an avant-garde of computer games. Drawing upon the argument established throughout the book that computer games are *actions,* he argues that much of the art created throughout the 1990s under the aegis of 'net.art' falls short of a 'true' avant garde for the video game medium. His main issue is the fact that these works of art remain in the realm of the visual, removing the feature that most thoroughly describe computer games; their interactivity. They remove the player's agency and reduce her to a viewer, consuming a piece of visual art in a traditional, passive manner. A computer game avant-garde, according to Galloway, has yet to happen.

Galloway's essay raises a number of issues related to our understanding of computer games, the avant-garde, and the

purpose of art. His concerns are echoed by numerous voices calling for games to be taken seriously; games must embrace formal experimentation, explore and subvert its technical language, in short, become more like established 'art'. This is juxtaposed with the current situation of story-based, immersive gameplay experiences that attempt to drag the player into the world of the game -this is 'fun', and therefore not to be taken seriously or given value. There remains a clear distinction between 'worthy', meaning experimental, subversive, 'deconstructable' games, of which there are currently not enough and which are needed for the medium to be recognised as having artistic merit, and the fun, un-serious games that are hugely successful and great to play with but not necessarily deserving of much critical acclaim.

An immediate response to the above criticism of games would be to resort to postmodernism. Invoke the death of the high/low culture divide, and depending on one's theoretical leanings declare computer games either playful pastiches of popular culture, or simulators of hyperreality, and be done with it. In fact, the relative lack of scholarly articles doing just that perhaps points to the ease with which it could be done; it is too suspiciously obvious. In *More Than a Game* (2003), Barry Atkins warns against what he deems the 'postmodern temptation' when making the first scholarly steps towards understanding video games. [2] It is a valid warning. The past three decades has seen a number of new movements, media and artforms being triumphantly presented as the 'ultimate challenge to modernism'. In 'new' media, which I take to mean digital, as opposed to analogue, media, this has been particularly true of early experiments with hypertext-based literary forms.

The 1980s and -90s witnessed a substantial amount of interest in hypertext literature within academia when the idea of computer-based fiction becoming a common, mainstream medium first appeared possible. Theorists of hypertext literature celebrated the interactive nature of the genre and the choice given to the reader in determining the direction of the narrative as the “vindication of postmodern theory”.[20] Lauded as the perfect instrument of liberation from the usual suspects attacked in postmodern discourse; linear logic, logocentrism, hierarchical structures, repressive powers, hypertext fiction, it was generally agreed, provided the final nail in the coffin for Barthes’ long-dead author. As Michael Joyce, author of one of the first hypertext novels *Afternoon, a story* claims; hypertexts are “read when they are written and written as they are read”.

This “cult of interactivity”, as it has been labeled by Marie Laure Ryan [20], is problematic in many ways. Can we really call the act of clicking on links “writing”? Hypertext fiction is not necessarily that different from traditional text based fiction, as it is still based on a fixed text. There is an element of choice involved, but it does not necessarily amount to more than what can be found in one of the 'choose your own adventure' books that are popular with children. These postmodern theorists are still celebrating the idea of interpretative freedom, a concept that does not change in the transition from the page to the screen.

The critical discourse on postmodernism does however provide us with one starting point for looking at games. If, as has been suggested, postmodernism denotes a shift of emphasis from epistemology to ontology; a deprivileging of knowledge in favour of experience [5], the computer game medium is uniquely placed as both a conceptual tool for exploring new notions of aesthetics as well as a timely object embodying this implied shift. Computer games have traditionally received substantially less critical attention then other new media forms such as hypertext fiction, although this is slowly changing. Yet if considered closely, games offer a more radical engagement with the possibilities offered by the computer than any other entertainment form that has so far emerged. There is certainly something to this new interactive media that is interesting to the cultural critic, as the theorists of hypertext literature noted. I would like to consider, for the remainder of this paper, the concept of immersion, it's relationship with interactive technologies and its implications in the aesthetic experience of computer game play.

