

## *SECOND LIFE: THE GAME OF VIRTUAL LIFE* Alison McMahan

I don't want the public to see the world they live in while they're in the park. I want them to feel they're in another world. – Walt Disney (*Imagineers*, 90)

Virtual Reality is basically nothing new. We have been creating Virtual Reality around here for more than forty years. – John Hench, Senior Vice President, WED Enterprises (*Imagineers*, 91)

Walt Disney's theme parks contain two key elements of virtual reality: high levels of engagement and of immersion. Physically, the "guests" are almost fully immersed, as they are completely removed from their real world while in the park. Psychologically, they are immersed by story: each themed area is built on a myth (the myth of the American Frontier for Adventureland, or the utopian concept of technological progress for Tomorrowland, for example) and each ride is based on a story that might be familiar from storybooks or films (for example, the Indiana Jones Ride, based on Steven Spielberg's 1981 film *Raiders of the Lost Ark*) or similar enough to a familiar story that we can quickly grasp the story from the ride itself (the Pirates of the Caribbean Ride, based loosely on novels like Robert Louis Stevenson's classic *Treasure Island*, and later the inspiration for a Hollywood film). To a certain extent, Disney's theme parks are also interactive. As guests stand in line to a ride they are often addressed by characters (enacted by humans, whether live or pre-recorded, or by Audio-Animatronic automatons) from the story-world of the ride as if the guests were characters in the story. Most of the rides are voyeuristic (traveling through the Haunted Mansion) but some attractions involve more direct participation (exploring Adventure Isle). Furthermore, games and events or

performances within the world, like the shooting gallery or a sing-along in the Golden Horseshoe saloon in Frontierland, go further in strategically engaging the guests in the world of the park.

The quote by John Hench invites us to compare Disneyland to virtual worlds in cyberspace. Persistent Worlds (PSWs) like *Second Life* could be described as 3-D virtual theme parks. In *Second Life* there is no one story or myth set, as there are in graphic medieval fantasy worlds such as *Ultima Online* or in text-based MUDs such as *Genesis* or *Angalon*, all of which owe a considerable debt of inspiration to *The Lord of the Rings* (1954-55) trilogy of novels by J.R.R. Tolkien. Instead, there are a number of areas with different themes, such as the area set in the world of Ridley Scott's film (and Philip K. Dick's original novel, *Do Androids Dream of Electric Sheep* (1968)), *Blade Runner* (1982) or an area based on the various worlds contained in J. M. Barrie's novel *Peter Pan* (1911), as well as various areas based on real life clubs, amusement parks, museums, art galleries, bars and restaurants, to name just a few. *Second Life* might not provide the same sensation one can get from a roller-coaster at Disneyland, and a 3-D world accessed via a desk- or laptop computer is certainly not as physically immersive as a theme park, but the level of interactivity is much higher: visitors are not just "guests", they are "residents." Residents automatically become members of a virtual familial group (when they choose their name), and their first task is to design their own appearance in the world, an appearance they can alter at will, including their gender.

In other words, the difference between Disneyland and *Second Life* is the difference between meatspace (that is, the physical world where the player's flesh and bone body resides) and cyberspace (the virtual reality space where the player's avatar, or digital, manipulable alter-ego resides).

Persistent worlds represent a different kind of digital play from the better known first-person shooter games, adventure games, or even massive multiplayer online games (MMOG). They offer interesting opportunities to test out various theories about interactive narration and gaming and what creates a strong sense of presence (the feeling of really “being there”) in the user. Finally, they can serve as an excellent and affordable teaching tool for teachers working with students from various backgrounds in issues involving non-linear narrative, gaming, and virtual reality.

This paper describes a second year undergraduate course I taught at Vassar College in Poughkeepsie, New York, in the fall of 2003 (course “syllabi” at [www.alisonmcmahan.com](http://www.alisonmcmahan.com)). The course challenged students to develop and confront their assumptions about virtual reality and to understand what constituted authentic virtual reality experiences of different types. They were asked to think about VR in both theoretical and practical terms, and then apply and test their new knowledge in their midterm and final projects. For these they created a virtual reality environment for their peers to enjoy, using one of several technologies: a MUD or MOO, QuickTime VR, a gaming engine such as the *Unreal* engine, a mini-CAVE (computer automated virtual environment) system or in *Second Life*. In the process, we learned a great deal about how immersion and engagement are achieved in virtual environments, and what factors affect them. Some of the conclusions we reached were surprising.

