Vicarious experience:

staying there connected with and through our own and other characters[*]

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Irrespective of technology (e.g. mobile, console, desktop, projected, head-mounted, etc.), the display is the window into the illusion of fantasy or simulated three-dimensional digital gaming environments. Digital games provide opportunities for player activities in scenarios with artifacts and other players. The environments' real-time response to players' interactions induces feelings of acting vicariously[1] – to imaginatively experience something through another person, being, object or character – within a mediated environment.

While much interaction in digital games is performed with and through character, there are limitations in theories and methodologies for their analysis and design from the subject areas of human-computer interaction (HCI) and the experiential concept of presence, commonly referred to as a sense of "being there".

In an effort to bridge this gap, my work looks to other study areas, in particular, activity theory, social-cultural studies and film, and is working towards the development of ways to reason about player's sense of connection to characters in interactive mediated environments (IMEs e.g. virtual reality, virtual environments, digital games). In response to the inadequacy of the concept of presence and limitations of work in HCI, I have developed a framework of experience – i.e. three Vs: voyeuristic, visceral, vicarious (Marsh 2001, 2002, 2003a) – informed from filmmaking (Boorstin 1995) to provide a way to reason about experience that is induced or evoked in, or witnessed by participants of interactive mediated environments. More recently, key publications in

HCI have adapted Boorstin's (1995) three Vs framework to inform experiential analysis and design of products and technological devices (e.g. Norman 2004; McCarthy and Wright 2004). However, because of the similarities between the developments of IMEs and film (Marsh 2003a), my work holds closer to Boorstin's (1995) analysis from a filmmaking perspective. Specifically, for the purpose of this chapter, the prevalence of character(s) (e.g. virtual, synthetic, avatar) within IMEs means we can utilize Boorstin's (1995) analysis of character through "vicarious experience". Adapting his analysis to interactive mediated environments, I argue herein that player's vicarious experience provides:

i. a way to reason about the connection between player's own and other characters.
ii. a way to reason about a player's sense of connection to a fantasy (or other) social and cultural structure through constraints in behavior.
iii. referred to as "vicariously there", it provides a way to reason about player engagement and is an alternative to the concept of presence.

As illustrated in figure 1, vicarious experience from encounters with three-dimensional digital gaming or mediated environments is derived from undertaking various pursuits and is identified as falling into three main categories. Firstly, those that come from navigation and exploration (e.g. transfer of spatial knowledge) and secondly, from the manipulation of artifacts (mediated, simulated or fantasy). These are identified as primary or fundamental vicarious experiences that can occur with or without the involvement of characters and share similarities with the concept of "telepresence", the sense of acting vicariously in a remote or hazardous location (e.g. outer space, deep sea diving), as described later. As mentioned, the focus of this chapter is on the

third category, vicarious experience through character. With increasing technological and artistic innovations, vicarious experience has become more complex through empathy with character. Vicarious experience has long been associated with other media (e.g. literature, theatre, television and cinema) through interpretation of, and identifying and empathizing with characters such as the protagonist. However, digital games provide players with the unique opportunity to assume the role of anybody or anything they wish, and to interact in scenarios (through either a first or third person perspective) within environments (mediated, simulated, fantasy) and with other characters in a non-linear narrative manner. So players in digital games can not only identify and empathize with characters through spectatorship as in theatre, television and cinema, but they are also able to identify, empathize and interact with their own and other characters. Hence, it is argued that vicarious experience is a link, connection or mediator between a player and gaming environment.

FIGURE 1 ABOUT HERE

I identify three kinds of vicarious and empathic experience through character. First, it is argued that the greater a player perceives him/herself to be vicariously in character acting in a digital game, the stronger the sense of belonging or connection between player and the gaming environment. Second, other characters' behavior (e.g. actions, gestures, facial and vocal expressions) tells us something about their emotions. The more a player interprets or feels these emotions, the more they have a sense of being connected (vicariously or empathically) with other characters. Third, how other characters respond to a player's character not only acknowledges their existence but also tells us something about their (a player's character's) emotions and disposition, and may reflect the empathy they have for the player's character.