Immersion is becoming an increasingly important issue in the scholarly study of video games, as evidenced the recent big event in the field, the DiGRA conference in September 2007, in which numerous papers grappled with the question of what exactly the concept is defined by. [18] Outside of academia, there is also a substantial amount of interest in immersion and its relation to the game play experience. This can be evidenced from various points of view, both positive and negative. The promotional material given by the video game industry itself lauds the fantastically immersive and realistic experiences of their games, especially in relation to increasingly sophisticated graphics and photorealism, whereas much mainstream media are often found engaging in the current moral panic surrounding many video games, fearing that children will become so immersed in the new worlds they become unable to tell fiction from reality.

Marie-Laure Ryan identifies the concepts of interactivity and immersion as two topics to have gained increasing importance and interest with the emergence of digital media. She notes, however, that immersion has received substantially less attention from the academy. On the one hand, this has a self-explanatory reason, after all, what more can one say about immersion other than that it takes place? [20] Immersion in fictional worlds is however a

substantially more complex notion that than, as Ryan herself is of course fully aware, as she develops an understanding of immersion in text drawing upon metaphors and technologies of virtual reality. What I wish to do here is develop an understanding of immersion as well as interactivity that takes the body as its starting point, as opposed to the text. Immersion and interactivity are often seen as dichotomous concepts; one cannot be fully immersed if one is interacting with an outside world. The problem is one of control; interactivity denotes gaining control, as Julian Kücklich argues when noting that the aesthetics of computer games is necessarily an 'aesthetics of control'[14], whereas immersion denotes a loss of control, a giving in to the world one is surrounded by and simply taking it all in. The computer game medium, however, thrives on the ambiguity that exists between the boundaries of control and the loss thereof. It is in the relationship between immersion and interactivity that the aesthetic experience of computer game play can be understood.

The question regarding immersion in video games is related to the issue of immersion in fiction in general. Video games, like theatre, literature, painting and cinema, constructs worlds and narratives, and allow players to explore and experience these through specific means, at the heart of which lies increasingly sophisticated technologies.

Throughout human history we find examples of attempts to trick our bodies into telling us the representations we are experiencing are in fact 'real'. Oliver Grau begins his study of virtual art with the now famous panorama frescoes dug out in the ruins of Pompeii, where the viewer would stand in the middle of a circular room and be surrounded by a continuous scene.[11] The post-war era saw various experiments with Smell-o-Vision cinema, in which viewers were treated to different scents excreting from the back of their seats, in order to 'smell' the various objects being displayed on the screen. Recent reports from the video game industry suggest that developers are experimenting with ultrasound to generate advanced haptic feedback, going beyond mere rumble to allow players to trace the shape of virtual objects with their hands. More mundanely, even such everyday experiences as going to the cinema, or listening to music at home, are constantly changing due to new technologies being developed that attempt to create a more 'optimal' embodied experience, such as 3-d vision or surround-sound.

Although the goal of these techniques have not always been to create the appearance of a complete transportation into a different setting, they illustrate the role technology plays in relation to embodied perception. To that end, the most thorough of these technologies are those that purport to the creation of Virtual Reality (VR). The term first appeared in Artaud's *The Theatre and its Double* (1938), where he coined the expression 'la realité virtuelle', and was used sporadically over the next five decades. With the explosive development in computing techniques and hardware, as well as the introduction of computers into the general cultural consciousness, in the late 1980s, VR began to increasingly appear as a viable possibility. The 1990s saw a research boom in interest into VR techniques, spurred on by the publications of books such as Howard Rheingold's *Virtual Reality* (1991), as well as influential fictional works such as Neal Stephenson's *Snow Crash* (1992).

VR, in brief, denotes a technology that allows users to interact with a computer-generated environment. This environment can be either entirely digitally constructed or feature images and footage from the physical world captured with a camera. The environment is three-dimensional and allows for the user to experience a sensation of being 'inside', immersed in the images, as opposed to viewing them from the outside, through a screen.

As a cultural phenomenon it is surrounded by a large amount of 'hype' and romanticism. Theories of VR can be found at each end of the utopian and dystopian scales; VR will finally liberate us from the dreary physical confines of our bodies, and could even just be the first step towards eternal life through technologies for uploading the mind into a cybernetic network, or alternatively, VR will lead to a form of mass enslavement by technology, as described numerous times throughout the 20th century, from E. M. Forster's *The Machine Stops* (1909), to the Wachowski brothers' *The Matrix* (1999). In academic theory, VR has been used as a conceptual tool for re-engaging in philosophical debates concerning the nature of reality and our understanding of it.

