Towards a Multidisciplinary Approach on Video Game Studies: A Case Study of *Portal*

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF ARTS
in
ENGLISH EDUCATION

UNIVERSITY OF PUERTO RICO
MAYAGÜEZ CAMPUS
2012

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Abstract

This thesis discusses how video games entered academia as an area of study and how Narratology and Ludology became the leading approaches. It discusses the benefits and shortcomings of each of them through a case study of the first person shooter game *Portal (2007).* Narratology discusses the structure of a game narrative whereas Ludology focuses on the mechanics of the games. This study concludes that both of these approaches are too focused on the content of video games and neglect other significant aspects, such as the hardware that makes the content possible.

The study presents a brief history of the video game detailing how each successive generation of hardware allows for the development and creation of new video game genres. It also provides game designers the ability to tell more complex stories through the use of computer generated full motion video and the ability it gives to the player to directly interact with the game.

The third chapter examines how video games became a subject of interest during the late 1980's as interactive fiction and as popular culture. It discusses the emergence of Narratology and Ludology, their importance in the field of video game studies, and their impact on future video game studies.

To understand how each of these approaches work, this thesis conducts a case study of the first person shooter game *Portal* and provides a discussion of the benefits and the shortcomings of each approach. It concludes with recommendations about how to advance the study of this medium of artistic expression.

Resumen

Esta tesis explora cómo los juegos de video entraron a la academia como área de estudio y cómo la Narratología y Ludología se convirtieron en los enfoques principales para su estudio. Se analizan las ventajas y desventajas de cada enfoque a través de un estudio del juego Portal (2007). La Narratología analiza la estructura de la narrativa en el juego, mientras que Ludología se concentra en la mecánica de los juegos. Este estudio concluye que ambos enfoques se centran demasiado en el contenido de los videojuegos y descuidan otros aspectos importantes, como las consolas que hacen que el contenido sea posible.

El estudio presenta una breve historia del videojuego que detalla cómo cada generación sucesiva de consolas permite el desarrollo y la creación de nuevos géneros de videojuegos. También proporciona a los diseñadores de juegos la habilidad para contar historias más complejas mediante el uso de videos generados por computadoras y la capacidad que le da al jugador para interactuar directamente con el juego.

El tercer capítulo examina cómo los videojuegos se convirtieron en un tema de interés durante los años 1980 como ficción interactiva y cultura popular. Se analiza el surgimiento de la Narratología y Ludología, su importancia en el campo de los estudios de videojuegos, y su impacto en los futuros estudios de videojuegos.

Para entender cómo funciona cada uno de estas perspectivas críticas, esta tesis conduce un estudio del videojuego y proporciona un análisis de las ventajas y desventajas de las perspectivas críticas. El informe concluye con recomendaciones sobre cómo avanzar en el estudio de este medio de expresión artística.

To my friends and family who encouraged me in tough times.

To my father and sister who had stuck with me until the end.

Most importantly to my mother who had passed away before I could present this work as a gift to her. She is my strength and my inspiration.

Thank You.

Acknowledgements

I would like to thank my father and sister who had supported me throught the good and the bad times. Most importantly I want to thank my mother who had inspired me and encouraged me to pursue a higer education. I would also like to thank all of my friends and family who have supported me through this journey.

This thesis could not have been done without the guidance and support from my mentor Leonardo Flores. He has stuck with me for a very long time and has taught me everything from the academics to homebrewing. I would also like to thank Mary Leonard and Jose Irizarry who have guided me towards the completion of this thesis. I will never forget this experience.

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Chapter 1: Introduction

The medium of video games as a form of entertainment has an audience that ranges from young children who carry their handheld gaming machines around the mall when shopping with their parents, to the elderly who fling their wrists at the screen as they watch a character throw a bowling ball towards the pins. Video games have grown from a niche market in the 1970's into a global phenomenon by the 21st century. Despite their overnight success, many consider video games to be inferior to other kinds of audiovisual entertainment like films, because they believe they have little or no artistic and cultural value. Even today there are many who would scoff at the idea of considering video games to be art.

The issue that video games face is that this is a young medium that has a little more than four decades of existence. It does not help that early games were designed to extract money from the player and the arcades were located in undesirable places. Despite the negative image that video games carry, there is interest in this medium due to its aesthetic appeal. Dr. Henry Jenkins, Provost Professor of Communications, Journalism and Cinematic Arts at the University of Southern California, argues that video games can "open up new aesthetic experiences and transform the computer screen into a broadly accessible realm of experimentation and innovation" ("New Lively" 23). Jenkins's argument follows that of Gilbert Seldes's 1924 book *The Seven Lively Arts* in which Seldes argued that "America's primary contribution to artistic expression had come through emerging form of popular culture" (22) such as jazz and Hollywood cinema. I believe that video games are destined to become as important as film, which, early on, was also frowned upon as a form of artistic expression because it was seen as a cheap and

uninspiring imitation of the more prestigious theater. Now film is highly regarded as a form of art that is worth exploring by academics.

The textual adventure game genre began to interest humanists in the early 1980's because of its ability to tell a story and interact with the text. Mary Ann Buckles became the first scholar to dedicate her dissertation to the textual adventure game genre, which she refers to as interactive fiction. The textual adventure game genre gives the player the impression that they are reading a story but with the added capabilities of interacting with the text. In *Colossal Cave Adventure* (1976) the player is given the opportunity to explore a cave system that is somewhat out of the ordinary, as magic can be cast within the cave. The player types in a set of actions and waits for the results to unfold.

This initial interest of video games in a scholarly setting was short lived, as there were few who expanded on the work that Buckles had started. However the proliferation of 3D graphics has given game designers the ability to create virtual environments that provide the player with the freedom to explore and discover. This was of particular interest to humanists such as Janet Murray who published *Hamlet on the Holodeck* in 1997, in which she discussed the role of virtual reality and how user interaction could enhance the narrative experience of the player.

1997 was also the year in which Espen Aarseth published his seminal work *Cybertext: Perspective on Ergodic Literature.* In this book, Aarseth described the concept of ergodic literature in which nontrivial effort is required to traverse the text. *Cybertext* suggested to some scholars that video games, like electronic literature, should be studied using an approach that is unique to the medium. This idea gave birth to Ludology, a term coined by Gonzalo Frasca in 1999, which means the study of video games as games.

Soon ludologists were claiming that established approaches such as Narratology were inadequate for the study of video games.

The debate between Ludology and Narratology became the central issue in video game studies for many years, with each side arguing that their own approach was the correct one for the study of this evolving medium. The argument has passed but no clear winner has been declared and I believe that neither side was victorious in the debate because both approaches are too narrow. Narratology studies the structure of a video game narrative and how user interaction can influence the outcome of the narrative. Ludology on the other hand is more interested in the elements that make video games different from other entertainment media, i.e. their characteristics as games. Ludologists focus on the rules and the mechanics of the game and discusses how these mechanics make them ergodic and interactive.

I believe that using only one approach to video game study yields a limited understanding of the medium and the specific game being studied. Using both approaches can give us a more comprehensive understanding of video games, since this can help us better understand all of the elements that make video games popular with their audience. However, even combining both of these approaches may not be enough to fully understand video games. A truly multidisciplinary approach may be the answer to this problem.

Computer technology is the underlying foundation in video games. It is the canvas that allows programmers and designers to create a virtual world in which the players can interact with. Video games have evolved through each successive generation

of computer technology. There are specific points in time in which technology has become advanced enough to create games that have attracted humanists to this medium.

In Chapter Two, I will look at the history of video games, and the technology that supports the medium, in order to understand how the medium came to be of interest to humanists.

Chapter 3 will discuss how the sudden rise of video games led to two different theoretical approaches: Ludology and Narratology, and show how both of these camps developed their approaches to understanding video games in specialized ways that do not fully account for the technology that enables developers to create games or the cultural impact the medium has had on society.

It is through a case study of the game *Portal* (2007) in Chapter 4 that I will provide a ludological and a narratological study of the game. Each approach will be discussed individually, and the strengths of each one will be demonstrated, but the chapter will also highlight the jarring differences between them, and discuss how they narrowly focus on elements of gaming related to their own interests. I will then explore alternate approaches such as platform studies and cultural studies and demonstrate how a combination of all these approaches can expand our understanding of video games. The analysis of *Portal* in this chapter will show how a multidisciplinary approach, that includes all of the approaches mentioned, is a more pragmatic way of studying video games.

This study will conclude that neither of the two most prominent approaches can provide scholars with the necessary tools to understand the medium and the games that are being studied. They are so focused on the content of the video game that they forget

to take into account the hardware or the platform that made these games possible. We must recognize that the medium is still evolving since it continues to respond to improvements in computer technology very closely, and it is not as mature as established media such as films and books. Therefore, the progressive spirit of game design should dictate how we approach video game studies in the future.

Chapter 2: A Brief History of Video Games

Academics from the humanities are generally satisfied at studying the contents of an artistic work while ignoring the media that supports it. This is understandable as established media such as print has been in existence for over 500 years. Nevertheless, the study of video games presents a problem in which each generation of video games provides an experience different from each other. Therefore, it is prudent to conduct a media specific analysis of video games and discuss how hardware such as computers, are in relation to the artistic visions of the game designers (Hayles, *Writing Machines* 29-33). A brief history of video games will demonstrate how it evolved from simple non-narrative gaming experiences in the early days into the far more narratively and technologically complex experiences they are today, capturing the attention of the academics from the humanities.

From *Pong* to Narrative

The history of video games can be traced back into the 1950's making this medium only 6 decades old. These early games were created on computer mainframes and large calculators that were only found in computer laboratories owned by universities or the government. University students who had access to these computers used their spare time to test the limits of these machines. They found that creating and playing video games on these computers would be enough to put these machines through their paces. The most famous example of student created games was *Spacewar!*, which was developed in the computer labs at MIT in 1962 (Wolf 28).

Prior to *Spacewar!* there were at least three other games that were developed in a private environment but the true beginning of the video game industry started in 1972

when Allan Alcorn and Nolan Bushnell released *Pong* in a pub in Sunnyvale, California. The game became an instant success and it drew in large crowds into the pub as people kept feeding money into the machine. The game of *Pong* was a virtual simulation of the game of table tennis. Two players would control their own paddles on screen through the use of a mechanical switch and they would move the paddles and bounce the ball back to the opponent; whoever misses the ball loses a point (Kent 40-5).

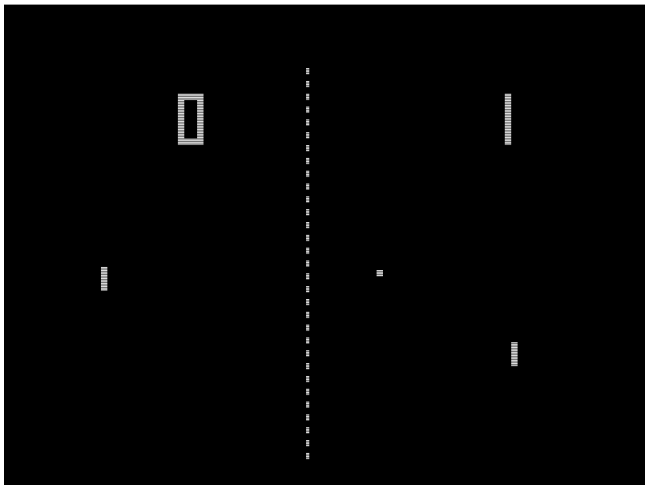

Figure 1 *Pong*, The game that started the video game industry.

Pong became an overnight success and it singlehandedly started the video game industry. Revenues from the release of *Pong* proved how video games can be monetized and other companies wanted to be part of this. Companies understood that the appeal of video games depended on how fun the games were and used visual technology to attract players to their games. *Pac-Man* (1980) is a classical example of popular arcade game design. The screen was filled with eye-catching colors as well as vibrant sounds, mimicking the appeal of a casino slot machine. This was a contrast to the visual graphics of *Pong* and *Asteroids* (1979) as they were limited to vector graphics in which lines were geometrically drawn on the screen to create familiar objects. As a result, these early

games used monochrome colors and many of the objects on screen were hollow. Improvements in computer processors allowed developers to use raster graphics, which uses a combination of pixels to create images on screen. Games such as *Pac-Man* uses raster graphics which allowed the developers to use colors and create images that are familiar to us.

Pac-Man also attracted players because it was easy to play and the rules were not complicated. The player controls a moving puck with a joystick and the goal is to eat all of the pellets on screen and avoid getting caught by the ghosts. Learning how to play the game was easy, but mastering the game was not and developers purposefully made the game harder as player progressed with the goal of making them lose. Players would then feel the urge to spend more money on the game and improve their previous scores. Others would look at the scoreboards of the game and they would play to achieve a high score creating a cycle in which players are playing against each other, feeding the industry with more income.

Because video games were designed as a capitalist investment, it did not garner any favor from the academics in the humanities. But releases of new video games were not entirely dependent on the commercial side of the medium. In 1976, Will Crowther who was a programmer for the technology company Bolt, Beranek & Newman, created *Colossal Cave Adventure* so that he could share his cave exploring adventures with his daughters (Rick). He then freely distributed the game through ARPANET, which is the precursor of modern day Internet and students who had access to computer labs at their university were able to play the game.

The release of *Adventure* marked a stark difference to the commercial games that were released for the arcade and home consoles such as the Atari VCS. The game was text-based: the reader would read the text and form an image in their mind much like how one would do when reading a book. The only difference is that players had the ability to directly interact with the game by typing a command while the player is creating his or her own narrative of the game. Unlike arcade games in which the player is playing for a score, the textual adventure games were played because they engaged the player in a narrative. These games had a beginning, middle and an end. There were chances that the player could make a mistake and cut their adventure short, but they had the opportunity to replay the game and find alternative paths to reach the end. The creation of the textual adventure game was possible because the computers that were being used to play *Adventure* was able to display a large amount of text on screen, which is a capability that was not possible if the game was developed on the same computer that *Spacewar!* was created on.

Not long after the textual adventure games became popular, computer programmers were creating new versions of adventure games. This was a contrast to the commercial video game industry that was creating games while focusing on visuals and game mechanics so that they attracted new players. Many of these game designers were not trained in the arts of narrative, as the majority of them were either computer engineers or programmers. Adventure games were largely developed by programmers but because their goal was to share a narrative experience, these people looked at their favorite literature for inspiration and J. R. R. Tolkien's *The Lord of the Rings* was a great source of inspiration to the creators of these games.

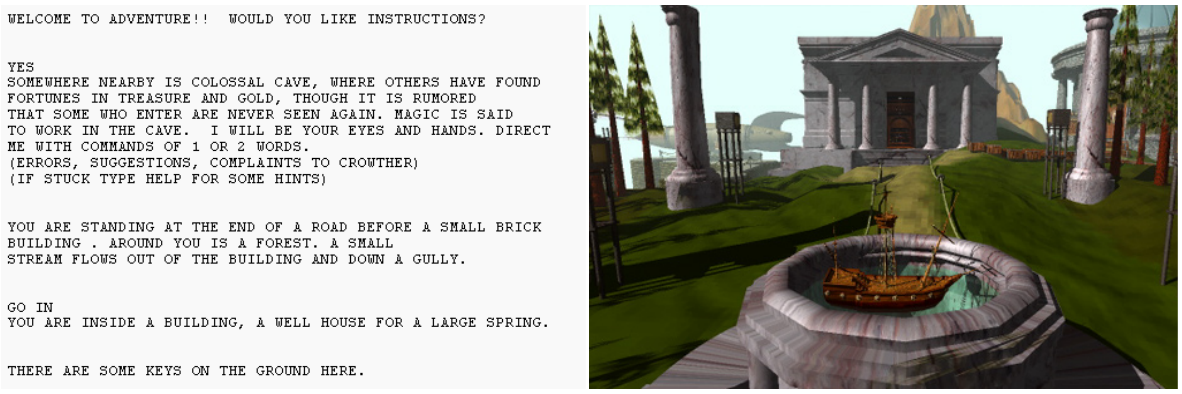

Figure 2: From text to 3D, the evolution of adventure genre. Left: *Colossal Cave Adventure* (1976) Right: *Myst* (1993)

There was some exception to the rules as there were a handful of arcade games that were created to provide a narrative experience. The most famous example of a narrative driven arcade game was *Dragon's Lair* (1983), which uses full motion video instead of sprites to provide visual graphics to the game. This provided players with an experience that is vastly different to the other arcade games of the era. The use of full motion video provided players the impression that they are interacting in an animated world. But this was also a shortcoming as the player had very limited control as to what the character could do on screen as the majority of the animation had been previously drawn by animators. Nevertheless, *Dragon's Lair* proved to be a success and this proved to the industry that a narrative driven game had potential in the market.