Previously I have argued that stimulating experience encourages players in “staying there” continuing to pursue activities in a gaming environment (Marsh 2003a, 2003b). Likewise, stimulating *vicarious* experience encourages players in “staying there”. The term coined herein to describe this sense of player engagement is “vicariously there”. Conversely, un-stimulating vicarious experience will not hold player’s attention, shifting their focus from the gaming to the real world environment. The term “corpsing” or “to corpse”, derived from an acting term (UK) to denote falling out of character, has been aptly used to describe this shift in focus of attention (Marsh 2001, 2003b). While much research on experiential interaction with IMEs has been carried out, this has largely focused on a user-player sense of connection through the concept of presence – commonly described as a sense of “being there” in a three-dimensional mediated environment. However, there are some difficulties associated with the concept of presence and so, as the next section discusses, the ideas of “staying there” and “vicariously there” are presented as an alternative.

In addition, I argue herein that the sense of connection between a player and a character can tell us something about the connection or feeling of belonging that a player has to the social or cultural environment depicted virtually. However, there is some difficulty in attempting to reason about player-character behavior in a social and cultural structure depicted virtually, because digital games can be fantasy or artificial worlds. This is because, borrowing from the words of Engeström (1999:23), unlike the real world, digital worlds can be “individualistic” (i.e. solitary, single player) and “ahistorical” (i.e. having no past). So attempting to consider cultural structures shaped by successive generations and successive successful adaptations (that in turn effect activities) in these environments can be problematic. While attempts to overcome these issues and to formulate a

methodology to accurately analyze the social and cultural context of digital gaming environments is a complex endeavor, requiring a sustained research effort, an alternative approach is to consider the idea of *constraints:* constraints in artifact behavior[2] and player-character behavior. The approach to considering culture by constraints is described well by Poortinga (1992:10). He argues that culture is "manifest in shared constraints that limit the behavior repertoire available to members of a certain social and cultural group, in a way different from individuals belonging to some other group". To varying degrees, culture is defined through commonalities shared by a group limiting the behavior of members. That is, people tend to restrict their behavior to what is considered appropriate and acceptable depending on which group they participate in. Likewise, it is argued that players participating in a scenario within a digital gaming environment are likely to adhere to certain social and cultural norms. Players-characters perform, conform, react and respond appropriately within the constraints governed by the situational and episodic events of a scenario. So whether an environment is "individualistic" or highly populated, or "ahistorical", appropriate behavior can be judged by the way players-characters act and respond within constraints imposed by a social-cultural structure and the appropriateness of their behavior can be captured and reasoned about through vicarious experience.

From “being there” to “vicariously there”

One of the most intensive and continued bodies of research in experiential analysis and design of three-dimensional interactive mediated environments (IME e.g. virtual reality, virtual environments) comes from work in presence. Presence is commonly described as a user’s sense of “being there” in a mediated environment. The concept of presence has its roots in “telepresence” (see: Sheridan 1992; Steuer 1995). Telepresence occurs when a user or tele-operator’s interactions with for example, a hand-controlled device (e.g. joystick, glove), are mirrored by a robot or mechanical arm within a hazardous or remote environment (e.g. outer space, deep sea diving) and viewed on a display screen. As a consequence, users describe a sense of being connected, vicariously acting, navigating/exploring or manipulating artifacts within a remote environment, as illustrated in figure 1. The adoption of concepts from telepresence in computer-mediated communication provides a convenient way to describe the effects experienced by users interacting within mediated environments. To distinguish telepresence from the more specialized experience of “being there” in an IME, the shortened version presence has been adopted.

Many researchers from the presence community see presence as a primary driver for design and analysis of IMEs, and consequently this has prompted much research in an attempt to elucidate the underlying determinants of presence and find measures for its assessment. While research continues to develop an increasing array of methods that attempt to capture a user’s sense of presence, the presence community is still however some way off formulating a consensus definition for this concept in mediated environments.

Generally, they argue that a sense of presence occurs in several ways, some of them interrelated. These can be grouped into three main areas: *social, physical and realism* (e.g. Lombard and Ditton 1997). Let us consider *realism* or fidelity of stimuli for a moment. While some argue that fidelity of stimuli (e.g. visual, aural, tactile and force-feedback, etc.) is not necessarily linked to a sense of presence (e.g. Whitelock, Brna and Holland 1996; Brna 1999), a prevailing argument is that increasing the fidelity of stimuli will lead to a sense of presence. If it were possible to replicate/simulate the world in every conceivable detail, this may provide users with the ultimate sense of being *physically* situated or present somewhere indistinguishable from the real world. Perhaps this is the closest that we can get to Licklider's (1960) visionary ideas towards a "man-computer symbiosis". A similar notion is Nozick's (1974) idea of plugging humans directly into an "experience machine" providing a more literal meaning to the term "plug and play":