The reality of VR as it exists in its current technological form is somewhat less spectacular than that found in science-fiction. Although new techniques are being developed continuously, it remains a mainly visual experience. The user is presented with an environment that is projected to her through various forms of technologies which convey the illusion that the simulated environment is 'real'. This environment can be both a replication of an actual, physical real-world scenario, as is the case with much training technologies such as flight simulators or medical surgery environments, or it can be completely fictional, as is the case with more game-like VR environments. VR technologies can be worn, using a head-mounted display and data gloves which a user can put on and interact through, or they can be static rooms, such as the CAVE (Cave Automatic Virtual Environment), which a user must enter into and be confined within. What they have in common is the attempt to project a believable sense of presence in a simulated environment onto the user, by

acting upon the users body and senses. As Lev Manovich argues, VR "establishes a radically new type of relationship between the body of the viewer and the image."[15] In order to move around in the virtual space, the user must move her body around in physical space. The virtual environment she is experiencing is reactive to input from her body, and acts upon her body in return. VR projects an embodied sense of 'being there'. The significance of this becomes clear if we consider the importance of our senses in relation to our understanding of the world around us.

Generally, we think of our senses as five passive receptors of external stimuli, the five being eyes, ears, nose, tongue and skin. In his seminal book *The Senses Considered as Perceptual Systems* (1966) J. J. Gibson proposes to regroup the senses into what he terms five 'perceptual systems'; these being the 'basic orientating' system, the auditory system, the haptic system, the taste-smell system and the visual system [10]. Gibson affords these systems an autonomous, active agency, arguing that there is more to the senses than their function as transmitters of neurological input to the brain, and that they in fact have a crucial role in equipping us with knowledge of the external world. As he argues. "there are two different meanings of the verb *to sense*, first, *to detect something*, and second, *to have a sensation.*"[10] The former meaning denotes an outwards-orientated attitude, giving the senses active agency in the process of orientation, whereas the latter implies a more passive, reception-orientated stance. Gibson argues that both meanings apply to the sensory system, and that science has traditionally only given consideration to the notion of the senses as passive receptors. Thus his project is to outline the active, perceptual nature of the senses. He distinguishes between the type of input to the nervous system that effects sensation and the type of input that effects perception, and argues that perception through the sensory system is a form of information detection that operates interactively with the brain and with the other perceptual systems. In Gibson's words:

"instead of looking to the brain alone for an explanation of constant perception, it should be sought in the neural loops of an active perceptual system that includes the adjustments of the perceptual organ. Instead of supposing that the brain constructs or computes the objective information from a kaleidoscopic inflow of sensations, we may suppose that the orienting of the organs of perception is governed by the brain so that the whole system of input and output resonates to the external information."[10]

To that end, Gibson considers the various ways stimuli is received. He distinguishes between perception and proprioception, where perception is concerned with the environment and external stimuli, and proprioception is concerned with the body and internal movement. Similarly, he categorises imposed stimulation, which is impacted on a passive receiver, and obtained stimulation, which is achieved through action. Through categorising the various ways in which the senses and the body receive and affect its surroundings, Gibson shows the importance of the senses in not only receiving input from, but in understanding, one's immediate environment. The senses are our main means for both acting in as well as upon the world. Seeing the senses as perceptual systems thus makes it possible to examine the relationship between the senses and the various technologies created to project immersive experiences, as the idea of perceptual systems emphasises the role of the senses in asserting the reality-status of our surroundings.