The popularity of textual adventure games enticed developers to commercialize this game genre during the late 1970's as personal computers such as the Apple II was starting to become a common household item. But the video game industry was still focusing on the arcade market as it provided the bulk of the profits. Oversaturation of arcade game machine and the lack of quality software for the home market eventually led the industry into the video game crash of 1984, ending the arcade era of video games.

Developers became cautious and the industry has started to change their approach to video game design.

The video game crash brought the industry to its knees and the future seemed uncertain for those who were involved in the video game industry. However, the medium of video games was resilient enough to bounce back into prominence during the rest of the 1980's and early 1990's with the release of the Nintendo Entertainment System (NES). Commercial arcade games had lost some of their luster and developers were shifting their efforts into developing games for home consoles. The experience of playing an arcade game loses some of its luster when they are being played at home. No one is near to watch the player aim for a high score and the scores cannot be posted in a public place for others to see.

Despite a shift away from score based game design, the narrative experience of video games was extremely limited compared to other established media such as film and novels. Game narrative did not develop beyond the common structure of having a beginning, middle and an end. These game designers were only interested in creating games that were fun and they would develop their game around a character and a simple story with no regards to how the narrative unfolds. This is due to the fact that the majority of the developers were trained as engineers and programmers, who placed their efforts on improving the visuals of the game. Moreover, it was still an industry motivated by profits and designers understood that the strength of video games lies on how the game looks and how fun it is to play. The development of video game narrative was merely an afterthought. Furthermore, hardware companies such as Nintendo were releasing new game system after a couple of years. These new machines provided developers improved

processors that can help them create visual graphics that were a step above the previous generation of games. Hardware updates were also made not only for the benefit of improving visuals, but also to expand the canvas the programmer could draw on when creating a new game.

Technological improvements can often lead to new game genres and improvements in existing genres. One of the biggest genres to have emerged through advancement in computer technology was the first person shooter during the early 1990's with the release of *Wolfenstein 3D* (1992) and *Doom* (1993) by id Softwares. These games allowed players to freely explore a virtual environment in a first person perspective view, which gave players the illusion that they were wandering in a 3D space.

Prior to the release of *Wolfenstein 3D*, games were played on a two dimensional field in which the player had a limited control over the character and the environment. But John Carmack from id Software was able to create a graphics engine that provides the player the ability fluidly create images in real time as the player manipulates the camera. The rest of the developers from id Software felt that exploring through the environment in a first person view enhanced player immersion and with the technology on hand, they created a gaming experience that was new to the general gaming community. By providing an immersive experience, the first person shooter quickly became a popular genre amongst gamers, as these games were violent and enhanced with gory visuals. But it was a genre that had little to do with the development of narrative as the designers were more interested in improving the visuals of the game so that they can provide players with a higher sense of immersion.

The goal of improving visual graphics drove the industry forward during the 1990's. They strived to create immersive games by exhausting the capabilities of the technology that was on hand. Graphic processing units were developed, enabling developers to create 3D objects by combining various polygons into a single object. The complication of developing games with 3D graphics made game development a costly endeavor as it requires a legion of artist and programmers to develop a game. When the industry first started, games were created and designed by a single person. As computers became more sophisticated the amount of people working on them grew to a handful and development teams remained small until the development of 3D graphics.

While the industry moved towards 3D graphics, compact discs had become the standard media in which data was stored and distributed by content companies. The extra storage space that the CD provided over the magnetic floppy disc or the flash chip cartridge, allowed developers to include voice recordings that could flesh out game character. But most importantly, it allowed developers to include computer generated full motion videos that are used as cut-scenes that serves as a reward for many players.

The use of computer generated motion video as cut-scenes quickly became the norm within the industry. In order to create a cohesive transition between game and cinematic cut-scenes, developers started to focus on relating the action of the game to the cut-scenes. Because of this, developers started to focus on narrative development when designing their games. Environments and character development were no longer being ignored and developers were designing to immerse gamers in the fictional world that they had created.

Improvements in game visuals were not entirely responsible for the shift towards narrative in game design. Increasing processing speed gave developers additional room to develop tools that they could use to enhance the experience of the game. In recent years, developers have used Artificial intelligence (AI) to create enemies that behave in increasingly natural and realistic ways. Prior to the development of AI, developers created enemies that followed a predetermined pattern that made them feel like obstacles rather than foes. AI has also helped developers create non-player characters (NPC) that can react to the player action. Game designer Doug Church has argued that complex 3D environment as well as photorealistic games has forced developers to improve AI because players expect to see human qualities in game characters (Spector).

The continued advancement in computer technology has increased the cost of game development and in order to mitigate any potential loss in their game's development, game studios have started to hire or outsource writers to help design their games through the use of narrative so that there is a cohesive transition between game play and cinematic cut-scenes. Furthermore, players have become more sophisticated and expectations of game design in both its mechanics and narrative development have become exponentially higher than they were a decade ago. The results are games that engage the player more fully through narrative, visuals, and game play.

As computers become faster and new computer technology becomes available to the masses, designers will continue to incorporate new methods and tools to develop new games. The current generation of game consoles and computer system can produce photo realistic visuals but computer engineers are still striving to improve visuals so that the virtual environment can become even more immersive. Computer programmers and

scientists are still trying to create AI that can mimic human thoughts and language. Combine AI advancements with photorealistic visuals and the industry could potentially bring the holodeck from *Star Trek* to reality.

Advancement in computer technology has forced the hands of video game developers to incorporate narrative in game design. Virtual space also provides players, the ability to discover and create their own narrative. It is through these abilities that video games became a medium of interest to the humanities. But the climate toward video game study did not occur overnight and the foundation had to be laid long before this medium became available to the public.

Chapter 3: Literature Review

Chapter 2 discussed how the industry was started for the purpose of making a profit out of this new medium. With time, video games have matured to a point that developers are creating a narrative experience, which was enough to garner interest from scholars in the humanities. This emerging medium proved to be fertile ground and many existing literary approaches was adapted to the study of this medium. New approaches also emerged to challenge those that have been established and debates have taken over the discussion of video game studies. As the medium continues to evolve so does the theoretical approaches to video game studies.

The first steps towards video game studies were taken in 1985 by Mary Ann Buckles, who submitted her UCSD dissertation titled "Interactive Fiction: The Computer Storygame." This dissertation carved a path towards video game study, but it was not until 1997 that the path was cleared for further study with the publication of Janet Murray's publication of *Hamlet on the Holodeck* and Espen Aarseth's *Cybertext*. At this early point in Video Game studies, these two publications split the path of video game studies into two different approaches. Murray followed the path Buckles had first carved out with her dissertation and expanded the use of Narratology in the virtual world. On the other hand, Aarseth believed that video games should be studied based on their distinctive qualities over the common narrative and set in stones the approach to video game studies known as Ludology. The perspectives that arise from these two publications have created a debate between Narratology and Ludology. I believe it was a debate that validates the importance of this medium for the future. However the debate also cast doubts on the perspectives used and their effectiveness when studying video games.

This debate occurred during the early 2000s when Ludologists such as Espen Aarseth, Gonzalo Frasca, Jesper Jul and Markku Eskelinen argued against the "colonization" of video game studies by existing theories such as Narratology. Narratologists such as Janet Murray, Michael Mateas, Celia Pearce, Noah Wardrip-Fruin and others defended a narratological approach to video game studies and the debate became the most talked about topic during the Digital Game Research Association (DiGRA) conferences in 2003 and 2005. Not long after these conferences, fewer papers were written on these two approaches and a shift in opinion has started to occur. There are now wider ranges of scholars from different academic fields contributing to the growing study of this medium most often through a multi-disciplinary approach.

In this chapter how Narratology and Ludology were first developed for the use of video game studies will be discussed. Furthermore we will focus on how each approach differs from one another and what specific issues led to the debate that became a predominant point of interest and discussion within the video games studies community. Although neither of these two theories were able to establish themselves in the field, they have brought to light the shortcomings and the challenges of video game studies. Through their struggles and debate, scholars can learn from this lesson and develop alternative approaches for the future of this field.

The Foundation of Video Game Studies

There is a large majority of scholars from the humanities who dismiss the study of video games for the same reasons that film and other modern media were ignored when they first appeared. For these scholars, the fact that the video game was created for mass culture disqualifies it as a work of significant cultural value. Fortunately the medium has

matured enough to warrant study by scholars. The foundation that was laid for the study of video games was established during the 1960's through various fields of study such as semiotics, film, cultural and media studies. All of these fields of studies have changed the perspective scholars have on popular media and helped create a climate that allows for the study of video games. The willingness of studying video games has then allowed for literature scholar such as Mary Ann Buckles to explore it as interactive fiction, paving the way towards the use of Narratology in the study of video games.

Video games are without a doubt, a mass culture media. It is being played by millions of people from around the world and it is a medium that the elitist would turn a blind eye on. However there are humanist who have shown interest in video games and this is due in part by the acceptance of mass culture that was set in motion during the 1960's with the study of semiotics by semioticians such as Umberto Eco and Roland Barthes.

Umberto Eco was one of the first to explore mass culture particularly with the essay "Phenomenology of Mike Bongiorno" (1961) in which he writes an analysis of Bongiorno as a public figure rather than a biography of him as a person. Bongiorno was a star in Italian Television and famous as a host for various quiz shows that mimicked the shows from American airwaves such as *Wheel of Fortune*. There was no real need to write an analysis of a person Eco deemed as "not particularly good-looking, not athletic, courageous or intelligent." However the phenomenon of Bongiorno and the infatuation of viewers with this public figure was reason enough to convince Eco to write an analysis of his significance in cultural context.

Eco's interest in popular culture studies arises from his research in semiotics and particularly in how texts, mass communication and so forth can be studied as a semiotic experience that we have to learn to read and interpret as signs. Other theorists such as Roland Barthes also support Eco's notion of mass culture and semiotics. In 1957 Barthes published a collection of essays in *Mythologies*, in which he explored the meanings of everyday things such as wine as a "signifier." We commonly look at wine and think of an alcoholic beverage fermented from grapes. This explanation of wine would be the common signifier but Barthes explored how wine as a signifier has changed because, in the French context, it is also understood to be the national drink of France because the bourgeoisie has adopted it as a drink that is healthy and relaxing.

Barthes further explores his approach to the signifier and the signified with the 1970 publication of *S/Z*. Barthes demonstrates how a reader can extract a variety of meanings from a literary text, uses the short story "Sarrasine" by Balzac to show how this can be done, thereby showing how the author is no longer in control of his work as he had previously argued in "The Death of the Author" (1968). It is up to the readers to analyze the text and give it their own meaning. Barthes established five different codes that can identify different kinds of significance and determined that with an open text the reader can give their own meaning to the work.

One last important contribution that Barthes provided was the publication of *The Pleasure of the Text* (1973) in which he claimed that a text can bring both pleasure and bliss to the reader and this is achieved when the reader is engaging with the text in a physical manner. The results are that through re-enactment the reader can experience through a "writerly text" a sense of bliss. Barthes believes that the highest level of writing

is when the text invites the reader to be “no longer a consumer but a producer of the text" (4). For the text to be “writerly” it has to allow the reader to be able to extract various levels of meaning from it. However not all texts can provide various levels of meaning and the ideas in many texts are so common that the reader is not engaging with it and therefore Barthes would consider them as “readerly texts.”

In what has been referred to as the linguistic turn in academia, Eco argued that anything and everything that surrounds us can be viewed as text whereas Barthes discussed how readers could interpret an open text in ways which can create thousands of different interpretations of a work. Video games are an open book, a text that is being studied by the players. Whatever the situation that the players find themselves in the game, individuals will read the events that are occurring on the screen differently and therefore their actions will be different from one another.

Eco and Barthes are only a fraction of theorists that have contributed to the study of popular culture and ignited an interest in the contrast of high and low art and the acceptance of popular culture as a possible and fair candidate for interpretation. They helped bridge the divide that exists between high culture and popular culture. As a result, academia has been willing to look at non-traditional medium such as comic books or graphic novels. They are also willing to look at genres that have been largely ignored such as science fiction and other literary genres that used to be dismissed as low art. Most importantly, they opened the door for an emerging medium such as video games to enter academia.

Eco and Barthes are not fully responsible for guiding academia towards video game studies. There was a movement that was emerging during this period known as

cultural studies. Theorists such as Raymond Williams, who coined the term “cultural materialism,” brought to light issues of hegemony and mass culture, and this approach was further expanded by other theorists such as Stuart Hall and Paul Gilroy. Cultural studies advocates have argued for the study of mass culture as a way to empower the struggle of the masses against elitism.

Let us not forget the rise of media studies and the need of studying the media rather than the content of the media, as discussed by Marshall McLuhan in *Understanding Media* (1964). McLuhan famously pointed out that “the medium is the message” and he uses the example of how the light bulb as a media has greater social implication than its contents since it can potentially alter our environment. The mere presence of a light bulb in a room can illuminate it during the night and a new space is being created. This has more social effect than the content of a novel because it has completely changed how society functions at night.

Mcluhan has also divided media into two different categories that he describes as “hot” and “cool.” Hot media are those that fully immerse the audience, as there is sensory overload from a large pool of information from the medium. Yet they require very little effort from the user. Cool media on the other hand provide a very limited amount of information and require users to be actively participating in the media. In the case of video games, the media lends itself more as a cool media as it requires user involvement in order to enjoy the game.

Society has been trained be fully immersed in traditional narrative media such as text and film in which the audience is exerting little to no effort when absorbing content. However, the ability for the audience to interact with the narrative has been a recent

development. In traditional media, the narrative of a story is set in stone and its outcome will always be the same. But when there is the ability to interact with the story, there is always the chance that the narrative can change based on the action and the choices that the audience will make. During the 1960's Brazilian theater practitioner Augustus Boal had used Paulo Freire's *Pedagogy of the Oppressed* (1968) as an inspiration in developing the *Theater of the Oppressed*. This theatrical approach places spectators within the play itself and requires them to live through this alternate reality and through trial and error act out their ideas and approaches to an issue and see the results of it. What a player does in a video game is similar to what happens in improvisational theater in which the actors are given a scenario and a problem and they have to act it out, but with direct intervention from the audience.

Interactive theater is one of the most traditional mediums to empower the audience and give them a sense of interactivity in the development of the plot. During the 1980's and early 1990's there was a boom in Choose Your Own Adventure books that were popular with young adult readers. The books were largely written in an adventure and fantasy genre in which readers are given scenarios to read and at the end of each scenario have to make a choice as to what type of action they would like to take. After choosing a desired action, the reader then turns to the given page that was assigned to the action and the scenario continues until the plot is done. These books are very similar to Boal's *Theater of the Oppressed* in which the reader or the audience is given the power to choose how the plot unfolds. The results of the books are already predetermined and after a couple of readings, the reader will already know which actions to choose to get the best result, but in a live improvisational theater, the plot will change based on the whim of the

actors. Choose Your Own Adventure books are no longer as popular but they have been replaced with hypertext and the Internet but that came after the release of video games.

Hypertext and interactive theater are an extension of traditional media that are familiar to the general public. Prior to the creation of video games, there was a medium that was highly influential to video games as interactive fiction. Tabletop role playing games were highly popular during the 1970's in which a group of people would gather in a place and play an imaginary role in an imaginary setting. The first and perhaps the most popular game to come out is the *Dungeons and Dragons* series in which a set of rule books and companion books were published to help create a game in which the players can interact in a controlled environment. Tabletop RPG relies on a dungeon master or the storyteller to control the flow of the game and the players are can then determine how the story is told through a series of actions and decisions that they take. This can only be achieved as the rules of the game are followed and the outcome of the action depends on the roll of the dice.

