Journal of
Virtual Worlds Research
jvwresearch.org ISSN: 1941-8477

Volume 3, Number 1
October 2010
The Researcher's Toolbox

Volume 3, Number 1
The Researcher's Toolbox
November 2010

Journal of Virtual Worlds Research
jvwresearch.org ISSN: 1941-8477

Volume 3, Number 1
The Researcher's Toolbox
November 2010

Interviews Within Experimental Frameworks: How to Make Sense of Sense-making in Virtual Worlds

CarrieLynn D. Reinhard
Roskilde University, Denmark

Abstract

As virtual worlds become increasingly utilized for purposes of entertainment, information and retail, how people understand, think, feel, act and make decisions about them likewise become important research considerations. This essay reports on the methodology and methods used to study these sense-making processes in relatively inexperienced people as they engage with virtual worlds. In order to understand the sense-making of virtual worlds, a method to record the interpretive process, as well as physical actions, was required. In order to understand the sense-making processes involved in new experiences, an amount of control was required over the nature of those experiences. With these requirements, a hybrid study was designed by deconstructing the conceptualization of "the experiment" and utilizing both quantitative and qualitative methods. The resulting study involved the following: a within-subjects experimental design served as the framework for the study, while in-depth qualitative interviews were

employed alongside surveys and audio and video recording as the data collection methods. Data collection occurred while participants were engaging with the media products, via talk aloud protocols, and afterwards when they were asked to recall and compare these situations in open-ended questionnaires and interviews structured using Dervin's Sense-Making Methodology. Having completed the study using this mixed methodology approach, I discuss the effectiveness of this approach, and where the approach requires more work.

Keywords: experiment, mixed methods, sense-making, entertainment, virtual worlds

Interviews Within Experimental Frameworks: How to Make Sense of Sense-making in Virtual Worlds

Introduction

My main research interest is in understanding human sense-making processes, especially those involved in the engaging with a media product, whether categorized as "old" or "new". As part of the Virtual Worlds Research Group at Roskilde University, I conducted research on sense-making with a recent innovation in media products, the virtual world. While there may be differing definitions of what is a virtual world, a common agreement discusses persistent online spaces where a network of computers generates a place for people to congregate via their digital representations, or avatars (Bell, 2008; Schroeder, 2008). This definition of virtual worlds provides for both gaming-based worlds, such as World of Warcraft and EverQuest, and socializing-based worlds, such as Second Life and SmallWorlds. The definition does not typically include console and computer games where the digital world in the game does not persist without the player's involvement. As a community of players around the world interact in-game or in-world at any time, virtual worlds change and evolve with or without the involvement of any single player or user. The ability for the world to evolve is what separates a virtual world from the more static environment of a single-player console or computer game.

Given the intersecting interests of myself and the research group, I set forth to study people's sense-making in virtual worlds. What I discuss in this essay is the approach I took in my largest study for the project. In this study, the Virtual Worlds Entertainment Study, I sought to compare the engaging with virtual worlds to the engaging with other, older, media products, namely film and console games, for how sense-making related to evaluations of entertainment and desire to engage. As I will discuss here, my research interest and questions were instrumental in deciding how to study this phenomena. Instead of relying solely on either qualitative or quantitative methodologies, and related research methods, I determined the need for a mixed methodology approach. However, it was an approach predicated on the deconstruction of a traditional quantitative method, the experiment.

In this essay I will discuss first this deconstruction of the experiment, and how the deconstruction allowed me to mix qualitative and quantitative research methods. This mixture was necessary as dictated by the nature of the research phenomena and questions of my study: a

necessity I hope to illustrate by discussing what was done in my virtual worlds study. Finally, I will discuss the disadvantages and advantages of this mixed methodology approach by detailing what I see as the successes and challenges of the data collection as I moved into data analysis. This essay, then, serves to explain my sense-making process as I decided how to design the study on my research phenomena.

Deconstructing "The Experiment"

Given that I saw the need to deconstruct the research method "the experiment" for my study, a place to begin this essay is with how an experiment has traditionally been defined. The standard definition relies on the manipulating of a variable while holding others in a system constant to observe the effect of the manipulation on predetermined, measured variable(s) in order to determine causality (Gjedde & Ingemann, 2001; Gorard, 2002; Roediger & McCabe, 2007; Winston & Blais, 1996; Shadish, Cook, & Campbell, 2001).

The deconstruction begins when we consider the various components mentioned in this definition. First there is the "stimulus": the independent variable(s) that is manipulated. Second there are the "subjects": those being exposed to the stimuli under specified conditions, possibly with randomization determining which subjects are exposed to which stimuli. Third, there is the "system": the contextual conditions, control variable(s) and design structure in which the subjects are exposed to the stimuli. Finally, there are the "measurements" taken within this system on how exposure to the stimuli impacts the subjects. This deconstruction, and the relationship of the components, was expressed in Shadish, Cook and Campbell's (2001) discussion of Cronbach's deconstruction of experiments as having units (subjects) who receive the treatments (manipulation of stimulus) that are observed (measured) under certain settings (conditions of the system).