With the steady rise of video games into mainstream contemporary culture, comparisons between video games and VR have inevitably been drawn. Video games, like VR, also act on the senses to an unprecedented degree, and despite video games' status as entertainment media, they are profoundly tied in with technological advances in both hard- and software development. Where games differ from VR, however, is in their unclear positioning between science and the arts. This positioning can be illustrated by the fact that most mainstream media feature video game news, reviews and commentary in their science and technology sections, rather than their art sections. Video games draw upon centuries-long traditions of competition, drama, gambling, storytelling, myth and chance, as evidenced by the current academic debates surrounding them. They do not merely present a user with a visual environment in which to experience, but with a fictional world in which to explore. Despite their novelty and the continued lack of understanding of video games in wider culture, video games are the latest addition to the various ways in which we have created worlds to explore and stories to tell since the beginning of humankind.

As Marie-Laure Ryan notes in her book *Narrative as Virtual Reality* (2001), a pervading theme in literature and film throughout the last century has been the notion of dwelling in fiction.[20] Alice falls through the rabbit hole, while Neo is plugged unwittingly into the Matrix. It is a theme found both within fiction itself, as well as in our everyday language. When we describe the feeling of immersion we claim to get 'lost in a book', or 'carried away' by a film, forgetting our immediate surroundings and becoming absorbed in another, fictional, world, experienced as spatially and temporally separate from the one we are physically confined to. And although we understand perfectly well the difference between these two worlds, the relationship between fiction and physical reality is complex; we cry at the death of a character yet do not call the police to alert them to a murder. Coleridge first put a name to this complexity in 1817 when he described the way

in which readers 'agree' to be taken in by a work of fiction as a 'willing suspension of disbelief for a moment'.[7] This agreement is present whether the work of fiction belong to the realistic or the fantastic genre, and is a basic necessity for immersion in fiction to occur. The 'willing suspension' suggest that the reader or viewer remains in control of her experience, and is able to at any moment 'pull herself out' of the world she has entered into. Nevertheless, immersion remains a problematic and contentious concept.

In the modernist era, immersion in fiction has been viewed with hostility due to a fear that the immediacy of the fictional experience will reduce contemplative faculty. The modernist aesthetic has often involved foregrounding the formal and stylistic features of a medium, purposefully alienating the reader or viewer from the text. Narrative or immersive fiction has been relegated to 'low', or popular, culture, where it nevertheless has continued to thrive. One reason why immersive fiction has been relegated to the lower end of the cultural hierarchy in recent decades may be that the immediacy of an immersive experience is related to the embodied and sensory experience of 'being there', as opposed to the more 'cerebral' ideal of the contemplative, alienated subject in modern art and fiction. The popularity of immersive fiction thus speaks to the continued interest in 'there', in being able to actually experience other worlds, or other realities.

Immersion has also been treated with apprehension due to its close relation to addiction. Where do we draw the line between being 'lost in a book' and 'trapped in a book'? Video games, in particular, are often blamed for addictive behaviour in young people. The portrait of the stereotypical 'gamer', sitting mesmerized in front of the screen, uninterested in the surrounding world, engaging with virtual violent acts, is frequently found in various media. It is a problematic stereotype which highlights the complicated relationship between immersion, addiction, 'high' and 'low' culture. Consider the fact that a reader of Tolstoy, sitting mesmerized with a book, uninterested in the surrounding world, engaging with fictional violent acts, would be perceived as a positive act to be encouraged, and we can begin to see the multitude of cultural attitudes and perceived notions of valuable behaviour that surround video game play, and immersion in general.

Immersion in various media is naturally dependent on the type of media one is experiencing, and again this highlights the importance of the senses in the experience of audiovisual media. Although the act of reading can be powerfully immersive experience, it remains a purely cognitive involvement with the represented environment or story. As Janet Murray states; “our brains are programmed to tune into stories with an intensity that can obliterate the world around us”[17]. She recognises the fear this has traditionally been viewed with throughout the history of western culture, from Plato's concern with poetry as a danger to his republic, to Cervantes' story of Don Quixote's madness stemming from the inability to tell fiction from reality. Audiovisual media, however, takes the brain's active involvement in creating an immersive experience a step further, and acts on our bodies as well as on our cognition. Audiovisual media is also inherently dependent on various forms of technology and hardware in order to engage with the body. As Ryan states; “in contemporary culture, moving pictures are the most immersive of all media”[20], due to their ability to combine spatial and temporal representation with the full detail of photographic pictures and natural language. In fact, it would be possible to argue that immersion in text-based media and in audiovisual media are two substantially different experiences, as the former is dependent on the cognitive shaping of mental images, whereas the latter is dependent on the interpretation and understanding of already-created images presented to the viewer on a screen. Thus, one can argue that the experience of immersion in audiovisual media is closely dependent on embodied understanding, as well as on cognitive understanding.