## **VIRTUAL WORLDS AND MOVIES**

Until this time, Walt [Disney] knew little of the three-

dimensional side of the entertainment fence, where fairs, amusement parks and the like could be found. But he did know movies and television. Driven by the desire to take his passion for storytelling far beyond the confines of two-dimensions, he landed on the idea that visitors who stepped in to this new park should feel as though they stepped into a movie. Every inch of the place should be part of a story, as in a movie or television show. (*Imagineering*, 11)

On the first day of class I asked my students to tell me how they understood and defined virtual reality. As they gave their answers I made a list on the board. Most of their assumptions were wildly inaccurate (except for one or two who had some computer programming experience), reflecting what they had seen in the movies. The final list was wide ranging, but it boiled down to a few widely accepted myths about VR: that the technology for a holodeck-type VR (as depicted in *Star Trek: The Next Generation* (1987-1994) television series) already exists, but is used, mostly secretly and for nefarious purposes, by powerful institutions such as the military; that these purposes include brainwashing and possibly torture; that the same technology could be used for intensely hedonistic purposes such as “safe” drug trips and intense but remote sex; that extensive VR use for work or play could lead to brain damage; that one could lose one’s soul to the VR machine or become a “ghost in the machine”, that is, that their personalities or souls would get trapped in the computer generating the virtual reality environment and never be able to escape. Clearly, this reflected a misunderstanding of how artificial intelligence works as well as how virtual reality works. As part of the course I encouraged the students to distinguish between the two as well as to understand each one better. There was little understanding, except amongst

some of the computer programmers, of the different types of VR that were possible. For example, most of the students did not see hypertext, text-based adventure games or even 3D computer games as forms of VR; in their minds VR had to include stereographic projection. And almost no one thought of the VR tools used for telepresence, such as the tools used to control the Mars Rover or for microscopic surgery, as forms of VR.

To encourage students to get to know and to collaborate with each other, as well as enabling them to understand how the myths and urban legends around VR had come into being, they were asked to do the following assignment. In groups of two, they were to watch a fiction film that featured extensive VR sequences, discuss how that film represented VR, then write a 500 word paper summarizing their findings which they also presented in the class. A selection of films had been put on reserve for them, but they were free to choose a different film if they wished.

It was easy to see, in the ensuing discussion, how most of the urban legends around VR were an outgrowth of a general set of political and cultural anxieties. The political anxieties were focused around the militarization of American culture, polarization within the group on the value of the U.S. invasion of Iraq, and the global social aftermaths of 9/11, an event that was very present in the student's' minds since Vassar is only forty miles from Ground Zero.

The cultural anxieties focused on the predominance of machines in our lives, our inability to understand them, and our fear that many of these machines could be used against us. Conceptual and practical mastery of the technology was presented as the solution for such anxieties, starting with an exploration of an easily accessible type of VR world: text-based multi-user domains.

## MUDS

For their next assignment, students were asked to work in groups of three or four. Each group selected a different text-based MUD from the list on [www.mudconnect.com](http://www.mudconnect.com) and spent some time in it. I illustrated navigation by having the entire class join me in Angalon, an LPMud (that is, a MUD programmed in such a way that players can add on to the world) where I had spent a fair amount of time.

A few students found this exercise enjoyable, especially because they had fun working in a group, but most of them, especially the gamers (there was a large number of PC and Xbox gamers in the class, plus a few that had grown up with Nintendo) found the text-based nature of multi-user-domains, or MUDS, off-putting. This even though by this point in the course we had read most of *Marie-Laure Ryan's book Narrative as Virtual Reality* (Ryan, 2001). The students felt that Ryan's narrative-based analysis of MUDS was misleading: perhaps the level of immersion in the MUD fiction that she described was possible for highly experienced Mudders who could alter the environment as well as exercise high-level powers and skills, but not for a casual visitor who only wanted to put in about twenty hours over the course of one week. In other words, the mudding experience failed for them because it wasn't enough like the 3D games at which they were more adept.