The deconstruction continues further with confusion about what is "the experiment" when the perceived necessity of the various components differ across disciplines and researchers. Experiments in social sciences often differ from experiments in natural sciences. In physics there is more emphasis on measurement and testing theories than on manipulation and randomization, which psychology emphasizes (Winston & Blais, 1996) because of the need to account for variance between human subjects (Roediger & McCabe, 2007). Additionally, natural sciences

and social sciences are interested in how things work, and why, while design sciences are interested in how things differ based on different conditions (Gorard, 2002).

Finally, the deconstruction arrives at a point where the experiment potentially becomes of no use when we consider its common criticisms, especially when it has been incorporated and applied by the social sciences, and psychology in particular. Both qualitatively and quantitatively minded scholars discuss the following critiques as to why experiments are not valid methods of research or how the results from such a method should be contextualized amidst these problems.

The first critique focuses on the system component of experiments. The experiment is criticized as stressing internal validity, in its quest to establish causality, to the detriment of being able to provide external validity, also known as ecological validity or generalizability (Gillath, McCall, Shaver & Blascovich, 2008; Howe, 2004; Shadish et al, 2001). Because the experiment often involves an artificial system, the laboratory, it can be hard to generalize the findings of those conditions to other times and places. However, as long as in communicating their results researchers contextualize their findings to account for this limitation, Shadish, Cook and Campbell (2001) maintain that the experiment is not completely useless. Howe (2004), taking a qualitative stance, still considers the focus on causality, especially in social sciences, and the desire to make predictions about human activity, a fault of experiments, as such localized, artificial findings cannot adequately help us understand and influence the larger, broader, more complex systems that constitute human life. Others have argued that without ability to completely replicate the conditions of the system in the experiment, it can be hard for subsequent studies to verify causality (Gillath et al, 2008).

Other common criticisms focus on the subject's component of experiments. These criticisms are particular to social sciences and how humans are handled as subjects. There are issues regarding researchers' overselling of the randomization of subjects as producing generalizable representative samples (Howe, 2004). Other critics take issue with the use of non-representative samples, which adds to the problem of generalizability. As most social science experiments occur in university settings, researchers draw on the convenient testing population of college students; this sample, with characteristics unique to college students, cannot be seen as adequate to explain the wider human population (Gillath et al, 2008).

Finally, there is the issue regarding being unable to prove causality in social sciences without knowing the "black box" of human interpretation (Howe, 2004; Potter & Tomasello,

2003). In psychology, the experiment was first primarily used within behavioral psychology's attempts to understand the stimulus-response mechanism. However, with the advent of psychological disciplines that focused more on the cognitive and affective mental processing of humans, the experiment was criticized for not addressing the subject's subjectivity when engaging with the stimuli. Without knowing this subjectivity, it is argued, whatever is learned in the experiment is not a result of completely interrogating all the processes that may have produced that result (Potter & Tomasello, 2003).

My Deconstruction

I have discussed in the previous section some deconstructions to the experiment as a concept that have occurred in previous literature. What I address in this section is the deconstruction I performed in order to see how to apply the experiment to the research phenomena and questions I had.

My deconstruction is not limited to the experiment. Instead, it is a conceptualization of what is empirical research; I will explain it using the experiment, but I see it being applicable to other styles of empirical research, such as the survey or the ethnography. First, there is the "data collection framework": the foundational approach used to organize how information about the research phenomenon is collected to answer the research questions. Second, there are the "data collection methods": the means by which quantitative or qualitative information is gathered about the research phenomenon. Third, there are the "data analysis methods": the means by which the gathered information is explored, dissected, scrutinized and evaluated, usually synchronized with the approach used to gather the information; that is, qualitative data analysis methods often are employed with qualitative data collection methods, and the same with quantitative-based methods. However, this connection does not have to always-already occur; it is simply more likely that a researcher operating in one or the other approach tends to synchronize these three parts rather than consider how they could effectively mix and/or combine qualitative- and quantitative-based methods to study their phenomena and questions (Josephs, 2000).

We often think of an experiment as a way to collect data; however, it can also be thought of as a way to organize the collection of data. The experiment provides an understanding of collecting data by determining a stimulus, sampling subjects, controlling the system, and

measuring what results from the subjects' exposure to the stimulus in the system. Data collection, then, occurs in the measurement component, as the framework determines what is being measured in whom and under what conditions. By seeing the experiment this way, the deconstruction acknowledges that the standard synchronization of quantitative-based framework, collection and analysis methods does not have to occur with the experiment. Instead, as the experiment provides the framework, collecting data can be done through quantitative methods, such as surveys and physiological recordings, or qualitative methods, such as interviews and participant observations.

For me, the utility of deconstructing the experiment into these three aspects comes in how it frees up the experiment to be part of a mixed methodology approach. This approach to the experiment can be useful for several reasons. First, the use of qualitative data collection methods can address the criticism of the lack of measuring subject subjectivity (Howe, 2004; Potter & Tomasello, 2003; Williams, 2005). This reason was particularly important for my study, given the research interest in the phenomenon of sense-making. Second, using multiple methods of data collection and analysis can be a way to cross-reference the results obtained from the one or the other (Howe, 2004), thereby helping to explain the results obtained from either (see examples: Garau, M., Friedman, D., Widenfeld, H.R., Antley, A., Brogni, A. & Slater, M., 2008; Mandryk, Inkpen, & Calvert, 2006; Vinayagamoorthy, Steed, & Slater, 2008).