> "Suppose there were an experience machine that would give you any experience you desired. Superduper neuropsychologists could stimulate your brain so that you would think and feel that you were writing a great novel, or making a friend, or reading an interesting book. All the time you would be floating in a tank, with electrodes attached to your brain. Should you plug into this machine for life, preprogramming your life's experiences? If you are worried about missing out on desirable experiences, we can suppose that business enterprises have researched thoroughly the lives of many others. You can pick and choose from their large library or smorgasbord of such experiences, selecting your life's experiences for, say, the next two years. After two years have passed, you will have ten minutes or ten hours out of the tank, to select the experiences of your next two years. Of course, while in the tank you won't know that you're there; you'll think it's all actually happening…Would you plug in?" (Nozick 1974:42-44)

However practical difficulties aside (e.g. complexity, memory requirements, costs), even if we can replicate/simulate the real world in every detail, would we ever really believe that we are

actually there? Apart from a situation in which unbeknown to us, we are taken unconsciously and placed in an IME (or plugged in), or the argument that asserts we may already be there (Bostrom 2003), we are still aware that we are interacting in an IME because we can remember going from the real to the virtual world. This prompts the question: Does it matter if users don't know whether or not they are in a mediated world?

Phillips (2000) raises similar points in comparison to the film "The Matrix" (Wachowski and Wachowski 1999) in which people are "living" in an illusion that is indistinguishable from the real world set in 1999. In considering the potential for recreating such a virtual world he suggests that, "…if we were not able consciously to locate the virtual experience as being different [from our sense of the real], we would not be able to take pleasure in it as an event" (p. 143). A similar argument can be applied to: "Matrix Reloaded" (2003) and "Matrix Revolutions" (2003). Laurel (1993) elegantly elucidates a similar argument through the description of a child experiencing a simulation ride (i.e. "a wild ride combining flight simulator technology with Star Wars content"). Pausing momentarily during a shriek the child shouts, "if this was real, I'd be scared!" (p. 120).

Likewise, it is precisely the unreal that allows subjects with phobia-related disorders to confront their fears in IMEs developed for therapeutic purposes; it is difficult to imagine them agreeing to spend much time in, or even enter an environment indistinguishable from the real world where their fear exists. Similarly, it is the unreal that allows trainee pilots to practice take-offs and landings, etc., and games players to fly fighter jets or race formula-one cars. If they had to be as highly trained as a jet fighter pilot or as talented as a racing car driver, games would not be enjoyable or at worst, be unplayable. Hence, it is argued that people take comfort from knowing

that a mediated environment is mediated and an environment in which they can act out situations, confront fears, make mistakes and experience things that would not be possible in the real world without causing untold fear, harm or damage to oneself or others. Support for this can be found in Scheff's (1977) similar arguments of experiencing emotions and cathartic release from an "aesthetic distance". Therefore, it is argued that the ability to identify and locate the virtual, mediated or gaming world from the real is a necessity that provides a safe distance enabling users and players to gain experience and pleasure.

Many academics outside the presence community view the idea of presence and the sense of "being there" in an IME to be too contentious and believe the arguments surrounding this concept need to be re-examined. As indicated above, to address this, much work in presence has moved away from its original highly specialized focus of "being there" towards a wider arena as captured for example, in Lombard and Ditton's (1997) definition of "perceptual illusion of non-mediation". Central to this is the idea of non-mediation, meaning a user fails to perceive the existence of supporting or mediating technology during an encounter, and so experiences an illusion of a non-technologically mediated environment. Furthermore, feelings of being connected with other people in a mediated environment are said to provide feelings of s*ocial* presence. While encapsulating a wider perspective on user experience, the term "perceptual" refers to "continuous (real time) responses of the human sensory, cognitive, and affective processing systems" restricting discussions to experience that occurs "instant by instant" (Lombard 2000). This makes it difficult, if not impossible, to describe unfolding events and episodes of a scenario and the after-effects, affects and consequences of a mediated encounter with IMEs within the boundaries imposed by definitions of presence; see for example discussions by Heeter (2000).