This was not simply a problem coping with text instead of the graphics they were used to, but it also reflected the fact that the narratological approach, when applied to game analysis, is insufficient for describing the degree of experience that the average user or player bring to the environment. The narratological approach focuses on the degree of immersion an ideal player will experience in the story world of an

interactive environment. However, this approach, though necessary for a certain part of a game analysis, does not account for the player's previous experience and personal preferences that have evolved as a consequent of that experience. As a result a purely narratological analysis cannot give us a complete picture of how gameplay works, even for a virtual environment as story-oriented as a text-based adventure. A ludological approach takes into account the pleasures that result from game strategy and from the non-diegetic chat that usually accompanies play (especially in games like first person shooters). We quickly realized that narratological analysis helped us assess the degree of immersion a virtual environment could offer, but a ludological analysis was more important for analyzing engagement. The next assignment aimed at helping students distinguish between immersion and engagement.

## **HISTORICAL OVERVIEW OF VR**

A fairly large number of the students had become disheartened by what struck them simultaneously as the "excessively technological" and "dated" demands of Mudding. In order to help them get some distance from technology, the next assignment was research oriented: working alone, they were asked to pick an early (pre-1990) VR technology, such as stereographic images (two dimensional images that appear three dimensional when you cross your eyes and look at them again), early 3-D projection systems such as Friese-Greene's stereographic system, 3D Hollywood films, OMNIMAX (the stereographic projection of IMAX movies which requires viewers to wear goggles), 3D television experiments, the transition from two dimensional graphics to isometric and then to three dimensional graphics in computer games, or any other 3D application. In their research papers the students were asked to describe the technology to demonstrate their understanding of how stereo

works, and, more subjectively, assess the impact of that particular technology on the artistic content.

Many students were very creative about finding out-of-the-way applications of 3D technology, from the 1953 experimental television broadcasts in the U.S., to a reception study of the film *Friday the 13<sup>th</sup>: 3D*, to autostereoscopic displays, to Omnimax projection technology and its attendant interface, and 3D movie attractions in theme parks like Disneyland and Universal Studios, to name just a few. The overall impact of this exercise was that students learned that the earliest filmmakers and many visual artists experimented with stereographic images in pursuit of what they called realism but which would later be defined as an increased sense of presence; that though many forms of virtual reality include three-dimensional images, not all of them do, nor it is necessary requirement for an application to be 3-D to be virtual reality.

## **THE ELEMENTS OF PRESENCE**

I had summarized my findings on presence in an article “Immersion, Engagement and Presence: A Method for Analyzing 3-D Video Games,” (McMahan, 2003). “Presence” is a term covers elements of immersion and engagement. Scholars who analyze presence in a virtual environment are looking at the VE’s immersive and engaging elements. My article surveyed the literature on presence and immersion (two terms that are often mistakenly used interchangeably, especially by humanities scholars working in game studies and film studies who adapt the scientific terminology for their own uses), and an update and clarification, based on my own research, on what VR specialists mean by these terms. Following Janet Murray (2001, 98-99), *immersion* is defined as the sense the player has of being involved in the story of



the game – the kind of involvement that Ryan analyzed in her book. *Engagement* refers to the non-diegetic level of involvement with a game (the involvement with aspects of the game that do not have to do with story, such as strategic planning, hoarding of gold or health potions, etc). Both diegetic immersion and non-diegetic engagement are aspects of what researchers in virtual reality have labeled *presence*. Many elements, some overlapping, some fairly incompatible with each other, go into making up a sense of presence; researchers Lombard and Ditton have summarized these elements into six characteristics, summing up their findings as follows: “Because it is a perceptual illusion, presence is a property of a person. However it results from an interaction among formal and content characteristics of a medium and characteristics of a media user, and therefore it can and does vary across individuals and across time for the same individual,” (Lombard and Ditton, 10).