Tabletop RPG greatly influenced the adventure games that emerged during the 1970's in the various computer labs around the nation and the adventure games became the template of how current games are being played (Heide Smith). These games are the precursors of video games as interactive fiction but it only played a small part towards the study of video games in the humanities. There are traditional texts that had multiform stories such as Jorge Luis Borges' "The Garden of Forking Paths" (1941), which was of great interest to scholars because it was also the precursor of the hypertext that is commonly used, in the World Wide Web (Murray 31). However hypertext is not

exclusively used in modern computers as traditional text such as the dictionary and encyclopedia are considered to be hypertext.

The development of interactive fiction as well as the study semiotics, cultural and media, have created an environment in which mass culture media was tolerated in the humanities. One of the biggest benefactors of the willingness to explore mass media was film, which is a media that was considered to be inferior to theater. Film theory took root during the 1960's and 1970's and it has flourished into a widely accepted medium for academic studies. But film is a medium that has been in the minds of society for over a century and time has been kind to it has film has risen from the low arts, into a higher platform. Video games on the other hand, had just started in the early 1970's and it is a medium that was not looked at favorably by society. When studies of this medium was conducted during the 1980's it was meet with some resistance, but the study of it was still tolerated.

In 1985 Mary Ann Buckles submitted her dissertation titles "Interactive Fiction: The Computer Story game 'Adventure'." It is widely considered by video game scholars to be the first academic research done on video games that focuses on the content of the medium. Buckles was not entirely alone in the study of video games as Sherry Turkle had discussed the relationship between the user and the machine in her book *The Second Self: Computers and the Human Spirit* (1984). Buckles' research was not fully supported by her advisers, but Buckles was fascinated by computers and the game of *Adventure*. She found that it was an emerging medium that deserved attention as a literary form and she spent a large portion of her study arguing that textual based games such as *Adventure* were literature.

Her arguments were largely based on the fact that the game *Adventure* was a text based game with no graphics and that the setting and the action of the game is told through the text. The player has to read the text in a similar way to how we have to read a book and because of the use of text, she argued that textual adventure games such as *Adventure* are literature because they are "written in words, conveys story, and can evoke powerful emotions" (3). She also argued that there are literary works that also evoke the notion of play particularly in riddles and word play.

Buckles also argued that video games, as a form of interactive art are immature much like how the chivalric prose of *Amadis of Gaul* was first written to take advantage of the printing technology that was readily available during the early 1500's. *Amadis of Gaul* (1508) and *Adventure* both share the brunt of criticism because they are the first of its class, but they are also the beginning of greater things to come as these media that, when first created were immature, with time will improve and will be legitimized.

One of the key issues that Mary Ann Buckles discusses in her dissertation is that video games are interactive fictions that empower each player to imbue the text with meaning in his or her own way, echoing what Barthes had discussed decades earlier. This effectively takes the power of creation away from the author or the developer and makes the role of the player or the audience the focal point in the overall experience of the game. This idea of user empowerment in a virtual environment became a focal point of discussion for the study of video games as interactive fiction.

Buckles made great effort to promote video games as an interactive fiction, but the lack of support from her peers and the politics surrounding academia had driven her out. This left a void in the study of video games as no scholar had picked up the mantel

that Buckles had worn before her departed from academia. Nevertheless, during this time, a literary movement known as cyberpunk had caught the attention of a handful of academics from the humanities as the concept of cyberspace and virtual reality can provide a narrative experience that is vastly different from the traditional form of narrative.

This was the case in Janet Murray's *Hamlet on the Holodeck* when she discussed the possibilities of the holodeck that was featured in *Star Trek: The Next Generation*. The holodeck is a room in which a computer can create physical environment within an enclosed space based on desires of the user. The holodeck also provides artificial intelligent host allowing the user to interact with the virtual environment, creating their own narrative in the process. The holodeck is technically impossible at this moment but it can be replicated to some certain extent through the use of virtual reality and video games. Video games may not be as immersive but Murray argues that a graphical representation of a virtual world that allows players to interact is enough to garner attention from humanists.

According to Murray, there are four essential properties of digital environment in which will "separately and collectively make it a powerful vehicle for literary creation" (71). These are: procedural, participatory, spatial and encyclopedic.

Video games are first and foremost procedural because they are designed by using strings of codes that will determine the limits of the virtual environment. Because the code is being written by a programmer, there are some limits as to what the software can and cannot do and as a result, rules are being established so that the player can now what they can do in the game's virtual environment.

Take for example the natural language processing software *Eliza*, the user interacts with a virtual character using a keyboard as the input method. The virtual character will then give the user a reply and thus engage him in a conversation. Language development in computer software is not advanced enough to creatively construct phrases and the developers had to develop an engine that can give the player the impression of a conversation with real person and one that can construct creative and cohesive sentences.

This is what Wardrip-Fruin coined as the "Eliza effect" in which the player has the impression that the game or the code is complex when it is not (*Expressive* 09). This is a clear indication that current technology is limiting the possibilities of what we can and cannot do in the virtual environment. This was most evident when Buckles first discussed the rules and the inherent understanding of the player of how to interact with the gaming environment.

The act of giving the player the ability to interact with the virtual environment means that video games are also participatory. Every level or chapter of the game places the player in the middle of an event or an action and the conflict will not be solved on its own. It is up to the player to pick up the gamepad and participate in the progression of the game. Currently, there are many games that engage the player in the story of the game by having them participate in conversations with non-player characters. It is through this interaction that players can uncover new goals for the progression of the game or expositions that are important for the progression of the plot. More recently Wardrip-Fruin has explored how games give the player a series of choices or a "dialog tree" for their reply and based on what they choose a new set of phrases are available for the player to choose from so that they can continue with their conversation (*Expressive* 51-7).

Spatial environments may not directly contribute to games as being interactive, but they appeal to the players and to humanists because they give us the impression that we are exploring a virtual space. Space in the virtual world is different from the real world as there are many places that cannot be accessed by the player because there are invisible walls blocking the player from accessing places that are non-existent. Space is also of great interest to narratologists because it lets the players explore and view the environment through their own eyes as opposed to the eyes of a narrator, as usually occurs in traditional written texts and in films. This gives the player complete freedom and power to explore and analyze the environment based on their experience thus lending itself closely to a reader response approach to the game's experience.

The virtual environment along with the freedom that is given to the user also provides us with a great opportunity to use this space for story creation. Video game developers are not merely creating a guided experience. They are also virtual storytellers as the virtual environment makes it possible to tell stories that have yet to be told by the game that we are playing. It is essentially a space in which stories can be created and shared within gaming communities through the use of the Internet.

The last property of the environment that can contribute to the immersion of the player in a video game is that video games can be encyclopedic. The digital environment gives the user access to a vast amount of information when you have access to the web. The web is a vast network in which storage space has no bounds or limits, and information travels quickly throughout the network. It is a place in which people can live an anonymous fantasy life. Cyberspace, as explained by the cyberpunks, is becoming a reality in which people can become dependent and addicted when they are connected to

the net. Cyberspace and the internet gives a broader voice to the community and allow for a greater development of narrative by giving the users the power to take pre-made narratives, as found in favorite science fiction shows such as Star Trek and Star Wars, and contribute publicly, and on the Internet, new narratives to the world that the fans love to read about.

The path towards video game study has been carved out since the 1960's through semiotics, cultural, and media studies. Barthes and Eco made mass culture media such as television and comic books available for interpretation. Williams and Hall brought to our attention the issue of hegemony and culture whereas Mcluhan and others from media studies focused their effort on understanding the media rather than on the content. These three theoretical approaches along with the interest in cyberspace and virtual reality that emerged during the 1980's through the science fiction subgenre known as cyberpunk, placed video games on the path towards recognition by academics. The biggest contribution to contemporary video game study, especially for Narratologists is the work done by Mary Ann Buckles as she discusses how interactivity in video games paved the way towards a future of interactive fiction.

The Role of the Player

Video games provide players with a level in interactivity that is not present in many other media. The ability of players to manipulate the environment as and move the story of the game forward is the most important element of video games studied by Narratologists, and it is important because it is through the freedom of player interaction that unique narratives emerge.

As I discussed earlier, Buckles referred to *Adventure* as an interactive fiction rather than a game. She further emphasized that this approach to creating fiction was still immature and time was still needed for it to evolve. But most important in her arguments for the study of video games is that she considers them as literature as they evoke the audience's feelings, are written in words, and tell a story. Viewing games as a form of literature allowed Buckles to look at the game as a text that can be analyzed and studied, which is similar to how semioticians such as Eco and Barthes had done decades before her. This time the player is considered to be the reader of this text and the interpretation of the text greatly depends on how the readers respond to the text.

Buckles made the argument that games such as *Adventure* and *Zork* could be easily viewed as literature because they were text-based. There were no graphics on screen to give the player a visual representation of the environment. Instead, the setting was described to the player in text. The feeling of playing these games are similar to reading a Choose Your Own Adventure books the fact that the software requires the player to type in their response and not give them choices makes the whole experience interactive. This allowed early video game study scholars the chance to call these early games interactive fiction. But if we were to take the definition of literature that was established by Buckles as work that contains text, then the textual adventure games or the interactive fiction could no longer be considered as literature because graphical adventure games supplanted them. As computers became more powerful and the display of graphics became more prominent, game designers quickly jumped on every new technology available to them and quickly abandoned textual adventure games in favor of the graphical adventure games that became very popular in the early 1990's.

Buckles felt the need to validate video games and their role within academia by arguing that this medium is literature as there was a lot of resistance towards the study of video games. She argued for video games as interactive fiction, for the future of this medium and how it could advance fiction based on the recommendation she had for it. However, there was also a lack of progress in video game studies after Buckles dissertation. She left academia after her successful defense as she encountered opposition to her work on video games and was disillusioned with the politics in academia. There was no other person to expand on her work.

It was Murray's *Hamlet on the Holodeck* that explored the gap that existed since Buckles' exit in academia. When *Hamlet on the Holodeck* was first published, video games were at a transitional phase in which cd-rom media was starting to become ubiquitous in both personal computers and in game consoles. Three-dimensional (3D) graphics was also becoming the norm in game design and the player no longer had to rely on textual input to interact in the game. The players now had direct control over the avatar and the amount of actions the player can make in the game has increased. Like Buckles, Murray believed that players had the power to construct their own responses to the virtual world.

However video games have gone past the point of being just text and the relation of games to literature was becoming less clear. Games were looking more realistic and incorporating computer-generated movie clips and thus becoming more like movies than novels.

What also led Murray to her fascination with video games was *Star Trek* and the holodeck technology that had become a tool of creative storytelling for the show's

writers. The holodeck gave the user the ability to recreate a story of their liking, and it allowed them to play the role of the hero or the heroine of their favorite novel or story.

In order to account for this change, Murray proposed the idea that the action that we produce has a tangible effect in the virtual world, one that offers the player a sense of achievement or a sense of agency. Murray argues, “agency is the satisfying power to take meaningful action and see the results of our decisions and choices” (126). Take for example the simple act of clicking on an icon on the computer desktop. By dragging the cursor over the icon and double clicking on it, we expect it to react to our action and in most cases a program will be run and the user can continue to interact with the computer. However not all actions that we produce can be considered as agency. This occurs when the results of our actions are dependent on chance. There are many board games that do not evoke the sense of agency because the only action the player has to do is roll the dice and move the piece based on the number of the die. A board game like chess does evoke agency because the player is controlling the pace of the game and each move he or she makes can have a meaningful impact on the overall experience of the game.

The sense of agency in a traditional narrative would most likely be discarded as there is very little a reader or an audience can do to affect the story and the plot of either a novel or a film. Video games are not much different than the traditional narrative since most games released today are built on a story and follow a plot created by the designers and the writers during its development. In many cases a game will be divided in various “chapters” and before the chapter begins the player is given exposition of the story and given goals to complete. When they reach the end of the chapter cut-scenes are usually played to move the plot forward and set up the following chapter of the game. The

beginning and the end of a chapter are already predetermined, but it is the middle part of the game that allows the player to be engaged through agency.

The action of the game takes place in a virtual environment that is traversable by the player through the use of the player character. Scattered throughout this environment are set pieces that serve as obstacles to the player and in many cases they involve enemies that are controlled by the computer AI or the environment itself becomes an obstacle that the player has to carefully trod through and survive. One of the joys of playing games is the ability they give players to traverse through this virtual environment and discover new things such as enemies and obstacles. This feeling is described in Guy Debord's "Theory of Derive" in which a person will explore an unfamiliar part of the city and let the landscape or the layout of the city guide him to discover new places that can then lead him to interact with new people in these areas. The virtual environment of video games is not any different because the setting is designed in a way to lead the player along a path that can lead to new discovery and obstacles which the player has to interact with.

The design of the environment will often guide players along a linear path towards the end of the chapter. But there are many cases in which players can explore and discover secret areas throughout the game, thus enhancing the level of enjoyment and a greater sense of agency when discovering secrets or Easter Eggs [1]in video games. Murray's concept of agency is tied to players' ability to move and the actions that they can execute expecting to get results. Video game designer Doug Church elaborates on the enjoyment of player action. Church, who has contributed to the discussion of video game design theory, argues in the article "Formal Abstract Design Tools" that players through character movement will understand the physics and the limitation of the game's

[1] Easter Eggs are intentional hidden messages or inside jokes found in games.

environment. Using these implied rules, players will then create their own “intentions” which define their goals.

Take for example *Grand Theft Auto 4* (2008) in which the player is given complete liberty over the exploration of the virtual city. The game also provides players with the ability to drive cars and drive them up ramps and jump the cars. Once they understand how the physics of the car works in *Grand Theft Auto*, players can then create their own goals of driving the cars up the ramps and jumping them to see how far the car will go. The player has to find an area that has a ramp and a long track that can allow the car to accelerate fast enough to make a long jump. There are other games in which there are areas that are inaccessible to the player and which they do not try to access because they understand the limitation of the world and the implied rules of the games.

Through exploration and the understanding of the virtual environment and the physics behind it, the player encounters obstacles such as enemies that are controlled by the computer through the use of artificial intelligence. Throughout the game the player will become familiar with the physics of the game and learn its limitations and new skills will become available for use. The player can then use all the skills they have learned and apply them to overcome these obstacles. AI is often used to make the experience interactive and the computer’s AI can counter many of the actions and decisions we make. We then have to adjust our action and hope that it will lead to a positive result. By reacting to the computer’s action and adjusting our action we are experiencing agency (Wardrip-Fruin “Agency”).

Players that understand the inherent rules of the game and the virtual environment, adjust to the procedural nature of the computer software. Because they have

the ability to participate in the events that are occurring on screen and the freedom to do what they believe the software is capable of doing, they experience immersion in the game. Murray argues that immersion "is a metaphorical term derived from the physical experience of being submerged in water" (*Hamlet* 98). The psychological experience of being immersed in water is somehow recreated when we are surrounded in a virtual environment and we dedicate all of our attention to this environment. Just exploring and losing oneself in a game constitutes as immersion. Obtaining agency may be the most rewarding aspect of playing games as it gives the player a sense of accomplishment and gratification.

Players also have the capabilities to break the rules of the virtual environment that have been established by the developers, usually through exploits. The codes that make up a game will never be perfect and a certain action by the player can potentially break the code, giving the player the ability to perform actions that are beyond the control of the developers. These capabilities include circumventing certain doors and areas that are supposed to be crossed through, accessing the outside perimeter of the maps, and others. These actions also promote the agency of the player because through the players' determinations and actions, they are able to achieve results that are meaningful to them even though they betray the original intent of the game designer.

Agency can often occur during the action of the game. Very rarely does it happen during moments in which plot and story is developing but that is now changing. I have previously stated that tabletop role-playing games were the precursor of interactive fiction in which the players can affect how the plot progresses based on the choices and the action they make. Video games based on the role-playing genre were heavy on

storytelling but there was little action and few choices the players could make to affect the story and the plot of the game. They carried the role-playing game title due to its association to the original *Dungeons and Dragons* name and format. However more recently, RPG's have become more closely related to the original format because they now allow the player to determine the outcome of the story of the game. This can be achieved through the use of a "dialog tree" as explained by Wardrip-Fruin in *Expressive Processing.* The player will engage in a dialog with a non-player character and a series of phrases is given to the player to choose from. The following phrases will depend on the phrases the player originally chose and from here on the dialog will branch out. In some cases the phrases that the character will choose can open new quests and adventures in the game that can potentially affect the outcome of the game's story.