Finally, from a more philosophical perspective, the mixed methodology approach can help the researcher and her study move away from the reductionism/determinism of a study based on either a qualitative or quantitative approach. Allegiance to just one approach often dictates the methods of data collection and analysis, possibly predetermining outcomes. Instead, as Josephs (2000) argues, researchers should construct a study based on the requirements of the phenomena being study. Advocating for a combined or mixed approach allows for recognition that no one method is better, epistemologically or ontologically, than another (Dervin & Foreman-Wernet, 2003; Gorard, 2002); rather, some are better at gathering certain types of information than others. As none offers complete information alone, it behooves the researcher to use a variety of methods in her study of the research phenomena.

In this section, it has been my main assertion that by deconstructing what is the experiment into three main aspects, I could undertake a mixed methodology approach using the experiment as a data collection framework, hereafter called the experimental framework. This

deconstruction allowed me to construct a study to surround my research phenomena from a variety of perspectives theoretically needed to adequately study them. What I shall explain in the next section is how this deconstruction was informed by my study; that is, how the requirements of the study dictated the construction of this mixed methodology experiment.

Virtual Worlds Entertainment Study

As I mentioned above, this deconstruction of the experiment was part of the sense-making process I went through for my study about how people make sense of virtual worlds, and how such sense-making relates to their evaluations of entertainment and desire to engage. In this section I will outline my specific research questions and how I conceptualized the phenomena of sense-making, entertainment, and desire to engage. After this discussion, I will focus on how my conceptualizations informed my decision to use the experiment as a data collection framework with quantitative and qualitative data collection methods.

Research phenomena, questions

Sense-making. There are various definitions of sense-making, but the primary focus is on the concept of people working to make meaning of themselves and the world as they move through their lives (Antonietti & Cantoia, 2000; Dervin, 2008; Dervin & Foreman-Wernet, 2003; Josephs, 2000). For my conceptualization, sense-making is understood as the internal behaviors, both affective and cognitive, and external, observable behaviors involved in working to understand one's self, life, and the world. Sense-making is a process of dealing with the situations of life, whether those situations are routine or novel, and whether the means of dealing with them are rote or unique (Reinhard & Dervin, 2010). While there may be outcomes of sense-making that can be objectively observed, it is the internal processes that are the primary component. Thus, to properly understand an individual's situated sense-making, both subjective and objective measurements are required to be interrogated.

Being entertained. My conceptualization of entertainment is not that it is simply due to the assignment by the producers to the media product, nor wholly in the hands of the media audience/user. My theoretical perspective is that the evaluation of entertainment is a complex, situated process of sense-makings by the individual as she regards: the media product, with

structural features of engaging that may or may not have been intended to be entertaining; herself and her lived experiences; and situational and socio-cultural contextual factors (Reinhard & Dervin, 2010). Of course, the structural features depends on the nature of the media product; the nature of the virtual world, or content, and the technology used to interface with it, or technological interface, can impact the determination of entertainment from that engaging. However, the nature of the media product is not the sole determining factor. As entertainment arises out of situations of media engaging, then it must be measured as part of the situated sense-making process as the extent to which a person is being entertained. In this study, being entertained was not defined a priori; instead, the concept was left open, and what led the person to say he was entertained was measured in the study.

Desiring to engage. The desire to engage with a media product is similar to the concept of consumer intentions in two ways. First, the idea is to understand the extent to which the individual desires to further her exposure to a particular media product with which she intentionally or unintentionally has engaged. In other words, the extent to which the individual would like to turn a onetime encounter into repeated encounters (Reinhard, 2008). Second, desiring to engage could refer to how much the person wishes to engage with a media product not yet experienced. This desire could arise from having engaged with similar media products, or having become aware of the media product from another source. For both types, the phenomenon is a desire – an internal behavior that is a combination of cognitive and affective elements with the potential to determine a subsequent external behavior.

Research question. My study sought to address the following question: how do people make sense of innovations to the structural features of media products meant to be entertainment when determining their own being entertained and desiring to engage? The focus on innovations addresses the rise of virtual worlds and their differentiation from previous media products, such as film, television, and even console and computer games, in terms of the technological interface. Looking at sense-making in relation to media products was similar to a question addressed by Antonietti and Cantoia (2000) in which the processes of sense-making were studied for how they were impacted by being in a virtual world to engage with a painting. My study had a similar intention, in that I wanted to know if engaging with different types of media products involves

different sense-making processes as the individuals determine the extent to which they are entertained and wish to continue engaging.

How research intentions drove study's design

In the following sections I will discuss how my research question, as focused on the research phenomena, were used to structure the study. First, I discuss how the intention of measuring the evaluations of entertainment and desire to engage informed the design of the experiment as a data collection framework to control the system, stimuli and subjects under study. Second, I discuss how the intention to understand the sense-making processes of engaging with the media products informed the data collection methods used within the experimental framework.