An increased sense of presence can result from a combination of all or some of the following factors:

1. Quality of social interaction (how the avatars are programmed and how much creative control users have of their avatars; how well the world’s backbone facilitates inter-player communication; how the communication interface is designed);
2. Realism in the environment, which is further broken down into social realism (how well the virtual world interactions line up with the user’s expectations based on their real-world experience) and perceptual realism (how closely the visual, audio, and game physics within the world match those of the real world);
3. “Telepresence”, that is, the degree of immersiveness generated by the interface design. Telepresence systems use specific interfaces to place one or more

users (the “teleoperators”) at a remote or inaccessible location for the purposes of accomplishing a specific task such as operating the Mars Rover.

4. The user’s ability to accomplish significant actions within the environment (a result of how well the interface is designed as well as the in-world physics)

5. The social impact of what occurs in the environment

6. The user’s responding to the computer itself as an intelligent, social agent.

Students were encouraged to apply this terminology and identify the six elements of presence when discussing or writing about various VR applications, including their own midterm and final projects such as the play they staged in *Second Life*. Forms of virtual reality we studied in class included the panoramas and dioramas we saw at the Museum of Natural History in New York City, the early virtual technologies they had researched, and the VR applications we looked at in class, such as surgical and space applications of VR, the work of artists like Zoe Beloff, Char Davies, and Jeffrey Shaw, 3D environments ranging from Quick Time Virtual Reality (QTVR) environments (cylindrical panoramas created by stitching together photographs or drawings of a location), to game environments ranging from the vector spaces of *Battlezone* to first person shooter games like *Quake* and *Unreal*. We had no access to an actual CAVE but we did have a demonstration of a mini-CAVE setup by Dave Pape, the creator of the CAVE computing language, and Josephine Anstey, the designer of *The Trial*, *The Trail*. (For more on Pape and Anstey’s work see [www.resumbrae.com](http://www.resumbrae.com).)

## **PUTTING THEORY INTO PRACTICE**

For their midterms and final projects, on which the bulk of

their grade would be based, the students were asked to form new groups of three or four and build virtual reality environments themselves. Everyone had to work on a QTVR in their group for the midterm; for the final the students could choose from a variety of technological formats, based on what we had available at Vassar at the time. The choices included: writing an in-depth research paper, designing another QTVR, or adding to the one they had built for their midterm; using Director MX to build 3-D environments; using a game engine to build their own mod or game level (in fact, one very adept student used the *Unreal* game engine to build his own little *Night of the Living Dead* kind of world); doing graphic design for one of the environments in the CAVE project which was the focus of my research (McMahan, October 2003, and McMahan & Tortell, 2004) or designing an experience for the entire class in an on-line graphic world called *Second Life*.

For the play the students were required to secure a performance space in *Second Life*, advertise it to other *Second Life* residents, and design the play in such a way (it could be a play they wrote or a play they found and modified) that members of the audience were pulled into the action.

## **ABOUT *SECOND LIFE***

We have chosen to use the title Persistent State World or PSW to describe these online experiences. Also used are the terms: virtual world, multi-user domain or multi-user dungeon (MUD), massively multi-player (MMP) game, massively multi-player online game (MMOG) and massively multiplayer online role-playing game (MMORPG). The sheer variety of acronyms and the inadequacy of them all are indicative of the young age of this industry. In particular the authors point out

that the growth of the persistent worlds market is almost predicated upon its moving away from its origins in fantasy role-playing type games. (2004 Persistent Worlds Whitepaper, p.6)

At the time of our group exercise in the fall of 2003, *Second Life* was in its version 1.1. The world was directed at the 18-24 year old student and the over 45 year old demographic. However most players were 19-44 and 70% male. Since our exercise in 2003, the demographic has changed somewhat. According to a news item posted on the *Second Life* website on June 29, 2005, 40% of players are female, average player age is 32, and average playtime is 16 hours a week. The world is now supported by 1000 CPUs (computer processing units) (Takahashi, 2005) and covers 12000 acres with 20,000 owned plots of land (“What is *Second Life*”, 2005).

*Second Life* is available by downloading from [secondlife.com](http://secondlife.com) with a free 7 day trial. In 2003 membership was available for \$15 a month or \$135 a year. In 2005 the subscription level is 32,000. Players only need to pay the \$9.95 monthly fee if they want to own land. For a \$9.95 one-time fee players can travel through the world, interact, build objects such as their own avatar, clothes and art, keep these objects in an inventory, and build larger objects in free-zones or “sandboxes”.