It is however important also to emphasise the difference between established audiovisual media, such as film, and video games. As both video games and films appear as moving images on a screen, we tend to easily make comparisons between them. It is a comparison that is often encouraged by the video game industry, in its heavy advertising of 'photorealistic' graphics, and epic, 'cinematic' narratives. This is understandable, as any new medium that struggles for cultural legitimacy tends to mimic an established predecessor. The first decades of photography were dominated by portraiture and landscapes, as the new technology was attempting to show itself as worthy as the established art of painting by simulating the most common and celebrated painting techniques. Similarly, video games mimic many established techniques and styles established by cinema. The two however differ as technologies, and thus the technological means for creating immersion in video games must be considered on their own terms.

In a cinema environment, everything is done to make the viewer 'forget' her active body. She is sat in complete darkness and silence, in order to make the reception of audiovisual input optimal. The cinema experience engages two of her senses; the eyes and the ears. This is not to say that the experience of viewing a film is one of disembodiment, in fact, there has been an increasing focus on haptics in film studies in recent years, forming part of an attempt to move away from the textual analysis of poststructuralism that has dominated the humanities since the 1960s and return to a consideration of the aesthetic

experience in art. Proponents of haptics and the study of embodiment in the cinema viewing experience are interested in describing the bodily sensations that arise from various scenarios presented on the screen. Whereas previously the notion of an embodied response to visual stimuli would be limited to the genre of pornography, recent film scholars argue that all moving images provoke and act upon the haptic system as well as the visual and auditory.

There is however a difference between the ways in which the haptic system works in cinema viewing and gameplay. This difference can be emphasised by an example given by Vivian Sobchack in her essay *What My Fingers Knew*.[19] In it she describes the visceral reaction she has to viewing a scene from Jane Campion's film *The Piano* (1993), in which the main protagonist Ada is playing the piano. The camera closes up on Ada's fingers, and Sobchack knows, and feels the sensation of the ivory, of hitting the keys and moving her hands. Compare this to a player engaged with for instance *Rez,* a game well-known for its intense synaesthetic feedback mechanisms. At first the experience appears similar to the player who is experiencing rumble while playing *Rez*, she feels the rhythm and the subtle pounding of the movements she makes. The author viewing the scene in *The Piano*, however, much like the reader of a novel, performs a cognitive construction of an experience, based on previous experiences, memories and prompts from the images presented on the screen. The player who is hacking her way into the central processing unit in *Rez*, on the other hand, is physically experiencing the environment in front of her through her fingertips. As Atkins argues, the game's designers have given the player something interesting to engage with as activity, as opposed to a mere spectacle.[3]

The physical and sensory nature of the VR and video game experience may appear liberating when compared to the darkness of the cinema theatre. The act of movement is an important metaphor of liberation, and thus when seen in comparison to the still-sitting reader or viewer it may appear that new technologies of immersion are giving users increasing freedom and agency. However, VR imprisons the body in a profound, albeit different, manner. Although the body is not immobilized, it is nevertheless tied intrinsically to technology. As Manovich notes when describing one of the earliest VR systems developed, “like today's computer mouse, the body was tied to the computer. In fact, the body was reduced to nothing less – and nothing more – than a giant mouse, or more precisely, a giant joystick.”[15] The emotive language that surrounds both VR and video games with regards to a discourse of liberation or enslavement can be difficult to escape, yet by focusing on the role of the senses in relation to technologies of immersion we can begin to develop an understanding of the aesthetic traits specific to video games.