The experimental data collection framework

The purpose of the study was to compare sense-making processes and the outcomes of being entertained and desiring to engage for different media products to see if there is any impact on such processes and outcomes from the nature of the media product with which the individual engages. Deconstructing this purpose, using the procedures described above, there was an interest in understanding the impact of a stimulus (the nature of media products) on subjects' subjective reactions and objective actions.

My intention was similar to one advocated by Gjedde and Ingemann (2001) for understanding media reception experiences. Because I was interested in comparing an individual's engaging with one media product to others, this meant designing a within-subject design as my experimental framework. In particular, four different sessions of media engagings were predetermined based on how media products differed regarding their requirements for the individual to engage with them. That is to say, the manipulation focused on the extent to which the individual had control over various aspects of engaging with the media product. This control could be over the content, or the technological interface, or both.

The four types of media products chosen for this study were as follows: movie, console game, online role-playing game (MMOG), and social virtual world (SVW). With these as the main types, specific titles were chosen for each product. For the movie, 15 recent superhero titles were provided. For the console game, the Nintendo Wii game "Spider-Man: Friend or Foe". For the MMOG, "City of Heroes/City of Villains". For the SVW, an island was constructed in

Second Life, called Metrotopia: City of Superheroes. All media titles were chosen to provide novel experiences to the individuals; participants were instructed to choose a movie they had not seen, allowing some control over stimuli to them. The games were ones not played before; and the Second Life island was designed specifically for this study. One participant had played "City of Heroes," but it was two years before this study, and the game had been updated repeatedly since then. Another participant had been in Second Life before, two years earlier, but had never been to the island Metrotopia prior to the study.

The study was interested primarily with innovations on technological interface; while interface can affect content, it was decided to choose specific titles that would represent similar content. All of these media products had as a constant content that reflected superhero genre conventions. The movies were standard superhero stories; both games featured superhero main characters; the Second Life island was constructed to reflect specific superhero tropes, such as designing a costume and fighting villains. While some experiments involving virtual worlds have manipulated aspects of the content of the virtual environment (see examples: Arnold, Farrell, Pettifer & West, 2002; Gillath et al, 2008; Van Vugt, Konijn, Hoorn, Keur, & Eliën; 2007; Yee & Bailenson, 2007), the focus of this study was on the manipulation of the structure of the interface with the media product, not the content; thus attempts were made to standardize the focus of the content, while recognizing that the information in each content cannot be equitable given the differences in narrative elements.

Previous research has manipulated this interface aspect to test how changes to this particular structural features impacted the outcome of engaging. In these studies it appears more typical for the experimental framework to be a between-subject design, manipulating either the degree of difference in interface within same media technology or comparing different media technologies with completely different interfaces. Examples of the first type of manipulation would be: Barr, Noble and Biddle (2007) comparing console versus computer gaming interfaces; Downs and Oliver (2009) comparing the Wii's motion sensitive interface to button-symbolic interface; Klimmt, Hartmann & Frey (2007) manipulating the extent to which a game responded to user's control. Examples of the second type would be: Antoniettei and Cantoia (2000) comparing a static image to an immersive virtual environment; Chen and Raney (2009) comparing Wii, a Flash game, and a DVD clip; Mania and Chalmers (2001) comparing a

physical lecture, a desktop virtual environment, a head mounted virtual reality, and audio only; Suh and Chang (2006) comparing static images, video clips and a virtual environment.

My manipulation of the interface was a combination of these approaches. I compared different interface designs within the same media technology by comparing the MMOG and the SVW. I compared the interfaces of different media technologies between film, console games and virtual worlds. Finally, I employed a within-subjects design to interrogate how the same person made sense of these differences, along with changes in content, amongst the media products.

Unlike the "true" experiment, I allowed the participants to have more control in determining certain aspects of the system. First, while participants were brought into a laboratory for the sessions with the games and Second Life, they were allowed to watch the movie at a place and time of their choosing. Second, the length of the engaging was semi-controlled, in that they were required to engage with the media product for at least 30 minutes. Upon reaching that point, they were instructed that they could either stop the engaging, or continue until they wanted to stop, up to a point of 150 minutes (chosen because of the length of the longest movie in the study). Giving control over the length of engaging was used as a measurement of desiring to engage.

Additionally, there was less strict control over the subjects in the study. Being a within-subjects design, there was no attempt at randomization; all participants would be exposed to the same four types of media products. The primary control was to sample different experience levels. I was interested in novel engagings, hoping they would promote more self-awareness of sense-making processes within the participants to aid in later discussion. This meant the convenience sample was pre-screened to verify that the participants did not have high amounts of experience with the specific media titles being used in the study, as well as a range of experience with the types of media products. This requirement meant sampling was conducted to find people who had various amounts of experience with superhero movies, with video games, with computer games, with MMOs, and with Second Life. Additionally, recruiting sought out a range of ages, on the assumption that age influences exposure to the media technologies. These controls were done as an attempt to manage possible spurious effects that could account for differences in the sense-making processes.