For an even more voyeuristic approach to entering the world visitors can watch *Second Life* TV, a live video stream from the virtual world available on the home web page. It is random in its selection of images and is accompanied by a live music track, making it reminiscent of Big Brother TV.

The hardware requirements of 2003 still apply today:

Windows XP/2000; 800 MHZ computer or higher, 256 Mb of RAM or more; broadband internet connection (DSL Cable modem/LAN), a graphics card (NVIDIA Geforce 2 or ATI Radeon) with 32 Mb of RAM or more). In 2003 these hardware requirements represented state of the art computing which was hard to obtain. At Vassar we needed access to the most sophisticated computer lab on campus, normally used by chemistry and physics students, for our *Second Life* experience.

## **SECOND LIFE: THE GAME METAPHOR**

Unlike a MUD or a MMORPG, a persistent world is not a game, though it incorporates games within it. Persistent worlds have some codes of behavior as well as strategic guidelines, but these rules are not story-based as they are in MUDS (in a MUD you build up your skills by belonging to a clan and training in the clan's guild-hall, for example). The most obvious way to describe the difference between a world and a game is the difference in their metaphors.

Players of computer simulation games such as *The Sims* are aided in their gaming by a simple metaphor the designers put forward to help the player get an initial grasp of the game. So *SimCity* is likened to a train set and *The Sims* (2000) to a dollhouse. However, game metaphors, much like the philosophical theme in a film, are not always reducible to a single concept. As players develop a better understanding of the game dynamics, they discover that the metaphor they started with is not very accurate, and that more complex underlying metaphors exist that can only be grasped as the game is being played -- e.g., 'gardening' for *SimCity*.

Game designer and theorist Chris Crawford (Crawford, p.8) refers to mental models as the philosophical core, as well as the *raison d'être* of the historical game. Players also carry

mental models in their heads, and this model changes according to circumstances. For example, Microsoft was pressured to remove the player's ability to fly between New York's Twin Towers and even crash into them in *Flight Simulator*, after the Twin Towers were destroyed in just that way by terrorists on 11 September 2001. But during the 1991 war on Iraq players demanded that flight simulator companies sell add-on Iraq war scenario disks to already existing flight simulator games (Dunnigan 1992: 249). Clearly, simulation games are not just about competing against other players, or a computer, at computation (though this describes most puzzle games). Simulation games are also about the mental models of a simulation in the player's head. The player's models and the model the designer's models can come into conflict with each other. The playing out of these simulation games results in "simulation narratives", that is, the player's game-play adds up to the story of their game experience. (Ryan 2001: 110-14).

A persistent world is not a game, but it still has an overall metaphor. For *Second Life* the metaphor is clear from the very title: your participation in this world is much like your participation in your real world; it's your Second Life. You are expected to take it seriously and make a considerable emotional investment. You are expected to respond officially (through a rating system) to the spaces and games built into the world by other "residents" (note that they are no longer called "players"). You need to earn money and you pay taxes. You are only allowed one avatar; among other things that you can do, you can virtually marry another resident from *Second Life*.

## **GAMING IN SECOND LIFE TODAY**

The designers of *Second Life* have built-in an open source development model into the world. Players can develop apps

(applications) and products inside the game; it's a great introduction to computer science for children and young people.

Residents have developed games within the persistent world of every size and style: multiplayer and solo play, dozens of in-world games, first person shooters, fantasy role-playing games, puzzle and strategy games, races across the world to find scavenger items, and solo board games and story-driven adventures. Residents can also socialize in nightclubs, participate in fashion shows, art openings, fancy dress balls, and other kinds of social events. Scripting is empowered by Havok™, and is compatible with Poser, Photoshop, GIMP, Quicktime movie, .mov, .wav, .bvh, .tga and .mp3. There is a wiki that gives an overview to all of the games in *Second Life*, which are constantly changing ([wiki.tinypirate.com/tiki-index.php](http://wiki.tinypirate.com/tiki-index.php)). Competitions are held regularly for the best game design.