In previous work I propose the idea of “staying there” as an alternative approach to presence to inform design and analysis of IMEs (Marsh 2003a, 2003b). Considered from a user-player perspective, “staying there” refers to the positive characteristic of IMEs that allows and encourages users to continue pursuing activities in the mediated environment and so continue to experience the mediated illusion. In other words, if user-player experience from an encounter (gaming or otherwise) is appropriate or stimulating they are encouraged in “staying there” pursuing activities in the mediated environment. Staying there is a shift away from considering encounters with IMEs as “instant by instant” or “being there” experiences. Instead it works towards a wider arena through which to reason about experience that is induced or evoked in, or witnessed by users in situational and episodic events of a scenario and the after-effects, affects and consequences of a mediated encounter with IMEs. Staying there is a similar concept to that used to hold spectators’ attention in film and theatre, the concepts of which have attracted interest in informing user-interface design. For example, Laurel’s (1986; 1993) ideas of engagement, direct agency and mimetic illusion, borrowed from theatre, and ideas borrowed from filmmaking to inform the design of virtual environments (e.g. Laurel, Strickland, and Tow 1994; Marsh and Wright 2000; Pausch et al. 1998).

As previously stated, in this chapter I propose that stimulating *vicarious* experience from characters (or otherwise, see figure 1) encourages players in “staying there” continuing to pursue activities in an interactive mediated environment. The term that I have coined herein to describe this sense of user engagement is “vicariously there”. Conversely, un-stimulating vicarious experience will not hold player’s attention shifting their focus from the mediated to the real world environment. The term “corpsing” or “to corpse”, derived from an acting term (UK) to denote falling out of character, has been aptly used to describe this shift in focus of attention (Marsh 2001, 2003b).

Reasoning about vicarious and empathic experience

Previous work

Research on empathy from numerous fields of study is beginning to attract increased attention. For example, work linking cognitive science and phenomenology identify empathy as one of the fundamental aspects of consciousness itself (e.g. being and self awareness): *"One's consciousness of oneself as an embodied individual in the world is founded on empathy – on one's empathic cognition with others, and other's empathic cognition of oneself" Thompson (2001:2).*

Increasing support can be found linking empathy to presence. For example, Sas and O'Hare (2003) look for correlations between presence and empathy. Additionally, in "The Cyborg's Dilemma", Biocca (1997) highlights similar philosophies to those of Thompson (2001) by turning to Zillman (1991:135-169) to link embodiment to presence. Biocca (1997) says "observers of the physical or mediated body read emotional states, intentions, and personality traits by an empathic simulation of them." However, as previously discussed, there are limitations with the concept of a sense of presence because current definitions largely restrict arguments to real-time "instant by instant" experience. This makes it difficult to consider empathic experience and vicarious experience beyond the instantaneous that occurs in unfolding events, episodes or the "big picture".

Past work on empathy and its measures from psychology informing work herein includes: Ickes (1993, 1997); Levenson and Ruef (1992); Zhon, Valiente and Eisenberg (2003). (See the last two for informed reviews). According to Levenson and Ruef (1992), empathy comes in three forms. "Cognitive empathy" is to know what someone is feeling, but does not automatically imply kindness. "Compassionate empathy" is responding kindly to someone, for example, being

comforting. Thirdly, “emotional empathy” is to know what a person is feeling but also, to feel what that person is feeling. Empathy may be transferred through actions, stories/anecdotes or facial expressions usually from one person to another person. The more one person feels what another is feeling the higher the degree or accuracy of “emotional information being transmitted” (Levenson and Ruef 1992:234). The term “empathic accuracy” (e.g. Ickles 1993; 1997) was coined to describe this.

It is argued that these three types of empathy can be found with IMEs (virtual environments, virtual reality, digital games). However, because a player controls a character, I argue that they should be considered from a player’s perspective and so slight differences to Levenson and Ruef’s (1992) three types of empathy can be identified. For example, compassionate empathy can be demonstrated by a player-character responding kindly to another character. Cognitive empathy can manifest itself through a player knowing how other characters are feeling by observation or spectatorship, or through interacting with other characters. Emotional empathy is similar to cognitive empathy, but in addition to knowing how other characters are feeling, the player feels these emotions as their own. The idea of empathy in IMEs is further complicated by the extent to which a player perceives him/herself to be vicariously in character. So in addition, I argue that cognitive empathy in IMEs is a player recognizing and being aware of how their own character should feel in certain situations and emotional empathy is a player feeling these emotions as their own. Moreover, other characters behavior acknowledges a player’s-character’s existence and may also reflect the empathy they have for us. Described next is the development of a matrix questionnaire approach and a study carried out to capture vicarious experience and empathic

experience. Results from the study are then discussed and briefly related to cognitive and emotional empathy between player and other characters.