My discussion has revolved around many different genres of games such as adventure games (*Adventure*, *Zork*, *Myst*), role-playing games (Dungeons and Dragons, Mass Effect) and sandbox games (Grand Theft Auto 3). There is one genre that I have yet to cover and that is the first person shooter, which is the genre that I will be focusing on my case study of the first person shooter game *Portal*. Everything that I have discussed can be applied to first person shooters but there is an advantage these games may have against other genres. The fact that games are being played from the first person perspective as opposed to a third person view of the character is that the player can be fully immersed in the game and its environment. The first person shooting genre also brings us closer to cyberspace and the holodeck as described by Gibson and Murray. The genre may not be in the forefront of storytelling when compared to an RPG, and that is expected as its focus is on shooting. However gamers are able to immerse themselves in

the game, particularly through the use of the first person perspective. They can also enjoy a level of agency similar to any other types of game genre. It also helps that designers have started to create narrative experiences for first person shooters.

The role that the players have in a video game is central to the understanding of the humanistic side of video games. It gives us the chance to explore how our actions can lead to results that can potentially affect how the game progresses and it also demonstrates how our inherent need for freedom and curiosity leads the players to explore and discover a virtual environment. The approach of Narratology in video game is highly dependent on the concept of agency.

The willingness to view video games as narrative can be traced back to Mary Ann Buckle with the research she had done on the game *Adventure*. But the current approach to video game studies and Narratology lies on the research done by Janet Murray on *Hamlet on the Holodeck*. Her discussion on player agency helps support her argument that video games are a novel form of narrative in which narrative theories could be used to study video games. Murray's arguments on agency have been supported and expanded by Michael Mateas, Noah Wardrip-Fruin, Steven Dow and Serdar Sali, but further contributions to Narratology had been stunted by the debate against the Ludologist who argues that video games should be studied on their own terms.

The Rise of Ludology through Ergodic Literature

1997 saw the release of Murray's *Hamlet on the Holodeck* and it is often credited as the groundwork for all future narratological study of games. Murray's approach to digital media particularly in video games and interactive fiction was grounded in previous studies and research such as Buckles' dissertation, and focused on the structure of

narrative. Coincidentally, there was another seminal work that was released in that same year which also delves into the issue of the digital medium and how academia should approach it. Espen Aarseth published his doctoral dissertation as the book titled *Cybertext*: *Perspective of Ergodic Literature.* In it, he argues against the use of established theoretical approaches to the study of electronic literature. This approach to electronic literature then became the foundation of Ludology as it aims to create an approach solely for the use of video game studies.

The research that Aarseth had conducted came at a time in which electronic literature was becoming a common sight because of the proliferation of the World Wide Web or the Internet. Computers were slowly becoming affordable to the masses and starting to become commodities in our society. As I have mentioned throughout this paper, computers have also given users the capacity to play games. The digital age had started and scholars had a new field to explore and humanists found some similarities between digital media and traditional media, much like Murray and Buckles had done with their research. New media studies emerged during this time and Noah Wardrip-Fruin and Nick Montfort made an effort to compile various works focusing on the development of new media. Hypertext works such as those created by Stuart Moulthrop and Douglas Cooper gave rise to the Hypertext theories of theorists such as N. Katherine Hayles and Lev Manovich, critics who have contributed to the study and discussion of digital work and new media. Aarseth was also part of the growing movement of new media studies and discussed the difference between traditional print and digital media through his research on ergodic literature.

The word “ergodic” was coined by Aarseth himself and the word was derived from Greek words “ergon”, meaning “work” and “hudus” meaning “path.” “In ergodic literature, nontrivial effort is required to allow the reader to traverse the text. If ergodic literature is to make sense as a concept, there must also be nonergodic literature, where the effort to traverse the text is trivial, with no extranoematic responsibilities placed on the reader except (for example) eye movement and the periodic or arbitrary turning of pages” (Aarseth 1).

Nonergodic literature can be classified as traditional texts in which readers have to make the effort of moving their eyes from one point of the page to the other point and turn the page in order to continue their "trivial" effort to read the text, which occurs when reading text on the codec. Ergodic literature on the other hand, offers the readers the ability to choose their own path when reading a text. The most common example of ergodic literature is the use of hypertext. As the reader traverses through the text, they will eventually encounter various links from which to choose from, that breaks the linearity of text. Nevertheless, any link that the reader chooses will always lead to the same node. In other words, all the links in the text are connected with each other even if they are not always read in the same order.

Aarseth’s view of ergodic literature is not completely grounded in ideas about text or the use of hypertext. He argues that ergodic literature is not medium specific, as it may exist in the form of print or electronics. What is important in ergodic literature is not the medium but the way in which the text functions. The fact that ergodic literature is not tied to one specific medium caused later scholars to look at Aarseth as an inspiration for

studying video games and this led academic scholars such as Gonzalo Frasca, Markku Eskelinen and other scholars to develop their own methods for studying video games.

The problem with applying narrative theories to video games as opposed to hypertext and electronic literature is that most of the early games were based on skills and didn't focus on interactivity or story. Arcade games during the late 1970's and during the early part of the 1980's were created to engage players and try to make them lose as fast as possible and force them to spend more money on the game. This was a tactic that game designers used as a way to make money out of games. Home console games followed the template that was established by arcade games. Textual adventure games such as *Adventure* and *Zork* were the exception but they also catered to an audience that were older, affluent and had access to computers, which were expensive. Once computers became affordable and accessible to the masses, textual interactive fiction ceased to exist and graphical adventure games became a common sight and popular with the computer community. Interactive fiction never had as much mass appeal as skill based games that were played on home consoles. The research that was conducted on textual interactive fiction and graphical adventure games catered towards a genre of games that had a strong connection to literature but it marginalized the other popular genres. This is perhaps the main reason why Aarseth's *Cybertext* became such an influential work for the emerging group of video game scholars.

Gonzalo Frasca, a video game designer and scholar in video game studies, was influenced by Aaserth's research on ergodic literature. He credits Aarseth with "revolutioniz[ing] electronic text studies with the following observation: electronic texts can be better understood if they are analyzed as cybernetic systems. He created a

typology of texts and showed that hypertext is just one possible dimension of these systemic texts, which he called “cybertexts”"(“Simulation” 2). By using Aarseth’s *Cybertext* as an exemplary work, Frasca set out to study video games by discarding traditional approaches much like Buckles had done with her dissertation by using Proppean analysis on a textual adventure game. Buckles was able to support her argument and use of traditional literary approach to *Adventure* because of her argument about how the game can be considered as literature. This was not possible with other games that was skill based or puzzle games that had no story such as *Tetris*. Murray would have argued that even a game like Tetris can be studied using a narratological approach through the use of agency but Frasca and his colleagues would argue otherwise.

Frasca first sought to study video games using traditional narrative approaches but felt that it was ill suited for this medium and as a result he developed Ludology. Frasca first coined the term Ludology, a word derived from “ludus,” the Latin word for play, in the publication “Ludology meets Narratology” (1997). When he first proposed the use of Ludology, video game studies was in its infancy and he wanted to create a term to refer to the still non-existent “discipline that studies game and play activities.” Games and play are two key words that Frasca deemed to be important and he wanted to distinguish them from each other. To play is to merely have fun when partaking in a physical or mental activity. But the most important feature of play is that it contains no set of rules as is found when in a game. A child is playing when he or she is running around the field looking for things that are hidden under a bush or on a tree. But if there are other children involved and hiding from each other to play hide and seek, they will want to set some rules as to how many seconds the seeker will need to give to the others to hide. When

they establish rules, the children are playing a game instead of just playing (Frasca "lud meet").

The fact that Ludology was created to study games and play means that there is an inherent conflict in what narratologists want to do with games. As I have previously discussed, Buckles approached the textual adventure game *Adventure* as an interactive fiction. She explained the mechanics of the game so that the readers could have an understanding of how the game is played, but her focus was clearly more on the idea of games being an interactive fiction. Murray's works, as well as those of other narratologists, were focused on the role of the player and the choices we make within the virtual environment. Despite a more open approach to video games, she did not hide the fact that she still regarded games as an interactive form of fiction. Frasca was eager to follow the ethos that Aarseth had established in *Cybertext* stating that video games should be studied as video games without allowing other theories and approaches "colonize" the field.

When Frasca first developed Ludology, he explained that in a video game, there are various stages that a player has to go through in order to obtain some sort of result. Most video games will usually start with a movie clip exposing the player to the characters, the story and the conflict of the game. Let us take the first person shooter Halo: Reach as an example. The opening scene shows a fiery red planet and we then zoom into the surface and we see a helmet on the ground as a truck drives over it and the dialog tells the player that the military had lost contact with a camp. This sets up the conflict that the player needs to face and within minutes the player has control of the character and, more often than not, the character is weak and vulnerable and the game

will guide the player and show us how the game is played and through familiarization, the player will eventually evolve as the game progresses. Progress in video games depends on the results that the player obtains which can either be a win or a loss (“Lud. meet”).

When Frasca first started studying video games, he was interested in the progression of the story of the game and found that for the story to move forward the player had to complete goals and tasks given to the player. He found that there are times in which the player will face a difficult obstacle and puzzles and that there are three choices the player can make. One, the player can give up and not overcome the problem and the game comes to an idle. Two, the player can try to solve the problem. He might fail, but he can always come back and try again until he can overcome this obstacle. Frasca found that the game choices and results were already predetermined and that the narrative will only emerge when the player can successfully play through the game ("Lud. meet").

Frasca may have first developed Ludology to coexist with Narratology. However as time passed his position towards Narratology changed and he chose to disassociate games with narrative for the most part. Before Frasca rejected the use of Narratology, Markku Eskelinnen was the first to point out the deficiency of Narratology for studying video games. One of the arguments that Eskelinnen brought up is the fact that narrative as defined by Gerald Prince and Gerard Genette should contain two components which are: "a temporal sequence of events (a plot, if you want to water down the concept) and a narrative situation (with both narrators and narrates for starters)" (“Towards” 37). In this approach, narratives are seen as being composed of two types of time: story time, which

refers to the amount of time it takes for a story to unfold, and discourse time, which refers to the amount of time it takes for the narrator or narrators to tell the story.

Eskelinen conceded that games do contain plots and back-stories, but he believes that these terms, by themselves, are not enough to describe what happens in video games. One reason for this is that the sequence of events in a video game does not necessarily become nor form a story. In the game *Tetris*, for example, the act of filling a blank gap with a falling block does not become nor does it tell a story within the game. Another reason, according to Eskelinen, is that video games require the player to be active in the game and there is an interaction between the user time and the game time, Therefore, "user time" and "game time" are more useful concepts for studying video games than the traditional narratological concepts of "story time" and "discourse time" are ("Towards" 37).

The time we spend playing a game does not correspond to the action that is occurring in the game. Sport games are very popular with players because they allow them to play as their favorite teams and a match can be completed in a short amount of time. Let us take for example the game of soccer. A real life soccer match will last a total of 90 minutes and some additional stoppage time, which is decided by the referee based on the time lost during the game. In the a video game, 90 minutes is counted as if it was a real game but the clock is ticking a lot faster than in real time. At the end of the match, the game only took 20 minutes of our real time.

There is also the issue of how time is represented during the game's plot progression. During the action of the game, the player can spend a varied amount of time completing the chapter. When the goal is reached and the cut-scenes are played, the

movie does not take into account the time the player spent playing through the chapter and what may have taken the player 20 minutes to finish may represent hours in game time.

Eskelinnen's arguments became the standard response to every argument geared towards Narratology and most specifically towards Janet Murray's argument in *Hamlet on the Holodeck*. It appears that every other ludologist since the publication of Eskelinnen's article has taken a radical stance towards Narratology and has taken the words written by Eskelinnen as the foundation of the arguments against narrative (Frasca "Ludologist Love"). Such thinking is evident in the publication of Stuart Moulthrop's article "From Work to Play" in which Moulthrop takes Eskelinnen's arguments as the foundation for his response to Murray's work. One of the most important arguments that any current Ludologist will bring up against narrative theory, ideas employed particularly by Moulthrop and Eskelinnen, is that games are configurative first and then interpretive, as the players have to adapt to the ever changing situations they are forced into and their actions can potentially change how the game moves forward.

The discussion presented by Ludologists often mentioned the inefficiency of Narratology, fueling a debate between the theorists from both camps. There were many papers published on their respective research and many rebuttals particularly from the Ludologists. By the end of the 2005 DiGRA conferences, however, the number of papers on Ludology and Narratology began to diminish as the debate that had been central in video game studies started to subside and be replaced by alternative approaches

Alternative Approaches to Video Game Studies

The debate between Ludology and Narratology became a topic within the study of video games as scholars spent their efforts on discrediting one approach and defending the other. But the discussions in video game studies did not focus only on these two established approaches. There were also studies of the medium from cultural studies and media studies perspectives. There have been a handful of new approaches that have been developed right after the debate had subsided.

Henry Jenkins, a media scholar who looks at video games through the lens of cultural studies published many articles at the height of the "debate," was often associated with narratologists by their counterparts as his research was more in tune with them. In "Game Design as Narrative Architecture" (2004), Jenkins discussed how narrative is presented in the video games through the use of space within the virtual environment. He states that game designers by default are not storytellers but "narrative architects". The idea is that designers "create worlds and design spaces" in which the world will naturally create narratives on its own. Jenkins has argued that game consoles "should be regarded as machines for generating compelling spaces… and that the core narratives behind many games center around the struggle to explore, map and master contested spaces" ("Game Design" 122). His discussion echoes the arguments that Murray had presented in *Hamlet on the Holodeck* in which the open space of the virtual environment as well as the participatory nature of video games was said to provide players with the tools they need to immerse themselves in the game and gain agency based on their own actions. Players effectively use this available space to create their own

narrative similar to how the holodeck in *Star Trek* allowed for new narrative experiences in the machine.

Jenkins argued that video games can facilitate different kinds of narrative experience and that they are very similar to older traditions of spatial stories commonly found in fantasy and science fiction writing such as *The Lord of the Rings* and Homer's *The Odyssey.* The similarity that these literary works may have with video games in general is that the environment is and of its own is a story of its own. It is through the environment that we can create "the preconditions for an immersive narrative experience in at least one of four ways: spatial stories can evoke pre-existing narrative associations; they can provide a staging ground where narrative events are enacted; they may embed narrative information within their mise-en-scene; for they provide resources for emergent narratives" (123).

During the early years of video game development games were developed by an individual instead of a large team. These designers did not have the skills to write a story much less create a world and they relied on their favorite fantasy books such as the *Lord of the Rings* to inspire them to create their games. As the development team grew, writers and artists were hired to create a fictional world and characters that the players care about and along the way these video game designers are also creating a mythology that enable them to tell many more stories related to the fictional world rather than just focus on the main character. In effect, the designers have created a diegetic world in which many more stories and events are occurring parallel to the main plot of the game. This allows the players to engage in the mythology of the world outside of the game and create

discussions amongst the players and possibly even participate in fandom similar to Star Wars and the Lord of the Rings.

Jenkins was associated with Narratology because of his view on how the virtual space is used for the purpose of creating user-generated narrative. This is a direct result of his specialization on media and fan culture. The bulk his research is based on the relationship between the media and its consumer and how they participate in contemporary popular culture, either through writing fan fiction, blogging or sharing their love for the media as fans. Jenkins wanted to construct another "image of fan culture, one that saw media consumers as active, critically engaged and creative" ("Fan" 1).

Fans of science fiction work such as Star Trek had been ridiculed by the public because of their attachment to a work that is irrelevant and their mob like mentality in which they would get together dressed as their favorite character and share their love for the work. Jenkins believe that "for fans, reading become a kind of play, responsive only to its own loosely structured rules and generating its own kind of pleasure" ("Fan" 39). Jenkins argues that fans appropriate the work of the original author and he refers to this act as "poaching". Fans do not want to just read the text or even play a game, they want to rewrite and reconfigure the work so that it means something to them. They want to escape from the "mundane" and enter into a world that they find fascinating.