Probably the most unique thing about games in *Second Life* is that residents retain all the intellectual property (IP) rights to their own creations. This means that game developers can charge admission, franchise their idea, become a scriptor for hire and trade Linden dollars on third party sites for real world dollars. Several resident game developers have already exercised their rights to sell a cross-platform version of their in-world game to a real-world publisher, or rented out their in-world game settings for commercial use. (From the *Second Life* webpage for game developers, [www.secondlife.com/games/game\\_dev.php](http://www.secondlife.com/games/game_dev.php). See also "Tringo Fever -- Catch It!")

This means that the best game in *Second Life* is the game of making money. Anshe Chung from Germany made \$150,000 in 2005 buying land in *Second Life*, developing it and selling

it (Au, Wagner James “Anshe at the Gates”). *Second Life* CEO Philip Rosedale says residents spent \$1.5 million Linden a month in buying and selling form each other. Hundreds of thousands of those dollars are converted into real world money . (Au, Wagner James, “Greenspanning the Globe-- Philip Linden Interview, Part I”.)

## **STAGING A PLAY IN SECOND LIFE**

Putting on a play for one’s community is a very social act. In addition, the students were charged with building some form of interaction between performers and audience. They found this a rather difficult thing to do. It might have worked better if they had chosen to stage a more “street theatre” or improvised kind of play, where some of the play involved more interaction with the audience; their plan was to engage the audience as wedding guests at the end of the play. But it is of interest that though a “street theater” option was available to them, the organizer students, who were drama majors at Vassar, chose to put on a traditional play; in fact they chose one of the most traditional plays around, Shakespeare’s *A Midsummer Night’s Dream*. Their choice was partly motivated by the “play-within-the-play” aspect, which they thought would be interesting to experiment with in a persistent world where residents have already designed an avatar to begin with, adding a further layer of performance to the performance (McMahan, 1999). Their first task was to shorten the play, taking only a selection of scenes, most of which focused on setting up Theseus and Hyppolita’s wedding plans, the play within the play, and the marriage at the end. Once scenes were selected cuts were made in the dialogue.

Music and sound effects are not required for game play in *Second Life*, though some use of sound is possible. Physical sounds relating to objects and the player’s avatar are



available. Short sound clips can be attached to objects. Sounds can be synchronized to the avatar's gestures. There is also a music synchronizer for those who want to make music, or players can download their own music on the sliders of the mixing board. However it is not possible for residents to voice their comments to each other; these have to be typed in and read from the screen.

The students tried not to modify Shakespeare's language, but simply to cut out some of the dialogue strands. They discovered the hard way during rehearsal that no one could type their lines fast enough, nor could the audience "read" the lines fast enough to keep a sense of performance going, even when the lines were pre-entered and just had to be cut and pasted in to the chat line. Many students, especially those who hadn't mastered the cut and paste and couldn't type fast enough, ended up simplifying their lines on the fly.

In addition to their traditional approach to play selection and performance, the students also chose to stage the play in a very traditional way, in a theatre with a proscenium stage and space for audience to sit. No one had the programming skills to build a proscenium stage but by negotiating with other residents in the *Second Life* space the students rented a piece of land (everyone contributed to the rent) and borrowed a theatre that someone else had built and had in their inventory of objects. We discussed staging the play in a *Second Life* forest, but most of the students felt the audience would not be able to find or follow the performance under those circumstances.

On the day of the performance, the audience, about twenty strong, sat everywhere in the proscenium space except in the space designated for them – many of them sat on ceiling beams or on the chandelier. Some would arrive in *Second Life* right in the middle of the stage and had to quickly be

escorted off. No one seemed to mind this, and the play performance continued without interruption.

At a certain point, about a third of the way into the play, there were too many people on stage, between audience and performers, and the memory allocation for that portion of the grid was exceeded. This caused *Second Life* to reset and we were all kicked out of the world and hadve to sign on again. To help solve this during the performance, students who were not actually onstage began to sign off and watch the performance of their peers on the large classroom screen, making comments along the way, giving the players a meatspace audience as well as a cyberspace audience. Even with these precautions we had several resets. What astonished me most is that the audience was very faithful and kept signing back on after each reset.