Thus far I have discussed how being entertained and desiring to engage were used to structure the data collection framework as a within-subjects experimental design. However, both of these phenomena were variables I was interested in measuring as a result of being exposed to the manipulation of type of media product. Along with the focus on sense-making, they informed the types of data collection methods the studied used.

The mixed data collection methods

From an experimental perspective, the focus on sense-making was both as a dependent variable, to be measured as a result of the exposure to the stimuli, and a mediating variable, a way into understanding the "black box" of human subjectivity that could give rise to the outcomes of entertainment and desire to engage. The other two phenomena were seen primarily as dependent variables; and, like sense-making, as evaluations of the engaging with the media product, they were primarily conceptualized as being subjective. However, while all these measured variables are subjective, there is argument for objective measurements to complement what is told in self report. The potential for measuring these phenomena both subjectively and objectively informed the decision for a mixing of data collection methods.

While the need for such a combination exists in many studies, it was particularly required here given the intention to measure physical and interpretive interactivities. Engaging with digital games and virtual worlds involves physical interactivity: making sense of the technological interface in order to further the content, as the content will only be received as a result of the individual's actions with the media product. Typically the requirement for physical interactivity is used to differentiate the "new media" like digital games and virtual worlds from the "old media" like film. Such differentiation cannot be denied, and as mentioned above it was the manipulation used to determine the four stimuli. This physical interactivity can be measured objectively, through observing or logging, and subsequently coding, of any and all actions undertaken by the individual. Physical interactivity with games has been theorized as an important component for entertainment from that engaging (Klimmt, Hartmann & Frey, 2006).

However, as these media products all involved content – specifically superhero tropes – another form of interactivity was also involved. All the engagings involved some type and amount of interpretive interactivity as the individuals had to make sense of the content in order for meaning to be generated from the experience. Games and social worlds are not so easily

comparable to the physical interactivity of other computer or digital applications because they have content within them that the engaging with is the purpose of using that technology (Barr, Noble & Biddle, 2007). I argue further that any engaging with a medium requires both physical interactivity via corporeal actions and psychological actions, such as cognitions and affectations, as the individual is sense-making his internal and external actions and reactions in the situation of the engaging (see Bucy, 2004, Salen & Zimmerman, 2004). Even watching a movie involves basic physical interactivity because actions to engage with the movie's content are undertaken in the physical world. Thus, in situations of engaging with stimuli like those used in this study, understanding interpretive interactivity becomes as important, if not more so, than physical interactivity.

Interpretive interactivity could be gauged by emotive expressions and/or physiological measurements; however, there is often a need to match such objective measurement with a subjective measurement to insure that the researcher's interpretation of the observable behaviors coincide with the participant's (Mandryk, Inkpen, & Calvert, 2006; Vinayagamoorthy et al, 2008). Feldon and Karfai (2007) argue that studying virtual worlds calls for such a combined data collection given the individual's position in the interplay of behaviors in the virtual world and physical world. I extend this argument to digital games and films, as both involve some amount of physical and interpretive interactivities and negotiating between what happens in the content (the "virtual" diegesis) and what happens with the technological interface (the corporeal actions).

The need for a combined data collection methods approach was furthered when considering that this study was not interested in usability issues regarding virtual worlds, but in how sense-making related to those issues. The study was interested in what are in part affective outcomes (Mandryk et al, 2006; Thüring & Mahlke, 2007): evaluations of being entertained and desiring to engage further. A focus on physical interactivity cannot provide the full understanding of such outcomes; but the addition of interpretive interactivity can account for the emotional experiences of engaging.

Thus, to study sense-making processes and outcomes in engagings with media products, a variety of data collection methods were employed. Questionnaires were administered after each session to measure the amount of engagement and entertainment. The questionnaires consisted of close-ended and open-ended questions: numbered scale items with subsequent spaces asking

people to explain what led them to give the numerical answer they did. Observations were conducted during the laboratory sessions as I sat alongside the participant, taking notes, while video and audio recording captured what was done during the session. For the laboratory sessions, talk aloud protocols were followed, as participants were prompted to give voice to any reaction they were experiencing; additionally, specific questions were prepared ahead of time to probe specific features of each of the products. During the laboratory sessions, at the 30 minute mark, the session was paused for a mini-interview using Dervin's Sense-Making Methodology (SMM) to structure the questions (Dervin, 2008). During the movie session, participants were asked to pause the movie any time they had a reaction to it, and to record what the reaction was, when it occurred and what triggered it on a provided worksheet. After all the sessions were completed, an interview was conducted using Dervin's SMM to structure the questions used to have the participant compare the experiences and go in-depth into their experiences with each media product.

This mixture of data collection methods was similar to the procedure used by Barr, Noble and Biddle (2007) to compare case studies of experiences with video games. In their research, they used observations, talk aloud protocols during game play, and semi-structured interviews after each game-playing session. One difference between our studies is that they focused on experienced players to see the results of having learned how to play these games, whereas I focused on inexperienced players to see process of learning, aka sense-making, as they engaged. By utilizing as many data collections methods as possible, I was able to amass a sizeable data corpus of information about my research phenomena that can be analyzed qualitatively and/or quantitatively. What I will discuss in the next session is how I see the successes versus the challenges of this approach in what my study attempted to do.