Video games have been considered to be a medium that allows for interactive storytelling. However there is an argument that the idea of it being interactive is an illusion as the player is only given limited choices about how they influence the flow of the story in a game. According to Jonas Heide Smith, computerized interactive fiction has been at a standstill because current game design practices have been highly entrenched in

history (“Dragon in the Attic”). The issue the video game industry has with current game design and the concept of interactivity is that they are too focused on a linear approach and not enough on telling a story. But the issue is aggravated with the problem of the user. The ability to tell a story in an interesting and captivating fashion requires skills that a regular user may not have. As a result the developers try to limit the possible outcomes that the player can choose so that they can create a linear and cohesive narrative in a game.

More recently video games have been trying to give players a greater sense of interactivity by offering gamers a handful of possible outcomes in the game based on the players’ actions in game. This is technique most commonly found in role playing games in which the player has the opportunity to interact with the non player characters. Through the dialog, the player is given choices on how they can respond to computer. Wardrip-Fruin calls this technique the dialog tree in which the player chooses a series of dialogues and the “NPC response is selected by traversing a hierarchically organized data structure” (Expressive 52). The concept of the dialog tree can enhance player choice and agency, as choices made in RPG games can lead to variety of results.

Interactivity is a subject that is still being explored, but discussions are not all focused on the debate between Ludology and Narratology. Jesper Juul who is commonly referred to as a ludologist, took a more progressive approach to video game theory when he published *Half-Real* in 2005. This work reconsiders the relationship that games may have with story. Juul argues that games are based on a set of real rules that govern the enjoyment of the game, but game rules are established in the fictional world.

Platform Studies: The Relationship between Hardware and Game

Nick Montfort and Ian Bogost developed another approach to video game theory with the publication of *Platform Studies*, which is "a set of approaches which investigate the underlying computer systems that support creative work" (1). Bogost calls platform study a practical approach to studying video games and other interactive media because it looks at the relationships that exist between the hardware and the software. This approach to video game study can provide a deeper insight into the choices developers make when designing games. But a discussion of the kinds of ideas dealt with by ludologists and narratologists is lacking in this approach so it would be beneficial if platform studies, as well as other approaches, were used in conjunction with these two established approaches.

As a person who has been playing games for years, I have come to form opinions about the hardware the game is being played on and how the experience of playing games can vary from platform to platform. There are the input devices that we have to take into consideration. On a PC, we tend to use the default combination of mouse and keyboard while on a console there are different gamepads that feel and function differently from each other. More recently there is the use of motion controllers and devices with cameras which makes our own bodies function as input devices. PC gamers have been vocal about the use of mouse and keyboard over a game pad because it offers first person shooting games a greater level of accuracy than a gamepad would. Furthermore, the use of a mouse can provide greater control and speed as compared to the analog stick on a controller, and this allows developers to create twitch style first person shooters such as *Quake 3* (1999) and *Unreal Tournament* (1999).

The input devices that are created and used for each specific platform help define the design of the games for their specific platform. However, platform studies is not entirely dependent on input devices, there are also other factors such as the hardware that is being used to play these games and tools that are available to create these games. Understanding the hardware that runs the game can also give us an insight into the history and the goals of the developers when designing the game.

The time it has taken for video games to become accepted in our society has been fairly quick. However the acceptance of this medium in academia has only started to take shape. Barthes and Eco created the work that led to popular culture studies but it was Buckles who cleared a space for the study of video games in the humanities. Her departure from academia left a hole in video game studies. After Hypertext theory and New Media Studies were used to develop ideas about video games, Murray and Aarseth emerged as the key players in the debate between Ludology and Narratology, but these two approaches have not been able to completely dominate the study of this medium. Cultural studies and media studies approaches have also emerged which have often been aligned with the interests of Narratologists.

Platform studies might be the solution that we are looking for in future approaches to studying video game. I feel that looking at the hardware and the platform for which the game is designed can provide insight as to what the developers were thinking when designing the game. This approach is very different from media studies as platform studies focuses on the relationship between hardware and the game and not the effects the medium of video games have in society. Platform studies can provide a deeper insight into how videogames work even though it will probably not enhance their prestige

with critics who are more disposed towards the academically accepted field of media studies.

One issue that Ludology and Narratology and platform studies all fail to address is the cultural impact a game may have. *Portal* is known to have a strong and dedicated following within the gaming community and a cultural studies approach, particularly a study of fandom, could provide a more intimate understanding of the relationship between the game and the players. Video games are still evolving and there will not be a dominant approach to studying video games soon. Perhaps it is best that there is none as all approaches are valid and useful for the study of this evolving medium.

Chapter 4: Case Study

In order to understand how Narratology and Ludology are being used in video game studies, I will conduct a case study through the use of the game *Portal,* which is a game that has garnered a huge cult following within the gaming community. As I have previously discussed, the two leading approaches to video game studies were engaged in a heated debate in which the Ludologists vehemently opposed the use of Narratology because of their colonizing approach to studying a medium that is first and foremost a game rather than a narrative. I concede that Ludologists provided a strong argument against Narratology, but the value of a video game for the players and the scholars cannot be discovered through a singular approach but through a multidisciplinary approach that goes beyond the establishment.

In 2007 Valve software released the *Orange Box* which is a compilation of games that includes fan favorite *Half Life 2* and its sequels *Episode 1* and the new *Episode 2*. Team Fortress 2, the sequel to the popular multiplayer first person shooter was also part of the compilation and a new game was included, titled *Portal.* As a whole, the Orange Box was a critical and commercial success and all the games that were included in the compilation were rated highly by fans. But *Portal* took the gaming community by surprise and it became an instant hit and a cultural phenomenon.

Portal was born out of an independent game called *Narbacular Drop,* which was designed by four students from DigiPen Institue of Technology in 2005. Valve studios was so impressed by the game that they hired the creator of *Narbacular Drop* and had them work on *Portal* which became one of the most talked about games of 2007 amidst a string of strong titles that were released during that year. Titles such as *Bioshock*, *Call of*

Duty: Modern Warfare and *Halo 3* were all big budget games that garnered a great deal of critical acclaim and commercial success and a game such as *Portal* could have been easily overlooked by the gaming community and lost in the pile of games released during that year. *Portal* was able to stand on its own in the large pool of games because of how different it was from standard first person shooting titles like the other big sellers of the year.

One aspect of the game that caught the attention of the gaming community was that the developers had created an antagonist that was loved by the general community. This character was an artificial intelligent computer that is an homage to the AI computer known as HAL from *2001: A Space Odyssey*. The gaming community latched on to this character and many of the dialogues became Internet memes. An Internet meme is a cultural idea that has been spread by one person to another through the use of the message boards and discussion threads over the Internet. Meme such as "The cake is a lie" and "This was a triumph" became an ongoing gag between the gaming community and remained relevant to gaming and online culture the following year.

The game itself is so different and fresh compared to most first person shooter games that I felt that the game deserved a Ludological study to help us determine the qualities that made *Portal* special to the gaming community. This kind of study can also help us distinguish the differences between *Portal* and the many different first person shooting titles that are in the market. Ludology should help us focus our attention on the game and the mechanics of it and how they lead us to understand the rules of the design of the game. The goal of Ludology is to understand that games are not a vehicle to tell a story, but to provide the user with the experience of simulation.

But a narratological study can also shed light on this game. *Portal* is not a game that is primarily focused on game mechanics. It is a game that contains a story and a very simple plot. It is also a fictional world that contains an overarching narrative or rather a much larger story in which the events of the game are only a small part of this grand scheme that the developers at Valve have created. The fictional world of *Portal* has been a huge success for Valve as they have created a new gaming genre and have amassed a following amongst gamers and critics due to the game mechanics and other interesting characteristics of the game. A narratological study of the game can guide us through the plot and uncover the larger narrative that exists both within the game and outside of it. I will use first Ludology and then Narratology to explain the characteristics of *Portal*, which have made this game so interesting to the gaming community, and then briefly explore other approaches that can help explain more fully how *Portal* works.

Ludological Study of Portal

Portal in its core is a first person perspective game in which the game plays much like *Half Life 2* and all other first person shooting titles that were in the market prior to the release of this game. But the game is being hailed as one of the most unique games to have been released during this generation of video games. Through a Ludological study of *Portal* I will discover the elements that make this game different from other first person shooting games.

Shooting weapons and killing enemies are two of the many components that are common in first person shooting games. First person shooting games were also known for its maze-like layout that required players to explore an enclosed space and fetch keys and activate switches to open doors. The player has to traverse this maze and get from point

A to point B. Along the path, there are some certain spots that contain secrets for the player to discover and there are occasionally some alternate routes to get to the goal. To complete a first person shooting game, the player has to traverse and survive various areas and in many cases engage in a final battle testing the skills that he has honed during many hours of playtime.

Portal is not different from traditional first person shooting games in which the player has to follow a set path and overcome various challenges to get from one point to the other. It is also a game of survival in which the character has to overcome the treacherous environment and outsmart an artificial intelligence computer who is set to use the player character as a test subject and dispose of her once she completes the test. There are hazards placed throughout the game that can kill the player and it requires direct confrontation in order to navigate past these obstacles. Despite having things that can kill the player the game is not considered to be violent as opposed to its first person shooter counterparts.

According to Jarvinen, "Ludology is not a clear-cut, systematic method. Rather, it has been an attitude or disposition to studying and designing games" (1). As a result, he created a set of tools that would incorporate ludological elements for the benefits of teachers and students when teaching game design. For this study, I will employ certain parts of Jarvinen's method of applied Ludology and relate it to the theory of Ludology as explained by Juul, Eskelinen and others. First I need to discuss the various game elements. This will then lead us to the discussion of the game mechanics and the game rules.

Game elements can be divided into nine different categories that range from the simplest of elements up through the more complex elements that make up a game. Game elements include: components, environment, ruleset, game mechanics, theme, information, interface, players and context. Not all of the nine elements are required in a game so for the sake of this study I will identify a certain group of elements while providing a discussion of how two of the most basic elements will eventually lead us to the discovery of the ruleset or the constraints that the game sets against the player and information that is required for a successful run in the game of *Portal.*

One of the first elements that Jarvinen describes are the game components, which are "the recourses for play; what is being moved or modified in the game, between player and the system." These resources can range from anything that is physical such as rocks, vehicles and characters, to the virtual such as cursors and points, and finally the transactions such as tokens and gold coins. In the case of *Portal,* game components that can be manipulated by the players are somewhat limited as opposed to the more traditional forms of first person shooter. Because the game is based on the Source engine that also powers *Half Life 2* there seems to be a need to include the need of picking up objects and having the player move the object around feely. When *Half Life 2* was first released in 2004, the ability to manipulate an object by using physics was relatively new within a game and this game engine was then put to use in *Portal.* The ability to pick up an object and manipulate it in a 3D world may be new for the first person shooting genre, but the execution is highly limited as the player can only pick up and drops an object. The range of movement is highly limited and it does not represent reality at its fullest. This is an issue that I will discuss further in this chapter.

One of the first components that the player encounters within the game are small household objects that are found in the beginning of the game. The objects found in within the enclosed room are a mug, a radio and a clipboard. By pressing the action button, the player can pick up these objects and observe them and move them around and drop them wherever they want to. There are also various non-movable objects within the room such as the stasis pod from where the player character first emerged, a nightstand and a toilet. Of these three non-movable objects, the toilet is one that can be manipulated by the player. Once again by pressing the action button, the player can flush the toilet and the game produces the sound of the toilet flushing.

All of these objects can be moved and manipulated by the player but beyond this early encounter and play, these objects are irrelevant to the advancement of the game. These items are placed so that players who are familiar with the engine can interact with them so that they can entertain themselves while waiting for the game to continue. They also allow new players to discover that they have the ability to directly interact with these objects. This proves that not all the components that are found throughout the game are important to the advancement of the game and its plot. The ability to pick up an object and manipulate it in a virtual environment is not used in many games and this is a feature that is unique to this source engine.

The components that are relevant to the game are various and I will be describing each of these components and their particular uses. One of the first components that are relevant to the game is the character herself. First we have the main character that we can perceive as female based on the ability players have to see themselves throughout the game. There is the computer AI who interacts with the player through the use of speech

but it is not until the end of the game in which the player has a direct encounter with the computer. The encounter with the computer AI is preceded by gun turrets, which also have a human quality to them but can be deadly if the player is not careful while engaging with them.

The other components that are directly manipulated by the player are the various switches that exist within the game. First there are the large red pressure switches that are usually found on the floor and require the weight of a person to activate the switch. Then there are the red button switches that are found in the middle of an empty space placed on a pole. Finally there is a switch that requires an energy source in the form of a floating energy ball that is also a hazardous object that can kill the player. Nonetheless there are ways to manipulate the movement of the energy ball and have it work for the advantage of the player.

In order to manipulate something like the energy ball the player has access to a device known as the portal gun. This device shoots a blue and red beam and each of these beams can open one end of the portal creating a passage that allows the user of the device to travel through time and space. This portal gun is an object that the player directly controls. Other objects that can be directly manipulated and moved by the player are the weighted cube, a large grey cube used as a weight, and the companion cube, which is similar to the weighted cube but has a pink heart engraved in each side of the cube. These are all of the components that are available in the game for the player to manipulate. Jarvinen specifies that we should first list a game element such as component and then combine it with other elements such as environments, which will then lead to a discussion of game mechanics and rulesets. I have listed all of the components that are

relevant to the game and now I will discuss the environment of the game, which will help in the ludological discussion.

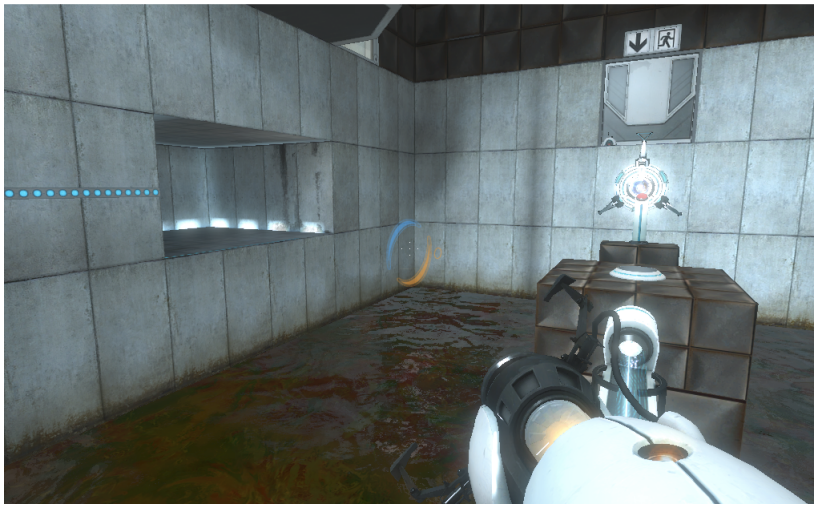

Figure 3: ***Portal***

The environment in *Portal* is very austere and each wall and panel that is presented in the game complements the components of the game. There is hardly any open area in the world of *Portal*. Every single room the player moves through is an enclosed space with monotonous looking walls. Concrete, glass and metal are the materials that make up the general environment and this gives the player the sense of being trapped within a maze. At the end of each level the player finds a particle barrier that disintegrates any object that the facility does not allow the player to bring into the elevator.

Apart from the materials that make up all four corners of the facility, there are some other environmental elements that are found within the game. At the beginning of each test chamber, the player will find a large white wall which is a screen that displays information about hazards and the actions the player will have to take in order to move past the test chamber. Occasionally throughout the game there are signs that are located

near hazardous objects that warn about the perils of getting near them. One example is at the beginning of the game in which a weighted cube is being held within a cage high in the ceiling. There are signs on the floor telling the player of the dangers of the cage and that it will drop the cube, which can potentially hurt the player. Other environmental hazards include some sort of green liquid poison that is found in the pit of some test chambers. There is no real indication of what the liquid is but if the player character were to fall into the pit, she would die. The same will happen if the character falls into a pit of fire. But before the character dies, the screen flashes red telling the player that they have been damaged and any more damage will lead to death. This information that the screen is transmitting to the player is another game element that when combined with component and environment will lead us to a discussion of game mechanics.