Capturing vicarious experience and empathic experience

Zhon, Valiente and Eisenberg (2003) identify four ways to measure empathy[3], one of which is a self-report questionnaire-based approach. The approach utilized in the following study is a self-report questionnaire-based method using a vicarious empathic matrix questionnaire. The matrix questionnaire builds on the literature review provided by Levenson and Ruef (1992). They describe one approach developed for use during marriage guidance counseling sessions. The idea is an attempt to identify couples' relationship and communication difficulties. In it, one half of the couple (the listener) views a video recording of their spouse (the talker) and rates the spouse's (the talker) feelings and emotions. The spouse (the talker) then views the video recording and rates what they believe to be their own feelings, moods and emotions expressed during the recording. That is, their feelings at the time when the video was shot. The correlation between the couples' rating (i.e. between talker and listener) then provides an indication of the accuracy of "the emotional information being transmitted" between the talker and listener. The higher the correlation, the higher the "empathic accuracy" (see Ickles 1993; 1997).

In digital gaming environments however, it is not feasible to ask the virtual character about their own feelings to provide correlation data. One option could be to ask the designer or developer to rate the virtual character's emotion, moods and traits. However, this is open to bias and inaccuracies as they could see or read things into their artistic creations that others don't. To overcome these drawbacks, a method was devised whereby players were asked to rate their virtual

characters' emotions, moods and traits using the empathic matrix questionnaire. They were then asked to rate their own emotions, moods and traits using an identical copy of the aforementioned matrix questionnaire. The correlation between the two matrices provides a measure of empathy between a player and their character. The higher the correlation between the two matrices, then the greater the empathic accuracy. A weak correlation between the two may point to a weak attachment or lack of engagement between player and player's character.

TABLE 1 ABOUT HERE

The matrix used in the study consists of nine adjective pairings (see: tables 1). Pairings were obtained following observation of, and interviews and preliminary studies with, digital games players[4]. They were chosen so that a minimal number of pairings would to be appropriate to as many genres as possible. These were designed to illustrate the extent to which emotions, moods and personality traits could be induced in players. The matrix data was obtained by initially posing questions along the lines of: "…in a moment I'm going to ask you for words to describe your character", then, for each adjective pairing: "…would you say that your character [*player's identified character inserted here]* was"…"confident" or "scared", etc. Questioning in this way continued until all emotions, moods or traits were rated. Next, players were asked to rate their own feelings while controlling their character using the second matrix. As mentioned, the correlation between this matrix and the matrix describing their character's emotions, moods and traits provides a measure of empathy between the two. A number of pilot studies have been undertaken to test the matrix questionnaire-based approach[3].

Study: role-playing and storytelling educational digital game

The study described herein was carried out with a prototype (i.e. largely in an experimental or design phase) role-playing and storytelling environment in which players speak to each other via microphones and headphones. The environment comprised of rich graphics, music and atmospheric sound effects, and incorporated many characters including female, male and sorcerer (female) and was designed to appeal to children. The study was undertaken in participants' natural context (i.e. school) where the mediated environment will be used. The study attempted to answer the following research questions:

1. how effective is the matrix questionnaire at capturing player's:
    a. emotions, moods and traits
    b. empathy with their own character and secondly, with other characters in the digital gaming environment
2. how effective is the matrix questionnaire method to reason about players behaving appropriately in a social and cultural environment depicted virtually

Data collection was carried out with as little disruption as possible to participants. That is, players were able to experience the mediated environment in its entirety without being prompted or interrupted for a response from the evaluator. During study sessions observations were made and notes taken. Following each study session the evaluator read aloud and filled out each question of the vicarious matrix. The wording of adjective pairings was made suitable for children (see: table 1) in an attempt to ensure that the players understood the meaning of the question.

Method

Twenty-four nine to eleven year old school children (fourteen females, ten males) from several classes and grades volunteered to take part in the study. Within each role-playing session, two children were placed back-to-back and facing their computer screens. From a first-person perspective, each assumed the role of one of two characters (i.e. female or male). The assignment of character was random by getting children to select objects (i.e. toy animals) that determined which character (female or male) they were to play. Correspondence between toy and character was intermittently swapped. Speech between characters was supported through microphone and headphones.