Discussion of Approach

The experimental design utilized in this study does not easily match unto the standard definition of the experiment. There was less rigidity of control over system, subject and stimuli components as I attempted to create more naturalistic engagings with media products to understand sense-making processes. I was not interested in theorizing causality as beginning with the media product's structure, extending through sense-making processes, and resulting in being entertained and desiring to engage further. Instead, any interest in causality I had was based on the question

of do sense-making processes alter when faced with innovations in how one engages with different media products. As it can be hard to imagine such alterations not occurring, theorizing causality was not of primary concern; instead, I was concerned with fully mapping and understanding under what conditions do differences, or similarities, emerge amongst the sense-makings of these various situations.

Without such a rigid focus on theorizing causality, my approach in this study closely aligned with Gjedde and Ingemann's (2001) experimental experience method and Gorard's (2002) discussion of design experiments. I employed the basic parameters of the experiment to structure four types of engagings with media products, then measured people's experiences as sense-making processes and outcomes in these engagings via quantitative and qualitative data collection methods.

I am not the first to appropriate qualitative methods into the experiment; such work has been done to answer criticisms regarding the utility of results from the experiment. As those before me, I did find that the mixed methodology approach was useful in answering some of the criticisms of the experiment, and that the approach gathered information that can be used to more thoroughly interrogate the experiences of the participants. At the same time, there were issues regarding the way the experimental framework was designed that created challenges for my analysis of the information. However, the challenges can be addressed if, as Shadish, Campbell and Cook (2001) admonish, I remember to contextualize my results. In this next section I will address the successes and challenges from deconstructing the experiment and using a mixed methodology approach.

Advantages/Disadvantages, Successes/Challenges

Given the mixed methodology approach, what are seen as advantages and disadvantages depends on which side of the methodological fence one is: the qualitative side will see some aspects as advantages the quantitative side will see as disadvantages, and vice versa. For this study, these advantages and disadvantages became apparent in the data analysis; depending on what methods are used to interrogate the information, generate results, and communicate the findings, disadvantages may be just challenges to overcome.

In terms of advantages, or successes, gathering the interpretive experiences along with recording their behaviors produced a complex and copious mixture of information. Preliminary

findings illustrate the utility of the mixture of data collection methods as information from one method can be used to reinforce and further elucidate information from another method. For example, an individual learning how to operate the Wii's motion sensitive controls for the first time: in the video recordings, she is seen trying to determine which hand should control the remote, and in the interview she discusses her thoughts and feelings about this physical interactivity issue. For all participants, after the sessions, the recollections in the interviews went into more depth, bringing in other lived experiences to discuss the engagings, such that the participants' expectations going into the session relate to what they did and how they made sense of what they did. The information gathered helped to show the variations possible amongst different people with different lived experiences dealing with similar situations.

These variations also indicated the utility of pairing quantitative and qualitative data collection methods. Although the basic structure of each situation, in the laboratory at least, was held constant (same system, same stimuli), the between subject variance can be quite high, especially given the high probability that each person did not play the game in the exact same way. But even when the content was held constant, there was still between subject variance in the interpretive interactivity, such as when two different people watched the same movie. Although elements of the experimental sessions may be consistent, other elements are not, and this variation in physical and interpretive interactivities justifies the use of the mixed methodology approach as it delves into the "black box."

Another advantage, or disadvantage, depending on one's perspective, is the size of the data corpus. The data corpus consists of 60.7 hours of audio recordings, 40.4 hours of video recordings, and 393 pages of questionnaires, reaction records, and transcriptions. For some, the amount of information gathered is daunting. However, this data corpus, with its subjective and objective data, can be used to probe the interpretive viewpoint of the participants during the experimental experiences. As indicated above, the in-depth information can be used to address the criticism of the experiment as failing to understand the "black box" sense-making processes.

Two disadvantages, or challenges, align with common criticisms of experiments: the artificiality of the experiences as not being part of the participants' actual lived experiences with the media, as well as carryover effects in terms of learning how to engage. However, I stress that these disadvantages are more challenges that require I the researcher to be aware of the

limitations when it comes to deciding what data analytical method to employ, as well as how to communicate results.

The first challenge, the artificiality of the experiences, can be answered from a qualitative approach, in particular Dervin's Sense-Making Methodology (Dervin & Foreman-Wernet, 2003). From an SMM perspective, each experience is a unique situation for sense-making, and at that point the experience can be seen for how it relates to other experiences in their past, present and future. Whether or not the experience occurred in the natural setting of the participant's home, or in the artificial setting of the laboratory, each experience still involves genuine sense-making from the participant, and this sense-making will in some way relate to the natural conditions of his everyday life. Indeed, the artificial conditions of the laboratory may help us better understand these sense-making processes. Josephs (2000) discussed the utility of the artificial lab environment "to slow down the meaning-making process in order to gain access to it." (p. 124). Of course, it is possible that a person's sense-making in a laboratory is affected by the pressure of such a situation (i.e. social desirability); however, an in-depth measurement of sense-making processes can illuminate any manifestations of the impact of the laboratory, and these manifestations must be provided in the communicating of the results to provide context for the other sense-making processes described.