The range of programming skills (and interest in programming) among the students showed in their character avatars. The student playing the lion wanted to look like a lion for the play-within-the-play, but in the end just gave himself a mane of golden locks; however the wall did make himself look just like a wall, but with arms and feet sticking out. Often the character in *Midsummer* and his character in the play of *Pyramus and Thisby* within *Midsummer* were played by different students, adding another interesting layer of performance.

The actors assembled a list of gestures, and they experimented with various combinations of gestures until they achieved a kind of pantomimic set of moves that they used to convey various emotions. For example, the Lion used a combination of gestures such as the “Boo” gesture, the bow gesture and the clap gesture to depict his roaring visually.

At the end of the performance the actors came down from the stage and invited the audience to join the dance to celebrate Theseus' and Hypolita's wedding. Most of the audience did not know how to use the gesture commands and so the performers spent some time teaching them. Then everyone danced wonderfully until the next reset.... This felt like the most successful part of the exercise.

All of this, especially the interesting problems encountered by the students in their staging of the play, sheds a new light on the ludology versus narratology argument. (For an in-depth treatment of this issue see Marie Laure Ryan's article in this volume.) The students aimed to test the limits of classic narration in a virtual world. Their dramatic presentation worked, but it seemed terribly limited in such an interactive medium. What we discovered as the result of our performance is that a persistent world like *Second Life* offers heightened possibilities but also limitations for presenting classical narrative. The limitations, as we have seen, included the inability to speak or type as quickly as Shakespeare's dense language required and the limitations on physical performance. The possibilities included the immense range of design choices and graphic possibilities for props, and the numerous ways the avatars could move or be used, including the ability to "fly", the possibility that several humans could invisibly play the same character in the play, and the heightened possibilities for interaction.

Using the terminology for presence, we found that the quality of social interaction in *Second Life* is very high, as is the impact of that interaction (the students had entertained a large audience, taught the audience how to use gestures, and had networked with other residents to make the performance possible). The interface was intuitive enough (learning it came naturally because we were already so familiar with the PC interface), but psychological immersion

was sometimes interrupted by technical problems such as the resets. Students experienced the world as intelligent primarily in how the *Second Life* engine enabled their avatar and character designs, a process that they enjoyed so much that they would re-do their avatars over and over again. Students experimented with an extended definition of telepresence during the play and during rehearsals by taking over each other's characters for short periods of time. Students were especially thrilled but by the newness of the experience, of doing something very traditional (putting on a play) that they usually only did in meatspace, in cyberspace.

We concluded in the end that classic narrative, even that of a dramatic presentation, can work in a persistent online world, but seemed terribly limited in such an interactive medium, a limitation that was brought home to us by the audience's choice of seating. By hanging from the chandeliers and venturing onto the stage, whether willfully or accidentally, the audience was reminding us of the limitations of "meatspace rules in this world, which are also the limitations of classical narrative.

The IGDAgda 2004 whitepaper on persistent worlds (PSWs) predicts that PSWs will do better as they move away from the adventure games format. This almost seems to predict that games within PSWs will lead to more interactivity and sense of presence than something with a narrative – even a loose overall narrative that simply unifies the design and dictates the nature of player interactions as it does in as in *Ultima Online*.

For our play, the diegetic immersion required by classic narration was the least important aspect of the experience (admittedly the choice of a narrative that is very well known to everyone made it less important); instead, the engagement in the non-narrative elements were what really

heightened the feeling of presence.

At one end of the immersion scale are theme parks like Disneyland, where rides, buildings and themed areas are all designed based on classical narratives that the audiences know well, where physical immersion is complete, but where interactivity is fairly low. At the other end are persistent worlds, with *Second Life* very similar to Disneyland in that it is a space where people can play in differently themed environments, and even go on rides; but the level of interactivity is much higher, though physical immersion is of course much less – the ultimate difference between cyberspace and meatspace. The principal similarity between theme parks and computer games and even themed areas in persistent worlds is their reliance on classic narratives better known to us from film as a shared world reference. Games have an added element of game metaphors, which the player may or may not understand; and understanding of the metaphor can also be at the conscious or subconscious level. Finally, the player's previous experience is an increasingly important factor, with a generation gap appearing in choice of genres: few of my students had the patience to master the skills required for a text-based world; but they had a high level of skill in 2-D and 3-D gaming which made an online 3-D world more appealing.

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