Although players were given the impression of complete autonomy to move around the gaming environment, the game was in-fact directed by a human operator (i.e. actress) responding to players' movements and steering them in one direction. Hence, the game in this respect was more akin to a linear rather than non-linear narrative structure. To drive the game along instructions and clues were interwoven into a story by the actress playing the role of several characters including the sorcerer. The actress was separated from the children by a partition screen. This type of set-up with a prototype is commonly referred to as "wizard-of-oz". This arrangement attempted to conceal the artificiality of the mediated environment and give children the impression of autonomously responsive characters within an automatically responsive environment.

At the beginning of each session children were introduced to their colleagues' and their own characters. During five to ten minutes training or practice session (i.e. depending on the children's ability, skill and prior experience) they familiarized themselves with keyboard and mouse operation

(e.g. item/function selection and moving around the environment) and watched themselves move around as seen on their colleagues' display (i.e. from a third-person perspective) and through their own screens from a first-person perspective. However, during the study children were instructed to view only their own screens, that is, they were encouraged to take a first-person perspective. Following each session the matrix questionnaire was interview administered (i.e. read aloud) to provide an opportunity for further explanations where necessary and to ensure they all had the same understanding of the meaning of each adjective pairing. Responses from children were then recorded.

Results

Nineteen participants played computer games between one and five hours per week, four played six to ten hours and one didn't play computer games. Participants variously identified their preferred computer games genres and these were categorized as: action/adventure, simulation, role-playing, point and click, and first-person shooter. While the test environment's intended future use was educational, because it incorporates many attractive features (e.g. rich graphics, sound, character interaction) the environment was referred to by the children as a role-playing "game". In response to the question: "what was *your* character" in the game, all identified their character as being the male or female without any difficulty. The choice of toy that unbeknown to the children determined what character (male or female) they would play was evenly distributed between boys and girls. Hence, suggesting no gender match between children and their choice of toy.

Vicarious matrix: emotions, moods and traits

Players had no difficulty in providing responses for their vicarious matrix (emotions, moods and traits) while controlling their character (i.e. male and female) during the game and there was no

apparent difference between ratings for players playing male characters and those playing female. All players rated themselves as feeling *kind* and *honest*. 83% said they felt *brave* and the same for *strong*, and 70.8% said they were *confident*. Some players said they couldn't choose between the two anchors (e.g. happy–sad) because they felt "a bit of both" at different points during the encounter. This suggests a limitation with this approach and the need for a continuous assessment method, or at least more options in an attempt to capture variability.

Empathic matrix

This is an attempt to match player emotion and traits with their characters and hence provide a measure of the extent to which players adopted a character's persona. Table 2 shows empathic matches for players with male, female and sorcerer. Players '1' to '12' assumed the role of male and players '13' to '24' the role of female. So for example, reading from left to right, player '1' who took the role of male had empathic accuracy with their character for eight out of nine paired adjectives, likewise eight with female and five with sorcerer. Empathic match for both male and female for all players was very similar ranging between five (56%) and nine (100%). In contrast, the empathic match with sorcerer for all players was comparatively smaller from one (11%) to six (67%).

TABLE 2. ABOUT HERE

Discussion

For vicarious experience, a method was developed to capture players' emotions and traits. In addition, a method was developed to provide player-character empathic match with their own and

other characters in the mediated environment's scenario. While there was little difference in empathic match between player and their colleagues' characters (i.e. male and female), as expected, this was higher than empathic match with the sorcerer. So while data demonstrates that the method can distinguish between protagonist and antagonist, it does not distinguish between player and colleague (i.e. protagonists). This may either be because of the close proximity of player and colleague throughout the game or suggests a limitation in the method (i.e. matrix questionnaire) to detect this. While every attempt was made to block out noise external to the game using headphones, any sound or awareness of each other outside of the game may have contributed to the empathic-matched pairs. In this situation, players empathize with their colleague outside the game, rather than with the character in the game.

Through observation it was apparent that the game engendered excitement and emotions demonstrated through utterances of most players, and for the most part, players' focus of attention stayed on acting within the unfolding scenario of the role-playing game. This suggests that the game was stimulating for players and so encouraged them in "staying there" continuing to pursue their activities in the gaming environment.