The second challenge is a common consideration for any within-subjects design, where each person experiences each experimental condition. In these designs there is the potential for carryover effect, such that in this study the experience with one media product may have influenced experiences with subsequent ones. There was indication of this, as some participants discussed how engaging with "City of Heroes" later impacted their engaging with Second Life due to similarities in their respective interfaces. Typically, carryover effect can be handled via the randomization of treatments, such that people are exposed to the stimuli in different orders. However, in the case of this study, such randomization would not have completely negated the carryover effect when considering how one individual made sense of each engaging; learning would have occurred regardless. Instead, as with the challenge of artificiality, participants' discussions that highlight the carryover effect must be drawn out in the analysis and communicating of the results.

A final disadvantage is not a common criticism of experiments; in fact, it relates to a structuring element that is usually seen as one of the experiment's strengths. Perhaps the biggest

disadvantage, and most difficult challenge, involves the problematic comparison of sessions to one another, even within a particular participant's experience in the experiment. This problem is due to the differences in the conditions of engaging between the movie and the three other sessions; chiefly, how the former occurred outside of the controlled conditions of the laboratory, without the researcher present during the engaging. However, in addition, during the Wii session, I the researcher played with game with the participant, where the participant was the main character and I was the sidekick. This "playing with" did not occur in the other two laboratory sessions. Thus, across all four sessions, there were differences in the system as well as the stimuli. Such system differences are typically rigidly controlled for by the experimental framework so as to test causality hypotheses.

As I mentioned above, I was not interested in studying causality, but in interrogating the processes and outcomes of situated sense-making. Thus I was less concerned with strict control of conditions and sought instead to create comfortable situations to promote a repertoire that would engender in-depth and honest reflection on sense-making processes. Movies were viewed at home because, as the first session, there was concern about social desirability; the idea that my presence while they watched the movie would impact their willingness to pause the movie and record every reaction they had to it. I played Wii game with them so as to promote a relaxed atmosphere for the think aloud aspects of data collection, especially as I would be there for that session and the following two. As part of the after sessions questionnaires for the laboratory sessions, I asked them to evaluate the impact of my presence on their engaging. Also, in the interviews, some participants discussed how the different conditions of the sessions related to their sense-making and evaluations of entertainment and desire to engage. As with the other challenges, all of this gathered information must be used to contextualize the results when they are communicated in the findings.

Conclusion

In conclusion, the mixed methodology approach was necessary given the research phenomena and question in my Virtual Worlds Entertainment Study. Deconstructing the experiment allowed me to conceptualize how I could proceed with my study. The experimental framework allowed for the comparison of different media products. The mixture of data collection methods has helped to measure the complexity of the engaging process, both the observable and non-

observable aspects of it. Thus far, the approach has yielded impressive data for in-depth, complex analysis, with recognition of the challenges generated by the experimental framework and the study's flaws.

Future work should consider standardizing the conditions of the engagings, such that the movie occurs at the same location as the other engagings. The question is the extent to which a talk-aloud with a movie engaging could disrupt the sense-making process of the individual, not to mention alter the entertainment evaluation. However, as this is an empirical question, only more empirical experimental work can answer it.

References

Antonietti, A. & Cantoia, M. (2000). To see a painting versus to walk in a painting: An experiment on sense-making through virtual reality. *Computers in Education, 34*, p. 213-223.

Arnold, P., Farrell, M. J., Pettifer, S. & West, A.J. (2002). Performance of a skilled motor task in virtual and real environments. *Ergonomics, 45*(5), p. 348-361.

Barr, P., Noble, J. & Biddle, R. (2007). Video game values: Human-computer interaction and games. *Interacting with Computers, 19*, p. 180-195.

Bell, M. W. (2008). Toward a definition of "Virtual Worlds". *Journal of Virtual Worlds Research,1*(1), available at http://journals.tdl.org/jvwr/article/viewArticle/283.

Bucy, E. (2004). Interactivity in society: Locating an elusive concept. *The Information Society, 20*, p. 373-383.

Castronova, E., Williams, D., Shen, C., Ratan, R., Xiong, L., Huang, Y. & Keegan, B. (2009). As real as real? Macroeconomic behavior in a large-scale virtual world. *New Media & Society, 11*(5), p. 685-707.

Chen, Y. S. & Raney, A. A. (2009). Mood management and highly interactive video games: An experimental examination of Wii playing on mood change and enjoyment. Paper presented at the International Communication Association Conference May 2009, Chicago.

Dervin, B. (2008). "Interviewing as dialectical practice: Sense-Making Methodology as exemplar." Paper presented at International Association for Media and Communication Research (IAMCR) 2008 Annual Meeting, July 20-25, Stockholm, Sweden.