To conclude, an emerging understanding of the aesthetics of video game play must begin with an understanding of its basis in embodied sensations. As I have argued, this is not an entirely new phenomenon, as the cinema also acts upon a number of the senses. 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 video games, and in VR, comes from technology acting upon the body and sensorial input. The importance of the body allows us to move away from a Cartesian view of the spaces created by new media technologies, yet also complicates our understanding of the relationship between fiction and reality. The moral panic that currently surrounds video games may be implicitly concerned with this problem -the fact that the body acts and is acted upon makes the scenarios taking place on the screen in front of the player 'too real' for comfort. This panic would however benefit from being seen in a historical context. A famous urban legend recalls that when the film *The Arrival of a Train at La Ciotat Station* was screened in Paris in 1895 the audience ran in terror from what they believed was a real approaching train. Whether this really took place or not, the story is told as an amusing anecdote of how unaccustomed audiences then were to the moving image and realistic representations, seen in contrast with how we are now perfectly able to tell representation from reality. Yet there is a genuine worry in parts of society today that the 'act' of shooting in a video game will turn children into 'real' shooters, despite research in cognitive science and psychology into the matter which concludes otherwise.[6] If we consider the development of various technologies for storytelling and world-building throughout history, as video games become more and more common, it is likely that we will be able to argue that despite increasingly intricate technologies that act upon more and more of our senses, we are still aware of the fictionality of the worlds we move in, and continue to suspend our disbelief.

This physical experience, then, provides a basis for understanding the aesthetics of gameplay, and the unique features of video games as entertainment media. All media that have fictional or storytelling elements to them are are immersive to one extent in that they attempt to transport a reader or viewer into another world, but different media do this in different ways, a difference that can be emphasised by looking at the role played by the body within each of these media.

REFERENCES

1. Aarseth, Espen, *Cybertext, prespectives on ergodic literature.* Baltimore, Johns Hopkins University Press, 1997.
2. Atkins, Barry, *More Than a Game, the computer game as fictional form.* Manchester, Manchester University Press, 2003.
3. Atkins, Barry, Killing time: time past, time present and time future in Prince of Persia: The Sands of Time in Atkins and Krzywinska (eds) *Videogame, Player, Text.* Manchester, Manchester University Press, 2007.
4. Bolter, Jay David. *Literature in the Electronic Space*
5. Boyne, Roy. *The Art of the Body in the Discourse of Postmodernity* in Theory, Culture & Society, Vol. 5, No. 2.
6. Byron Report, Safer Children in a Digital World. http://www.dcsf.gov.uk/byronreview/pdfs/Final%20Report%20Bookmarked.pdf accessed 30.07.09.
7. Coleridge, Samuel Taylor, *Biographia Literaria*. London, 1954.
8. Csikszentmihalyi, Mihaly. *Flow: The Psychology of Optimal Experience*. New York, Harper Perennial, 2008.
9. Galloway, Alexander R. *Gaming: Essays on Algorithmic Culture.* Minneapolis, University of Minnesota Press, 2006.
10. Gibson, James Jerome. *Senses Considered as Perceptual Systems*. Westport, Conn, Greenwood Press, 1983.
11. Grau, Oliver. Virtual Art, from Illusion to Immersion. Cambridge, Mass, MIT Press, 2003.
12. Greene, Rachel. *Internet Art.* London, Thames and Hudson, 2004.
13. Kellman, Nic, *Video Game Art.* Assouline Press, 2005.
14. Kücklich, J. Literary Theory and Digital Games in Bryce and Rutter (eds.) *Understanding Digital Games*, London, Sage, 2006.
15. Manovich, Lev. *The Language of New Media*. Cambridge, Mass, MIT Press, 2002.
16. Manovich, Lev. *Avant Garde as Software.* Avainable online at http://www.uoc.edu/artnodes/eng/art/manovich1002/manovich1002.html accessed 30.07.09.
17. Murray, Janet. *Hamlet on the Holodeck, the future of narrative in cyberspace.* Cambridge, Mass, MIT Press, 1998.
18. *Situated Play, the Proceedings of the Third International Conference of the Digital Games Research Association (DiGRA)*, Tokyo: The University of Tokyo.
19. Sobchack, Vivian, *Carnal Thoughts, embodiment and moving image culture.* Berkely, University of California Press, 2004.
20. Ryan, Marie-Laure. *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media*. Baltimore, John Hopkins University Press, 2003.