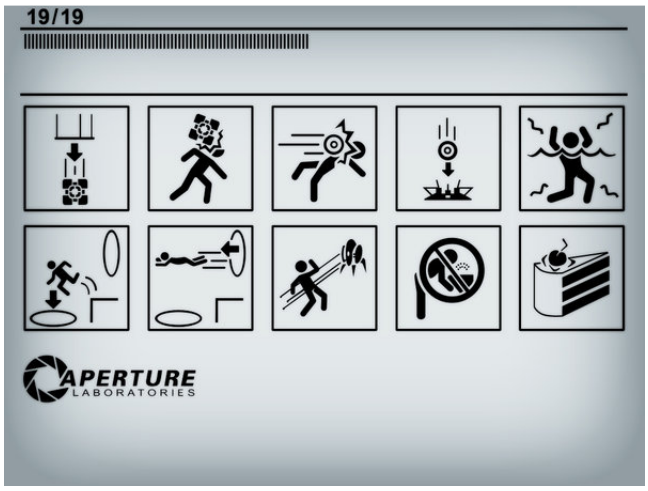

Figure 4: Icons that inform players of dangers in the course

Information that is presented to the player can range from scores, to health, a compass, maps and many other things. This information can help the player plan their actions. In the case of *Portal*, there is no immediate information that is given to the player, as there are no score to be tallied within the game. Also, the game does not use

any form of health that is registered through the use of numbers as seen in many previous first person shooting games in which the health of the player is dictated by numbers or a bar. In older first person shooting titles like *Doom*, the player is provided with a heads up display (HUD) on the bottom of the screen that contains various numerical figures that represent how much health the player has, the guns that they are carrying and the amount of ammo that they have available. In *Portal*, the player does not need to count the items and ammunitions that are available and there is no overhead map that helps guide the player through the terrain. The lack of a HUD in *Portal* is information that is useful for a discussion of game mechanics.

The big question is how all of these elements are related to each other, how they all function as a whole, and what can we learn from these elements. First I will discuss the general premise of the game so that I can then make sense of how the elements are best utilized. The general concept of *Portal* is that the player has to start in a test chamber and reach the elevator that is located at the other end of the chamber. The path to the elevator or the end of the test is filled with obstacles that prevent the player from reaching the goal by following a linear path. By manipulating components and the environment the player will be able to reach their goal and move on to more challenging chambers.

The obstacles that are present in the games are often created by the many components that I have listed. Doors are often used as a way to prevent the player from moving forward, and just moving towards a door and pressing the action button will not activate the door. The environment will often give clues to the player as to what is required to succeed and the electronic doors are often accompanied by a pattern of dotted lines that leads to a switch that the player has to activate so that the door may open.

Before gaining access to the first test chamber, the player finds himself looking at the giant red button on the floor and a dotted line pattern connecting to a door at the end of the room. The red pressure switch can only be activated when an object of great mass is placed on the switch. The player can stand on the switch and activate the door but once he steps off it the door once again closes.

In order to keep the switch down the player has to find an object that is large and heavy enough to activate the switch. Near the pressure switch, there is a cage hanging from the ceiling and there is a grey cube looked inside the cage. As the player approaches the cage the bottom of it opens and the cube drops onto the ground and the game tells the player that pressing the 'e' for action will enable the player to pick up the object and move it around. This action is one of the first game mechanics that the game employs.

The action of picking up the weighted cube and placing it on the pressure switch is a simple action that leads to more complex game mechanics. In the case of the pressure switch, the first instinct the player has is to stand on the switch to activate the door, but as soon as the player steps off the switch the door closes. They are forced to find other alternatives and the weighted cube is presented as a solution to the problem. This first challenge has forced us to learn a skill that will help us complete future challenges and we also learn that object manipulation serves the dominant game mechanics which is problem solving. The skills that players develop throughout the game have no real purpose outside of the game. They only enhance the experience of playing the game as they give players instant satisfaction when they can use their newfound gaming skills effortlessly.

Let's take the first test chamber as an example of how the game mechanism of problem solving can escalate. Prior to the first test the player had already learned of the function of the weighted cube and the pressure switch. He also learned that portal holes could be created allowing them to cross from one area to another just by crossing over the hole. These are two components that can be mixed together to increase the difficulty of the problem presented to the player. To reach the elevator in the first test chamber, the player has to activate a pressure switch to open the door that is blocking the path. The problem is that the pressure switch is nowhere in sight.

In order to increase the difficulty of the problem, the developers choose to use the game mechanics of portal creations and place a weighted cube inside a room that can only be accessed through the use of a portal. But this portal will only remain open for five seconds and if the player cannot extract the cube within that short window of time they have to wait in the room until the portal is once again open. This robs the player of time that they can use to progress through the game at a quicker pace.

The rest of the test chamber requires the player to place the weighted cube on a pressure switch that is located inside a room accessible by the use of the portals. This test is not difficult but it does require a set of skills that is necessary for successful completion of each test. The action of moving and executing an action is a game mechanic itself. Precise movements should be employed in this first test chamber and this is the game mechanic that is used throughout the entire game. As the player continues to play, the more familiar they become with the movement of the character, the more fluid their execution is within the game.

Game mechanics are not merely the actions the player has to execute, they become the experience of the game and mastering of these actions is required to advance later in the game. The skill set that the player acquires is similar to what Aarseth had discussed in the publication of *Cybertext* in which ergodic literature requires a nontrivial effort to traverse the text. The skills that the player acquires are nontrivial because they are needed to move through the environment that is presented to the player. The game itself requires players to solve problems much like solving a math problem. The skills that they acquire will help get them through it efficiently and quickly.

The game is not entirely composed of weighted cube and pressure switches or the simple traversal of portal holes. Through the use of a device known as the portal gun, the player can eventually create these portals. At first the player can only shoot the blue beam, which can open one end of the portal but there are limits to what the player can do with it. The environment is specifically designed so that the player can only create portals in specific parts of the facility. Walls that are made of white concrete are the only material capable of absorbing the beam. Any walls that are black or use a material other than concrete are not capable of absorbing the beam

The environment is set up in a way to easily tell the player what can be used to create a portal and through the limitations of the environment and the game mechanics, we learn of the rules of the game based on what can and can’t be done with the device and the environment. Based on the capabilities of the portal gun, the player can only create one portal at a time and they can only be created on the white concrete walls. When the player finally gains access to the orange portal beam, they have solved a handful of puzzles or test with one beam and by now their skills and understanding of its

capabilities has increased. The inclusion of the orange beam increases the difficulty of the game similar to how a traditional puzzle game gets harder as the player progresses further.

One aspect of the game that I have yet to discuss is the concept of death and hazards that exist within the game. Games have a set of rules that a player has to follow and in the case of *Portal* the rules are as simple as getting to the exit of each test chamber while conforming to the limits established by the portal gun. In a game, there is always a winner and a loser and that can either be the player or the game itself. In a traditional first person shooter, death is often considered to be the indicator that the player has lost in the matchup against the computer when playing a single player campaign, or another human player in a multiplayer matchup. In *Portal*, the player is faced with the challenges of solving puzzles or problems laid out by the computer and eventually the stakes of survival have to increase as the player improves their skills.

The hazards that exist in the game are based on a handful of components and the environment. Within the environment, the player will eventually find himself moving through the environment by jumping from one pillar or platform to another. By using the portal gun, they can create portals than can drop the player character on each platform. Failure to create a portal in the correct place can drop the character into a pit of poison or fire. The screen will start to pulsate in red providing information to the player that he is taking damage and when enough damage is dealt the outcome is death.

The components that are commonly found within the game that can cause damage and death in the game are the floating energy ball that can be found throughout the game. Touching the ball will inflict great damage to the player and death is instantaneous. Not

only is the energy ball a hazard, it is a component that the player has to try and manipulate because they are needed to trigger electrical switches to open doors and platforms that provide the player access to blocked off levels. Another component that can lead the player character to her death are the gun turrets that are placed throughout the game. Unlike the energy balls, the turrets have no other purpose than to kill the player character and the only way to deactivate them is to either drop them by using portal placements or tip them down manually.

The penalty of death in a game usually means that the player has to either start from an earlier point or, in the worst-case scenario, from the start of the game. However in *Portal* death is almost inconsequential, as the player will only start from the beginning of each test chamber similar to any other puzzle game. Current games have become increasingly lenient to the players dying midway through the game since they do not penalize players and let them restart near the place of death. The concept of death and penalty has changed because narrative has become more important and developers want players to complete the game so that they will complete the narrative.

In *Bioshock*, every time players die, they are revived with full health and with all of their previous items intact, steps away from where they died, and the enemy carries the same amount of damage that had been previously dealt. More traditional first person shooter would have forced players to start from a much earlier point and replay most of the game up to the point where they died. Lenience in game death also affects the game ludologically because gamers no longer have to perfect their skills to finish a game. Persistence can and will often lead to success with the current crop of games.

One aspect of the game that I have yet to discuss pertaining to death and hazards is the concept of player falling to their death, which is found in many games from the beginning. Games are modeled after real life physics and falling from a certain height can potentially kill a person. Jumping from 15 feet can potentially break a person's leg but jumping from a height of anything more than 40 feet will kill the person. In *Portal* falling down 30 to 50 feet to the ground will not kill the player character. Only when the player falls into a pit full of poison or file will the character receive damage and die after exposure. The character has a device attached to her leg. Perhaps its use is to absorb any energy when she falls from a great height.

The reason why falling from a great height is necessary in the game is because of another kind of game mechanics that is employed. Manipulating the rules of physics becomes a skill that is required to gain access to otherwise unreachable areas of the map. The problem with the character is that she cannot jump high enough to reach a ledge and climb over it. Video games strives to be a simulation of reality but *Portal* chooses to obey the laws of physics up to a certain point and put the player in a sense of disbelief so that it can heighten our reality and as a result provide players with challenges that are specific to the game and not to reality.

In order to gain access to an unreachable area, players have to create portals and launch the character like a projectile so that she can gain access to a ledge. Players can put one end of the portal high on the wall and the other end at the bottom of the pit. The character then jumps down into the pit and enters the portal and exits through the other end at the same speed she entered. The speed of walking is not fast enough to propel the character into unreachable places and therefore the laws of momentum are used to help

the character reach these places. When the player is first required to use this game mechanic, it requires the player to place a portal in an area that allows the character to pass through it using highest amount of momentum and fling oneself out of the exit to reach an area. To make the game more challenging, it comes to a point that the distance that is provided in the game is not far enough to fall and the character cannot gain enough speed. Therefore the player has to use hand and eye coordination to create new portals on the ground so that, as the character exits, she then falls through the newly made portal to gain more speed so that she can reach a new area.

Ludology builds on the foundations that were established by Aarseth and his arguments that not all electronic literatures can be classified as cybertext. Juul took this notion and argued that video games are not narrative. This forced me to look at games not as narratives but as games. Game elements such as components, environment, information, game mechanics and rulesets are only specific to games. Any other approach that was not ludological would skip through all of these elements that make up the foundation of a game. If none of these elements were important then the quality of the game could have suffered and there wouldn't have been a game for us to play or study.

I have found that Ludology has helped me understand what makes *Portal* unique within the first person shooting genre. As I have discussed, the primary focus of first person shooter is to shoot and kill your enemies to survive. I have found that *Portal* uses many of the contemporary game mechanics that are found in other titles of the same genre. For one, the player needs to think fast and be quick with their movements. This is similar to many twitch shooters in which the player has to be quick with their fingers to avoid obstacles and gain a kill. The difference between *Portal* and other shooters is that

Portal requires more critical thinking because of the use of puzzle elements and that death and health are not important problems when playing the game. Overall this analysis shows how Ludology can help distinguish one game from another by pointing out which qualities it shares with other games which ones make it unique. However I found that Ludology can only explore a small portion of a game while neglecting many elements such as story, characters and every other artistic element that is present in a video game.

Narratological Study of Portal

The history of video games has shown that the development of new technology has given game designers a set of tools that grants them ability to create a free roaming virtual environment similar to the holodeck as described by Murray. Many video game critics have proclaimed that the *Half Life* series of video games have pushed the boundaries of video game storytelling. So I felt that it was natural to look into *Portal*, as it is an offspring of the Half Life games, and how the player can interact with the virtual environment can produce a narrative that is unique in this medium.

As I have previously discussed in the history of video games, narrative became one of the main components to influence game design because visual graphics have reached a plateau and the cost of game development has become increasingly higher. Developers have chosen to focus on game story so that they can create a cinematic experience similar to a Hollywood summer blockbuster film. They achieve this by engaging the players through storytelling and character development, along with more traditional video game elements such as game mechanics. Most importantly developers achieve a more engaging experience to their games by creating a virtual world that is alive and thrusting players in thrilling scenarios that keep them tense and anxious

throughout the scene. This leap in technology was enough to convince Murray that the age of interactive narrative is upon us, and other narratologists such as Mateas and Wardrip-Fruin have followed her in exploring video games as a form of narrative.

Before I proceed with a narratological study of *Portal*, I will first discuss the techniques developers are using to tell a story in video games as this can help us understand how narrative is constructed in this medium. Story driven games have been present in games since *Adventure* first spread out over the network of college campuses. Other action games also contain a story to give the player some context for the game so that they can be goal oriented. Let's take *Donkey Kong* as an example. The story of the game involves a large gorilla kidnapping a carpenter's girlfriend and climbing up to the top of a building keeping her hostage. Jump man, who is the precursor of Mario is after his girlfriend and has to avoid objects thrown at him by Kong before he can reach the damsel in distress.

Stories have been an integral part of games since the beginning but the majority of these early titles were lacking in plot. The focus of these games was on the action and the game mechanics and there was hardly any form of plot progression or explanation as to why the player is in the heat of the action. Nevertheless there were games that did provide a clear plot and this was achieved through the use of cut-scenes. When players completed events, they would be awarded a scene in which pictures accompanied by text would serve as a plot device and set up the action that was to come.

Cut-scenes have been present since the 8-bit generation of gaming consoles. Games such as *Ninja Gaiden* would reward players with pictures text explaining to the player what they had achieved, and the new set of problems that had emerged after

accomplishing a task. The use of the compact disc made it possible for developers to improve traditional cut-scenes by including video clips in the style of live action movies, as seen in the *Wing Commander* series, or clips made using traditional and computer generated animation. The use of cinematic cut-scenes has become the standard form of providing plot progression throughout the game. It was during the era of compact disc that story driven games became important and more emphasis was placed on story development along with game mechanics. However cut-scenes have proven to be a problem for game developers as they can break immersion as control is taken away from the player while the cut-scene plays. As a result, different approaches to plot development in games that do not require cut-scenes have been invented. Live interaction with non-player characters has been used in first person shooter titles such as *Half-Life* and *Bioshock*. There are also audio cues in which the player receives information relevant to plot progression through an audio playback. This method of plot progression is the primary method used in which *Portal*

My initial impressions of *Portal* as a narrative driven game was not positive as the traditional uses of cut-scenes to drive a plot was absent within the game. But lately, video game journalists have condemned the excessive use of cut-scenes as they believe that they can affect the immersion of the player in the game, as the player is no longer in control of the character. They also distract the player as they remove us from a fixed point of view and detach us from the game. Long cinematic cut-scenes are no longer in heavy use and yet video game narrative continues to evolve. Perhaps through Narratology I can uncover the reasons why a game like *Portal* can still contain strong narrative elements.

In a first person shooting game, the player is experiencing the action through the first person perspective but as soon as a cut-scene is presented we start to see the player character in a third person view and it detaches us from the character and we are no longer in control. Perhaps the lack of cut-scenes may not be a negative and the game of *Portal* may provide a narrative experience that is different than the typical game. The game also follows the common plot structure and characters development found in many other games that have borrowed from the monomyth and fairytales.

When the game first starts, the player hears a song playing in the dark background and an image fades in. Based on the camera angle, we perceive that that character was sleeping inside of a pod. The glass door opens and the character exits the bed and full control is given to the player. At this very moment the character is stuck in a room surrounded by glass walls and a concrete slab near the pod. In a corner we find a small coffee table with a writing pad, a radio and a mug and right next to a table we find a toilet. There is also a digital clock embedded within the glass wall and outside of it, and the timer is counting down from one minute. Suddenly a voice starts to speak.