Dervin, B. & Foreman-Wernet, L. (Eds.). (2003). *Sense-Making methodology reader: Selected writings of Brenda Dervin.* Cresskill, NJ: Hampton Press.

Downs, E. & Oliver, M. B. (2009). "How can Wii learn from video games? Examining relationships between technological affordance and socio-cognitive determinates on affective and behavioral outcomes." Paper presented at the International Communication Association Conference May 2009, Chicago.

Evans, E. J. (2008). Character, audience agency and transmedia drama. *Media, Culture & Society, 30*, p. 197-213

Feldon, D. F. & Kafai, Y. B. (2007). Mixed methods for mixed reality: Understanding users' avatar activities in virtual worlds. *Educational Technology Research and Development, 56*, p. 575-593.

Garau, M., Friedman, D., Widenfeld, H.R., Antley, A., Brogni, A. & Slater, M. (2008). Temporal and spatial variations in presence: Qualitative analysis of interviews from an experiment on breaks in presence. *Presence, 17*(3), p. 293-309.

Gillath, O., McCall, C., Shaver, P. R., & Blascovich, J. (2008). What can virtual reality teach us about prosocial tendencies in real and virtual environments? *Media Psychology, 11*(2), p. 259-282.

Gjedde, L. & Ingemann, B. (2001). In the beginning was the experience: The experimental reception studies. *Nordicom Review 2*, p. 49-60.

Gorard, S. (2002). Can we overcome the methodological schism? Four models for combining qualitative and quantitative evidence. *Research Papers in Education, 17*(4), p. 345-361.

Howe, K. R. (2004). A critique of experimentalism. *Qualitative Inquiry, 10*(1), p. 42-61.

Josephs, I. E. (2000). A psychological analysis of a psychological phenomenon: The dialogical construction of meaning. *Social Science Information, 39,* p. 115-129.

Klimmt, C., Hartmann, T., & Frey, A. (2007). Effectance and control as determinants of videogame enjoyment. *Cyberpsychology & Behavior, 10*(6), p. 845-847.

Mandryk, R. L., Inkpen, K. M., & Calvert, T. W. (2006). Using psychophysiological techniques to measure user experience with entertainment technologies. *Behaviour & Information Technology, 25*(2), p. 141-158.

Mania, K. & Chalmers, A. (2001). The effects of levels of immersion on memory and presence in virtual environments: A reality centered approach. *CyberPsychology & Behavior, 4*(2), p. 247-264.

Potter, W. J. & Tomasello, T. K. (2003). Building upon the experimental design in media violence research: The importance of including receiver interpretations. *Journal of Communication, 53*(2), p. 315-329.

Reinhard, C. D. (2008). *Gendered media engagings as user agency mediations with sociocultural and media structures: A Sense-Making Methodology study of the situationality of gender divergences and convergences.* Doctoral dissertation, Ohio State University.

Reinhard, C. D. & Dervin, B. (2010). "Situations of media engagings: Comparing the new and the old through sense-making". Paper presented at the Association of Internet Researchers Conference 11.0, October 21-23, Gothenburg, Sweden.

Roediger III, H. L. & McCabe, D. P. (2007). "Evaluating experimental research: Critical issues." In R. J. Sternberg, H. L. Roediger III, & D. F. Halpern (Eds). *Critical Thinking in Psychology* (pp. 15-36). Oxford, United Kingdom: Cambridge University Press.

Salen, & K., Zimmerman, E., (2004). *Rules of Play: Game Design Fundamentals.* MIT Press, Cambridge, MA; London, England.

Schroeder, R. (2008). Virtual worlds research: Past, present & future. *Journal of Virtual Worlds Research, 1*(1), available at http://journals.tdl.org/jvwr/article/view/294.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2001). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference.* New York, NY: Houghton Mifflin Company.

Suh, K. S. & Chang, S. (2006). User interfaces and consumer perceptions of online stores: The role of telepresence. *Behaviour & Information Technology, 25*(2), p. 99-113.

Thüring, M. & Mahlke, S. (2007). Usability, aesthetics and emotions in human-technology interaction. *International Journal of Psychology, 42*(4), p. 253-264.

Van Vugt, H. C., Konijn, E. A., Hoorn, J. F., Keur, I. & Eliëns, A. (2007). Realism is not all! User engagement with trask-related interface characters. *Interacting with Computers,19,* p. 267-280.

Vinayagamoorthy, V., Steed, A., & Slater, M. (2008). The impact of a character posture model on the communication of affect in an immersive virtual environment. *IEEE Transactions on Visualization and Computer Graphics, 14*(5), p. 965-981.

Williams, D. (2006). Virtual cultivation: Online worlds, offline perceptions. *Journal of Communication, 56,* p. 69-87.

Winston, A. S. & Blaise, D. J. (1996). What counts as an experiment? A transdisciplinary analysis of textbooks, 1930-1970. *American Journal of Psychology, 109*(4), p. 599-616.

Yee, N. & Bailenson, J. (2007). The Proteus Effect: The effect of transformed self-representation on behavior. *Human Communication Research, 33*, p. 271-290.