Using the matrix questionnaire, it was shown that no player had an empathic match that was under 50% with their own character and only one had an empathic match under 50% with their colleagues' character. Five players were 100% in agreement with their own character and seven were 100% in agreement with their colleagues' character. The high "empathic accuracy" as measured through the matrix questionnaire approach suggests that most players perceived themselves to be strongly connected to their own and their colleagues' character. In other words,

this suggests players had stimulating vicarious encounters; the term coined herein to describe this sense of player engagement is “vicariously there”.

Conversely, using the matrix questionnaire, a lower “empathic accuracy” suggests players have a weaker sense of connection to their own and their colleagues’ character. In this situation it could be argued that players are less likely to continuously maintain their focus of attention in the role-playing game, so their attention may shift from the gaming to the real world environment. Hence, this has the potential to cause players to fall out of character or “to corpse” (Marsh 2003b).

While future work requires refinements of the matrix questionnaire method described herein before it can provide an effective way to capture cognitive, emotional and compassionate empathy through interacting with a player’s own character and other characters, it is a step in this direction. For example, through analysis of the results we can reason that a high empathic match between a player and their colleague suggests they know what their colleague is feeling (i.e. cognitive empathy) and they feel what their colleague is feeling (i.e. emotional empathy). The lower empathic match between players and the sorcerer might suggest they know what she is feeling but they do not feel what she is feeling.

Reasoning about players’ behavior in the social-cultural gaming environment

Questionnaire responses provided an indication of whether players’ behavior adhered to social and cultural constraints determined by the IME context. As shown in table 2, of the 24 players, no player had under 50% agreement or empathic match with their own character and only

one player ("9") had under 50% match with their colleagues' character. Five players had 100% match with their own character and seven had 100% match with their colleagues' characters.

The high agreement or empathic match suggests that players' behavior adhered to constraints imposed by the social and cultural environment. Observation of players' behavior during study sessions was in keeping with the context (i.e. scene, setting and scenario) of the game. That is, players tended to restrict their behavior to what was considered appropriate and acceptable depending on the role-playing "group" that they were participating in. For example, players followed behavioral patterns in keeping with the eerie castle environment and scenario and these were different to behaviors from studies of other digital game genres[3].

Problems with questionnaire-based approach

One limitation of the matrix questionnaire is that the results may have been tainted by players providing socially desirable responses. For example, some children are less likely than others to admit to feeling *scared, weak or cowardly*. Another disadvantage was the limited set of questionnaire items that might not have accurately reflected some players' role-playing encounters within the empathic matrix. Therefore, future research should work towards identifying an appropriate number of items that can adequately capture empathic experiences. One approach could be to pursue a more inductive method whereby adjective pairings are obtained from players themselves in post study open-ended interviews. Similarly, another approach and source for future work to overcome this limitation is George Kelly's (1955) Personal Construct Psychology. According to Kelly (1955), because we all have a different repertory of constructs, it may be more appropriate to let respondents choose their own. I have already carried out some work in this

direction and applied it to a study to capture children's experience of role-playing characters within a computer game. Constructs were elicited from the children by asking simple questions like "what words would you use to describe [insert character's name]" and then asking them for the opposite of the word that they had just provided. Using these as biploars, children were asked to rate each character against each elicited construct while at the same time showing pictures of each character. This may go some way to overcoming children's difficulty of not understanding or misunderstanding some of the items and constructs in the questionnaire.

Probably the most serious limitation of the matrix questionnaire was its inability to detect variations in emotions, moods or experience between adjectives during the unfolding of a mediated encounter. Although continuous assessment methods such as sliders, dials and verbalizations get round this problem, they require players to divide their attention between the mediated experience and the data collection technique being used, thus disrupting what is being measured (i.e. experience). While facial analysis and physiological measures do not require the player to perform any additional operations, some work is still required in order to employ these techniques to accurately measure a range of player experiences. Valuable directions for future work would be to develop these and other continuous techniques. While it could be argued that study subject numbers were small, the results of the questionnaire matrix did provide a way to reason about the extent to which participants empathize or take-on emotions and traits of their character and other characters. Finally, supplementing this quantitative approach with qualitative data may provide a way to better relate what players feel from an encounter with a digital game to cognitive, compassionate and emotional empathy (Levenson and Ruef 1992).