The generic and lifeless voice that the character can hear is known as GLaDOS, which stands for Genetic Lifeform and Disk Operating System. It must be noted that GLaDOS does not tell the character her name nor does she tell us the name of the silent protagonist. It is not until we reach the end of the game and through the scrolling of the credits do we learn of the name of both the player character, who is known as Chell and the antagonist that is known as GLaDOS. I chose to disclose the name of the character early in this study rather than reveal them after the end of the game so that we can clearly

identify the characters when discussing the plot and the progression of the game by using names rather than their role.

This opening scene follows a structure that is universal in a narrative. First the main character is presented to the audience and in a video game, this can either happen either through a use of a cinematic cut-scene or as in *Portal* in which the player immediately gains control of the player character. There is also the exposition of the setting, which can provide valuable information to the player and set the initial tone for the game. Like in any other narrative work, the character will be thrown into a conflict that will lead her to take a journey. In *Portal*, dialog and player agency drive the plot forward. I will now discuss how these things happen.

I have previously stated that the game presents very little information about Chell because the designers choose to make the heroine the silent type. This is a trick often used by many game designers. Players understand that silence is a characteristic of the player character and their image of characters is built around their experience with them. There are cases in which the gaming community have been supportive of silent characters, and once game designers decide to flesh out their characters and give a voice to them, the characteristics that gamers have projected onto these characters have been shattered in an instant, as happened with the character of Samus of the *Metroid* series with the release of *Metroid: Other M (2010).*

Figure 5: The player character Chell

Fortunately for *Portal*, it has another character that can provide us with a great deal of information and enough back story to serve as a motivation for the player and most importantly, for the development of the plot. We have GLaDOS who is very forthcoming and likes to chat with Chell in a one-way conversation with her. Even though we know that GLaDOS is a computer, there is something human in her and through our interaction with the computer we learn about the overall plot of the game and some background story behind the game.

One of the biggest questions in the game is why we are here and what the purpose of the game is. The player receives some background information from GLaDOS. But how the player receives this information is very different from the traditional game. Instead of using cinematic on a cut-scene in which the player loses control of the character, the player retains full control of the character throughout the game. There is hardly any interaction between the player and the other character and for the majority of the game, we don’t know who or what GLaDOS is.

What we can gather through the games dialog is that Chell is taking part in a test located within the testing facilities of Aperture Science, the company that is responsible for the test. Through spoken dialog, Chell is given some background information as to why she is there and what is expected of her from GLaDOS. Chell was placed in a deep sleep for what is considered to be a “short duration” and the tests are ready to be done. The goal of the entire test is to learn and have fun however the player character is also susceptible to injuries that can be fatal. Before GLaDOS can give Chell a direct warning about the dangers we hear GLaDOS’ voice become distorted and incomprehensible for a few seconds and then eventually returning to normal and counting down the seconds until a portal opens up allowing Chell to exit the confined room. This is an ominous sign from GLaDOS that something is not right within the facility and with the computer itself.

The environment of the confined room echoes the design palette of the entire facility. The walls, floors and ceiling are completely void of any color and the monotonous palette of grey is present throughout the entire game. The grey walls are also accompanied by the use of white screens telling the player the number of the test chamber and all the possible hazards and challenges that await her. The stale environment looks clean but it also shows no sign of life within the facility, as the only thing that is interacting with Chell is a computer. Combine Chell with the environment and the player can start to feel that they are confined in a tight and lifeless space fit for a lab rat to live and serve its purpose for a greater good.

The amount of information that is provided to the player is kept to a bare minimum and this is intentionally done by the developer. This keeps the player intrigued and only through a complete play through of the game will the player uncover the secrets

of the game's story. This approach to video game story telling can be found in almost all modern games as the environment was purposely created to help the player unfold the events that will push the narrative forward. This is done because plot is becoming more complicated as this can help players feel a sense of attachment to the player character. This notion of player and character attachment was largely absent in older games because developers were focusing on the action and provided a beginning and an end to a game to give the player goals and context. With time and experience came maturity in game design and narrative.

Characters in video games can be a delicate issue in video game narrative. They can either be pre-defined by the developers or they can be silent which gives the player the opportunity to define the character. Because Chell is a silent protagonist, there is very little information that we can find out about Chell. This character is very similar to many other characters in other games particularly in the first person shooting genre. The fact that the game is being played in a first person perspective can limit how we see the character act on screen and we are immersed in the world as the character themselves. I feel that developers purposely create generic characters to allow the players immerse themselves into the role and not let a predefined character affect the player's immersion.

Despite being a silent protagonist, the character of Chell can potentially have her own personality based on the plot structure of the game and through the dialogs between Chell and GLaDOS. Throughout the game, the tests are created to challenge the test subject and determine how capable she is in solving these challenges. By finishing each challenge we demonstrate that Chell is very capable of completing these tests, but more importantly is that Chell is resilient and will not give up easily. One scene that

demonstrates her strong character is the scene in which Chell has completed all the challenges and is placed on a conveyer belt towards a furnace to die. As the player we inherently understand that we want to survive and therefore our actions affect how Chell is viewed as a character. Game designers create situations and scenarios that are directly tied to the characterization of the player character and all successful action from the player is directly reflected on the character.

Because Chell is a silent protagonist, we have the opportunity to develop our own impressions and readings of the character. Chell does not speak during the game and I get the notion she is strong and a person of few words. There are many female protagonists in other video games that are similar to Chell, but there are games that do flesh out the characters with the use of cinematic in cut-scenes and this gives the player a more direct impression of the character. An example of a strong female character would be Lara Croft from the *Tomb Raider* series in which the cinematic cut-scene, the dialog and the third person view of the character demonstrates that she is a fearless woman who would wear an inadequate outfit on an archeological expedition.

The environment also holds a lot of clues about the fictional game world and it can also help tell a story within a game that is void of one. During the introduction of the game, one thing that the player can see through the glass walls is a room at the far end with some office chairs and a desk. We can deduce that these are observation rooms in which a scientist can oversee the test and the subject. Nevertheless the room in that first test chamber is empty as with every other observation room that Chell encounters throughout the game. This tells us that the only living being in the facility is Chell and the

question arises: why is Chell the only living being in the facility and where is everyone else?

The environment in a video game, particularly in *Portal*, is a mise-en-scene. The pale color pallet that is found on the walls of the test chamber gives the player the impression of a sterile environment. It also gives us the clue that we are inside a lab facility or perhaps that the player is being treated like a lab rat inside a maze. All of the props that are seen throughout the game suggest abandonment and isolation. The game is constructed with many different test chambers and the players get some sort of satisfaction every time they finish one and they feel the urge to continue with the game much like a good plot in a book will entice the reader to flip to the next page.

The characteristic that makes *Portal* engrossing is its game mechanics. Each chamber is a puzzle that needs to be solved and I found each chamber fun to solve and play. But for some reason I also felt the urge to know how the environment would change and how it would affect me and the player character. Perhaps these are signs of this game being engaging because its narrative and environment.

There is a general plot that structures the game. The actions that are presented from the moment Chell leaves the confined space can never be replicated in each and every play through as the path and the movement of each gaming session will be different from each other. Nevertheless the required action of each test chamber will be similar in each play through. What is important for understanding how the narrative in *Portal* works is to understand the rules of the game and its environment and how players can gather what they've learned to produce actions that can produce meaningful results. This phenomenon as explained in the previous chapter is known as "agency". One of the first

things that the game trains the player to do is to move and look around using the mouse and the keyboard. The player also learns to grab objects by pressing “e” and they can carry the object with relative ease and place the object wherever they desire.

I have previously mentioned in this chapter that the game of *Portal* is divided into different test chambers in which the player has to solve the puzzle in order to progress through the game. Each chamber becomes harder and harder and this proves to be a motivating factor for the player to complete each challenge. We want to know what is beyond each door and wonder how much harder each challenge is going to be compared to a past challenge. This feeling of accomplishment is achieved through agency and the player will freely roam around the room looking at how each set piece is located and try and determine how to solve this puzzle. If I decide to open a portal at one end and place the portal at another end and the action allows me to reach a switch, I have achieved a result that will allow me to further explore the game.

As I have previously discussed, in a story driven game such as *Halo* and *Call of Duty*, completing a task and moving past a point will often trigger a plot device such as a cut-scene in which the player loses control of the game and a movie is played to give the player a sense of accomplishment and a reward for completing a level. This is also a time in which the game moves the story forward by presenting plot elements and more exposition and goals for the following level. Let’s take the first person shooting game *Halo 2* as an example. There is one cinematic cut-scene that presents one of the player characters being tried in a court for failing to complete his mission and being punished by the higher council. The player character is then given the opportunity to redeem himself and given the mission to infiltrate the enemy base and kill the enemies.

In *Portal*, the advancement to the next test chamber does not trigger cut-scenes and there are no plot elements that help tell a story within the game. However what is present during the intermission between each test is the dialog that GLaDOS presents and through her we learn a little bit more about the characters and we can start to deduce the situation Chell is in during the game.

Intermissions in games are generally cut-scenes in which the player is given a cinematic or text and pictures giving us the background information and a goal for the following scene. These scenes do not occur in *Portal* however. Every time a player finishes a chamber there is a resting period between each chamber. This is what I would consider as an intermission. Every time the player finishes a chamber GLaDOS talks to the player. What has caught my attention occurs at the end of test chamber 4. GLaDOS tells Chell that she will no longer monitor the test and that she will wait for Chell to cross the particle wall at the end of the test to determine if the test was successful or not. Right after the test, GLaDOS reveals to Chell that she had lied to her and that GLaDOS had monitored the entire test. There is some sort of distrust that is starting to brew when GLaDOS speaks. One important aspect of GLaDOS and her interaction with the player character is the tone that she takes throughout the game. At first the AI computer sounds lifeless, as one would expect from a digital machine until there is a short circuit that affects it. The tone at first is humorous and upbeat during the first half of the game. But once Chell nears the end of the text chambers GLaDOS starts to sound more sinister, hoping that Chell will fail in one of the tests and continuously taunting her about how death can occur at any moment. After completing test chamber 19, and the test being deemed successful by the computer, Chell is going to be killed in a furnace and it is only

by quick thinking that she is able to escape certain death. During this last chapter of the game, GLaDOS starts to sound more desperate and flustered as opposed to the first part of the game. The idea that a specimen is capable of escaping death must have been out of the computer's calculation. Apparently, the death of the player character would have been a lot more beneficial for the antagonist.

There are possible reasons as to why GLaDOS wants to stop Chell and why she asks her to surrender, return to being obedient to the system and yield before the computer. During her daring escape, GLaDOS has offered her the reward of cake but during the escape, we stumble upon graffiti on the wall written by what we can deduce were previous test subjects of the Aperture science enrichment center. One of the scribbles that is visible on the wall is "the cake is a lie". This refers to GLaDOS's constant referral to the reward of a cake at the end of the test. There are also notes written by a past survivor known as Doug Rattman who warns any future test subjects of the perils ahead.

Figure 6: "the cake is a lie" reveals a sinister side of GLaDOS

After navigating through the belly of the facility, Chell finally reaches GLaDOS in a large room holding the AI computer. Nevertheless the self defense mechanism is activated. By using the portals and all the skills that Chell has learned during the experiments, she is able to guide the missiles towards GLaDOS and knock the personality cores out of the main system and drop them into a furnace. Eventually GLaDOS activates another defense mechanism in which she releases a gas agent that can potentially kill Chell and this limits the time the player has to destroy GLaDOS. Ultimately Chell prevails and is able to destroy all three of GLaDOS' cores and she is able to escape from the testing facility and gain freedom by appearing in the outside world watching as the debris from the explosion falls onto the ground. But freedom is short lived as an unknown AI machine approaches Chell and drags her back into the testing facility. As the end credits roll, a song is sung by GLaDOS herself who is "still alive" and excited that the experiment was a success. These credits are similar to those at the end of the film.

The plot of the game is very straightforward. Analyzing minute details within the environment and studying GLaDOS as a character can give the player various layers of possible story telling of the game. However as the game develops and we get to know this fictional world better, we move past the structural narrative of the game and can start to explore the overall narratives that exist within the world set in *Portal*. The diegetic world in *Portal* is filled with many different narratives that do not unfold in the game. This is alleviated with the release of *Portal 2* in 2011, which further expands on the history of Aperture Science and continues the narrative of Chell. It is these unexplored aspects of the narrative that have interested the entire online community in *Portal*, and

provoked the desire to learn more about the characters and the mystery behind Aperture Science.

The idea of multiple narratives in video games is not exclusive to a game like *Portal.* Video games provide players the freedom to explore and create their own narrative based on the fictional environment that we are playing in. The results are that players can freely create alternative narratives in the game that they are playing. Hidden messages and Easter eggs, which are secrets left by designers for players to discover, are also very common within the gaming industry. *Portal* expands on these traditions of video game design. But what sets it apart from other games is the uniqueness of the character and the story.

When Valve first announced the Orange Box and the game of *Portal*, viral marketing for games had become a common occurrence when promoting highly anticipated games. Bungie, the developer of *Halo* for the original Microsoft Xbox had commissioned an alternative reality game called *Ilovebees* in which the player could visit the site of Ilovebees.com and look at the challenges and the clues that are left behind on the website. Many believe that the website was hacked and the clues left behind were challenges that required users to go to payphones and dial a number to get more clues. This was one of the many activities that the website provided for its users. The fictional information that the participants received were somewhat tied to the fictional world of *Halo*. Eventually it was discovered that Ilovebees was a marketing tool for the release of *Halo 2* for the original Xbox console.

Valve did something similar to what Bungie did with *Halo*. *Portal* was an entirely new game, and to promote the game Valve published the aperturescience.com website

mimicking the name of the fictional corporation from the game. Early versions of the website contain no graphical user interface. It uses a command prompt similar to Microsoft's DOS that was widely used during the mid 80's until the early 1990's. The users have to figure out a series of commands that will allow them to access the system and explore it to find any clues that are relevant to the overall picture and or story of *Portal*.

When Chell escapes the final test chamber and gains access to the backbone of the facility, she stumbles upon graffiti or scribbling on the wall that was left behind by Doug Rattman. One particular scribble on the wall is relevant if the player wants direct access to the system terminal in aperturescience.com website. The player has the choice to briefly skim over the scribble on the wall, but those who choose to read the entire thing can find information that may seem irrelevant to the game but provides a login name and a password. When logging on to the aperture science website as Cave Johnson, the user gains access to various memos and notes that are closely related to the history of the company itself.

Figure 7: Login and password information found in this secret room, provides a diegetic narrative experience of the *Portal* universe

It is revealed that company was founded in 1953 by Cave Johnson, a shower curtain manufacturer for the armed forces. Johnson became a rich through the continuous business from the armed forces and began to expand his business to further scientific research. Unfortunately he became sick and, with his kidneys failing, he set his company to focus on three research projects, two of which were failures. Only the portal project showed promise. One issue that arose during the portal experiments was that employees were wary of the safety of the test chambers and the number of deaths that were occurring in many of their tests. Johnson had sent out memos to his employees explaining that in the case of anyone who participated in the test and died, their families would receive some sort of help so that their death would not be meaningless. Furthermore a memo can be uncovered detailing the recruitment and indicating that one of the groups of participants that they were looking for were orphaned children. Perhaps Chell was an orphaned girl who was adopted by the corporation and put into a deep sleep from which she was later woken so that she could participate in the test.

A purely ludological study of this game would have been enough to understand that this game is not a first person shooter clone in which the character is wielding a gun and shooting her way through enemies. One aspect of the enjoyment of the game lies in game mechanics such as portal creation and problem solving. However for many gamers, the full experience of playing the game does not entirely lie on the game mechanics. Many of them play to be immersed in the story and participate in the development of it through the actions and the decisions made by the players, thus evoking agency as described by Murray and other narratologists.

One of the biggest interests of playing games is that the action that I have produced throughout the game can cause the narrative to develop. This gives the player the impression that the game is both participatory and procedural. These two virtual environments also give us the impression that we are interacting and creating the story of the game while playing.

By studying the game beyond its mechanics and design, we can also look at the details that can tell us about a much larger narrative that occurs in the game. There are clues scattered around the virtual world that allude to a different game created by the same company and using the same graphics engine, but by a different team within the company. Players are able to spot what is considered to be an “Easter egg”, which is hidden bonus content that the player can find, and through the discovery of this bonus content, the player discovers more background information of the company and the experiments through the use of external sources such as the apperturescience.com website.

Ludology alone is so focused on looking at video games as games that the result is a study that is purely focused on the mechanics and the design of the game. It leaves a gap in a comprehensive study of a video game and it hardly acknowledges the aesthetic appeal a game may have. This is where Narratology can be of great use as it explores how games can use interactive storytelling and allows us to focus on elements that are relevant to the story of a game. This two pronged approach can give us a more cohesive study of a game, but the experience of a game is not entirely limited to mechanics and the story of a game. It is also the way games make use of different platforms and about the community that they create amongst gamers. So perhaps a third approach that uses both

platforms studies and cultural studies approaches can help us paint a much larger picture of the value of video games.

A Taste of Platform Studies

Having completed a Ludological and Narratological study of the game *Portal*, I feel that a brief study of the game through alternative approaches could help support my findings on the limitations of these two approaches to video game studies. My preliminary findings for the two main approaches are that they naturally focus on the content of the game which can help us understand how a game like *Portal* is such a success within the gaming community. But they don't address the cultural impact and the relevance that this medium may have outside of the gaming community. The biggest shortcoming that I found in Ludology and Narratology is the lack of support for hardware studies and the relationship between the game and its software.

Taking these shortcomings into consideration I will briefly employ an alternative approach to the study of *Portal* through the use of platform studies as devised by Nick Montfort and Ian Bogost, to help us understand the hardware and the platform that runs a game. Then, I will discuss the relevance of the gaming community and fandom for the study of a game like *Portal*.

As I discussed in the review of literature, the goal of platform studies is to understand the relationship between the hardware and the software. I believe that by looking closely at the hardware, we can try and understand why certain game elements such as game mechanics and visual graphics were created for the game. However, platform studies are not entirely dependent on the hardware the game is designed for. We can study how a game engine can affect the design of a game. We can also explore the

methods used to distribute the game and how that can also affect the design of the game. Take for example the social game *Farmville* which can only be played on Facebook, which is a social networking site. By looking at Facebook as a platform, we can immediately deduce that the games being developed for the social networking site will build on its built-in capabilities to interact with "friends" and focus on the social interaction between the players.

When conducting a platform study of *Portal*, we have to take into consideration that the game could be played on a personal computer and on home consoles such as the Xbox 360 and the PlayStation 3. Usually when developing a multiplatform game, the developer has to choose a leading platform in which the designer will focus all of their efforts on one machine and port the game to the other platforms. In the case of *Portal*, the game was primarily designed for the PC and then ported to the home consoles.

When designing games for the PC, the developers have to take into consideration the many different types of hardware configuration that the game will be played on. Some gamers will have a state-of-the-art computer with a powerful GPU (graphics processing unit) whereas other gamers will play on older computers with limited system resources. In order to cater to the largest group of players, the developer has to consider the most common hardware setup and they have to design their game around it. Based on these criteria, the developers had created a game than can be played on two year old computer during its release. They were able to do this because the game was designed around the Source engine that was released back in 2004. As a result, the visual graphics of *Portal* were not as detailed as first person shooter counterparts such as *Call of Duty 4*,

and *Bioshock.* Because visual graphics were not relevant to the design of the game, Valve was willing to create a virtual environment that was muted in color and texture.

The source engine that powers *Portal* may not have been as graphically powerful as other contemporary game engines of the time but its visual shortcomings were easily remedied by the capabilities of its physics engine and the ability to pick up and manipulate objects. When *Half Life 2* was developed, they created game mechanics around this capability, creating puzzle like situations for the player to solve in order to progress through the game narrative. In *Portal* the designers built upon this capability to create objects like the companion cube and created puzzles in which the companion cube was needed to help the player progress through the game.

The developers also used the physics engine of Source to create puzzles in which the player has to go through strategically placed portals and use the game's physics to defy gravity through the use of terminal velocity. This ability was not available in *Portal's* predecessor, *Narbacular Drop* (2005). The premise of this game is similar to *Portal* but it used magic doors instead of portals. Most importantly, the physics engine for *Narbacular Drop* was not as advanced as the one from Source and didn't have the ability to maintain momentum from one portal to the next. The Source engine allowed the same developers to create more sophisticated puzzles than were possible in *Narbacular Drop*.

Figure 8: Narbacular Drop (2005), the precursor to Portal (2007)

By looking at the Source engine as the platform, I was able to understand how the developers were able to use physics to create puzzles that required the player to jump on a ledge and go through a series of portals that will throw the player as a projectile so that they can reach an unreachable area. I also learned that the engine's ability to manipulate objects in the virtual world could have pushed the designers to create the companion cube and the design obstacles that require the use of the cube in order to advance through it.

Platform studies accounts for the possibilities and creative opportunities offered by hardware and software systems but it doesn't discuss the relevance of a game within the gaming community or society. It is therefore productive to also examine videogames from a cultural studies perspective.

Portal as an Internet Cultural Phenomenon

In 2007, the gaming community was excited about Valve's release of *The Orange Box*, which was a compilation of past releases such as *Half Life 2*, and *Half Life 2: Episode 1* and new game such as the highly anticipated *Episode 2* and a fan favorite

multiplayer first person shooting game *Team Fortress 2. Portal* was the last game to round off *The Orange Box* and it was an entirely new game from the studio as all of the other games included in the compilation were sequels. *Episode 2* and *Team Fortress 2* were well received by video game critics and the gaming community. However, *Portal* became the sleeper hit and the news spread throughout the internet.

Portal could be completed within three to four hours and as a result, the game garnered a large group of fans within a short span of time. Players could have passively consumed the game, however many chose to log on to their favorite video game forum and discuss the game and share their thoughts on it. The general consensus of the game was positive and gamers shared details that they loved from the game. Initially, the discussion of *Portal* revolved around the original game mechanics and the puzzle solving element of it. This is because no other game within the first person shooting genre combined elements from puzzle games into a cohesive experience. The conversation evolved from game mechanics to the narrative elements of the game.

Fans returned to the world of *Portal* because they felt a connection with the character of GLaDOS. The sarcastic and witty dialogue of the artificial intelligent computer became the greatest asset of the game because it struck a chord with the gaming community. This resonated with their own social modes of communication, sarcasm and bravado, both of which are ways to interact with other players and a defensive response to a frequently unsympathetic non-gaming society.

Through the game, GLaDOS would often tell the player that at the end of the test, there would be a cake waiting for them. After a series of test and constant reminders by GLaDOS that a cake would be available, the player would finally realize that there might

be no cake. Nevertheless, players felt motivated to complete the tasks that they had in front of them with the promise that there would be a prize at the other side of the door. However, through the ability to explore the virtual space, players found that there were hidden areas within the game that had written text on the wall. “The cake is a lie” would be repeatedly written across the wall and we would come to the cruel realization that there would be no reward for our efforts. But the players did not feel that way, they found it to be funny and whenever there was a discussion about false promises players would allude to the game and quote “The cake is a lie” and this quickly grew into an Internet meme.

Fans are content to go back and replay the game to find Easter Eggs or game secrets and *Portal* is full of them—a testament to the game’s powerful diegesis. Within one of the secret rooms we find that there is a web address as well as the login information to the website. Fans that took the chance and visited the website discovered that the website was a command line terminal for the fictional Aperture Science Facility, which contained information that was not provided in the game. The site provided details such as who the founder of the company was and the year it was founded, as well as other information in regards to the fictional company. Fans compiled all of the data that they had gathered and built a timeline for the game and discussed the possibility that *Portal* is a part of the *Half Life* universe.

Analyzing *Portal* from a cultural perspective allows us to look at marketing and other materials, which are part of the diegetic world of the game. It also allows us to examine how the fan community appropriated these materials to transform a simple narrative gaming experience into a cultural phenomenon. The highly successful release of

Portal 2 in 2011 demonstrated that this diegetic world and its characters were compelling to a broad audience.

This chapter has modeled four different critical approaches that in combination allow us to better understand the heart of what makes videogames appealing to the public. Ludology helps us understand the allure of game mechanics, whereas Narratology exposes the appeal of player interaction in traditional narrative structures, allowing agency to explore fictional worlds beyond scripted roles. Platform studies show how the combination of hardware and software open up creative spaces for developers and players to explore. With its focus on fandom and its manifestations, culture studies validate the appeal of videogames as both games and narratives to the gaming community.

Chapter 5: Conclusion

The current generation of gaming consoles such as Microsoft's Xbox 360 and Sony's PlayStation 3 pushed the gaming industry towards the high definition generation of games. Both hardware companies believed that the lifespan of this current generation of consoles could last more than the standard five years of shelf life a console would normally have. They believe that the graphics that these machines produced had reached a plateau and any new machine released in the future would not produce a huge leap in graphics like these previous consoles had done. This meant that designers had more time to explore and be familiarized with the hardware, thus giving them a chance to experiment and develop new game designs. Some developers choose to focus on game mechanics while others opted to improve on video game storytelling.

Portal was a product of experimenting and developing new game mechanics. Puzzle solving in video games had been present in other genres such as adventure and survival horror games. However, developers were content in having the player shoot their way through a maze in first person shooting games. What *Portal* did was take a genre that was inherently violent and made it accessible to audiences of all ages. *Portal* became a phenomenon within the gaming community and it became one of the top games of 2007, a year that had many first person shooting games as triple A titles.

Call of Duty: Modern Warfare, *Halo 3* and *Bioshock* were all games that had taken a different path than what Valve did with *Portal*. The developers for these games had opted to expand the first person shooting genre by focusing on its story and narrative. *Halo 3* took a more traditional narrative approach in which the end of a mission was marked with a cut-scene in which the player was given insight on the events that had

occurred and the problems that they will face in the future. *Bioshock* and *Call of Duty* choose to expand on their narrative through the use of real time events placing the player in direct control of the character when important events are occurring in the game. This means that immersion is never broken like it did with the more traditional narrative approach in games such as *Halo 3*. Either of these two approaches to storytelling moved the industry forward in terms of game design. All of these games that I have mentioned as well as the large majority of games that were published had taken serious steps in improving video game storytelling and narrative development. Fictional worlds were created and many stories were told through them.

I have argued that there has been a huge shift in video game design towards narrative driven games because of high cost in developing games. The single player experience in video games was largely responsible for the continued rise of video games during the previous generation of consoles. In order to justify millions of dollars when developing new games, developers had to make sure that their games could provide a satisfying experience through the use of game mechanics and narrative development. The high definition consoles have given developers greater tools and freedom to create games that are immersive. However these consoles have also given developers and user the ability to connect with each other.

On the personal computer, the Internet has allowed for people to interact with each other in virtual worlds such as Azeroth in *World of Warcraft*. First person shooters were also popular on PCs because of the multiplayer format. This allowed players to fight against each other and challenge themselves beyond the single player campaign. The online capabilities in gaming console brought the casual gamers into the competitive

world of video gaming and players are no longer buying games for the single player experience, but for the challenge and the thrill of multiplayer gaming. For the past four years, the highest selling game had been from the Call of Duty series and the majority of the players bought the game for the multiplayer portion of it.

Multiplayer capacity has become a strong selling point in the current crop of games and I believe that it will remain the most important aspect of a game that players are looking for when buying a new game. There seems to be a large appeal to gamers when it involves social interaction. Humans are competitive by nature and the fact that multiplayer games pit players against each other has broadened their appeal. My concern is that video game designers are going to put aside any goals for developing video game narrative and focus on multiplayer and social aspects of future games.

This is evident in the release of Valve's sequel to *Portal*, which was released in 2011. *Portal 2* added a cooperative component to the game allowing two players to play through a series of test chambers and collaborate with each other to solve the problems that they face in the game. *Portal 2* may have included a multiplayer portion to the game, but the main game is still a continuation of the original game which expands even further on the story of the game. New characters have been introduced and both a face and a voice have been given to Cave Johnson, the founder of Aperture Science. Back-story as to how the company was founded and the experiments they were doing has been revealed and the origin of Chell as well as GLaDOS has also been hinted at throughout the game.

Valve took the game mechanics of the first game and expanded on the original mechanics but they have also chosen to focus on telling a story within this game and expand on the fictional world that had already been established in the first game. During

my study of *Portal*, I originally felt that the game was highly biased against narrative because of the strong emphasis on the use of portals and game physics as the main selling points of the game. Ludology made it possible to understand how *Portal* was played and the unique qualities that set it apart from all the other games that were released in 2007. The ability of creating portals in a virtual world in a way that gave the player the ability to break the laws of physics was completely new in the video game design. Furthermore, the combination of puzzle solving and first person shooting mechanics was also new within the industry. Video game critics and gamers had praised the game for its mechanics and Ludology provided the evidence as to why this game was a huge success when discussing game mechanics and design.

I argued at first that Portal was a game that was more focused on the experience of gameplaying than on narrative because of the lack of a strong story within the game. However, through the use of Ludology I discovered how the use of player agency helped shed light on how *Portal* can be a narrative driven game. During the case study, I found that there were strong characters within the game. For the most part GLaDOS had a large role in the game as the antagonist. But it was also a character that set the tone of the game and it largely remained playful throughout the game. Chell on the other hand was the quiet heroine but because of the player's agency, it also became possible to view her as someone who is strong, smart and has an unwavering spirit that will never falter despite facing deadly challenges.

In addition, the game opens up narratively when players explore the spaces of the game on their own and discover secrets of the game that might have been missed if they had not deviated from the main course. Throughout the game GLaDOS had been

reminding me that there was a cake waiting for me at the end of the test. Through exploration I discovered that GLaDOS had been lying all along, as a previous test subject had gone through the entire test. The most important detail that I found in the game through exploration was the login name and password for the aperture science website. This bridged the game with the internet through transmedia story telling and it gave the game greater depth in storytelling and narrative development.

Taking a ludological to studying *Portal* made it possible to determine that the game mechanics as well as the game engine were responsible for the success of the game whereas Narratology helped me realize how deep the narrative of the game could be despite its simple plot. Furthermore, I discovered that games could contain a diegetic narrative. I wouldn't have been able to arrive at this conclusion had I just focused on one approach over the other. However, as a gamer, I felt that the relevance of this game went beyond what the methods used by ludologists and narratologists could explain. One of the greatest appeals to *Portal* is the cultural impact it has had in the internet and gaming community. Internet memes such as "the cake is a lie" and "this is a triumph" have become popular in gaming forums. Inanimate objects such as the companion cube became objects of desire, and the character of GLaDOS was admired by players despite it being the antagonist. The cultural phenomenon and the fandom of *Portal* would be completely ignored if a study of the game were conducted with one of the two primary approaches.

Another aspect of the study that I found lacking was the lack of consideration of the platform the game was being played on and how the platform has influenced the design of the game. A platform such as a video game console has an input device that is

predefined by the hardware manufacturer and there is a limit as to what the game pad can do. Because of the popularity of game consoles, the majority the games that are being developed cater to the console community and the games are designed around the limitations of the gamepad. PC gamers have complained that by catering to the console crowd, video game design had suffered. Issues like this would have been ignored had I only focused on Ludology and Narratology as they have a narrow focus on the content of the game. I believe that hardware and platform studies are also required in order to understand how the capabilities of machines had affected the design of the games.

However, platform studies do not explain the social impact that media has on our society. Therefore a media studies approach to video game studies is needed if we are to look at the relationship between video games and society.

I had first set out to demonstrate that using a singular approach to video game studies is not prudent as it leaves out many details that are relevant to the understanding of the medium. I believed that using both approaches was the proper way of approaching video game studies. However I've come to realize that even combining these two approaches does not give me a complete understanding of this medium. Culture, platform and hardware studies along with Ludology and Narratology should be combined to make up a multidisciplinary approach to video game study if we are to gain a greater understanding of this medium. Based on the research that I have done with *Portal*, I'm confident in saying that video games can provide players with a fictional world that can be freely explored by the player. Through transmedia and fandom video games have become a media of great cultural importance in the 21st century because they provide

players with an immersive experience that cannot be found in any other medium. Video games are taking us one step closer to freedom in a virtual environment.

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