Conclusion

While much interaction in digital games is performed with and through character, there are limitations in theories and methodologies for their analysis and design from the subject areas of human-computer interaction (HCI) and the experiential concept of presence. Building on work developed in the author's Ph.D dissertation (Marsh 2002), this chapter has described research that looks to activity theory, social cultural studies and film, in an effort to bridge this gap. To this aim, I have proposed a way to capture and reason about the extent to which a player perceives him/herself to be vicariously in character, is able to empathize with other characters-players and has a sense of being connected to a fantasy or simulated social and cultural mediated environment. The term coined herein to describe this sense of player engagement with character(s) and a digital game/mediated environment is "vicariously there". Results of the study presented herein show that using a questionnaire-based matrix approach provides a way to capture and reason about the extent to which players empathize or take-on emotions and traits of their character and other characters. Future research should continue to work towards validating player sense of engagement through the idea of "vicariously there" by linking empathy-match ratings and a desire to play the game or pursue activities. In addition, work should identify what makes players fall out of character, or "to corpse", and shift their focus of attention to the real-world environment. Limitations of a questionnaire-based approach have been identified and recommendations made for future work. In particular, a continuous and unobtrusive assessment technique has been argued for to detect variations in players' emotions, moods or experience during an encounter.

Digital games provide the potential for players to assume the role of anyone or anything they choose. Studying the vicarious and empathic connection between players and their own and

other characters is an important step towards understanding and in turn informing the creation or development of more complex character. The development of more complex character can help to stimulate players, encouraging them to keep playing and so continue to be "vicariously there".

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Endnotes

1. The Oxford English Dictionary (1989) defines vicarious as: “1a. That takes or supplies the place of another thing or person; substituted instead of the proper thing or person.” “4d. Experienced imaginatively through another person or agency.”

Merriam-Webster’s on-line defines vicarious as: “1a: serving instead of someone or something else.” “3: experienced or realized through imaginative or sympathetic participation in the experience of another”.

2. These discussions share similar arguments with those on affordances borrowed from J. J. Gibson and introduced to HCI by Norman (1988). “The affordances of an object refers to its possible functions: A chair affords support, whether for standing, sitting, or the placement of objects. A pencil affords lifting, grasping, turning, poking, supporting, tapping, and of course, writing” (Norman 1993:105-106). While Norman (1999) acknowledges limitations of earlier discussions (contained in: Norman 1988) that may have lead to some misunderstandings (e.g. arguing that what he was really talking about was “perceived affordances” as opposed to “real” or physical affordances), he adds that the HCI community enthusiastically took-up the idea of affordances (Norman 1999:39) while generally disregarding related concepts of constraints and culture (see: Norman 1988). He asserts that much discussion in HCI on affordances is really about conventions and behavioral constraints i.e. “physical” (Norman 1988:84), “logical” (p. 86) and “cultural” (p. 85), and the latter two in particular, are shaped by their “shared” practice that “inhibits some activities and encourages others” (Norman 1999:41). However, Norman’s (1988; 1999) discussions on concepts of constraints and culture are very brief and need developing if they are to be useful to inform interface analysis and design. Research that has applied activity theory to interactive mediated environments (IME: computer games, virtual reality, virtual environments) (Marsh 2003b) is now being combined with the notion of constraints in an attempt to work towards informing analysis to reason about appropriate artifact behavior defined by the social cultural environment depicted virtually.

3. The four ways identified by Zhon, Valiente and Eisenberg (2003) to measure empathy are firstly, self-report using questionnaires or picture-stories, secondly other-report from teachers, parents or

peers, thirdly, coding of individuals' facial, gestural and vocal indices, and fourthly, physiological measures such as, heart rate and skin conductance.

4. Adjective pairings for the matrix were initially derived from investigation of digital games reviews and magazines, interviews with a games design manager and players in arcades and a University campus to identify the language and descriptions. In addition, an investigation of empirical studies, questionnaires and related published work on presence and experiential design and evaluation from the HCI literature applied to interactive mediated environments was conducted. Several amendments to the matrix were made following pilot studies, for example, the study as described in endnote 5.

5. One pilot study was conducted at a computer games club with eight male computer games members (aged thirteen to twenty-two) using a first-person perspective shooter game played on networked desktop computers. All were very experienced games players spending around seven to twenty-eight hours per week (14.5 mean) playing games. When asked "what character did you control?" and "who were you in the game?" all participants immediately responded "I was a…": "terrorist", "counter-terrorist" or "British SAS [Special Air Service]". Eight adjective parings were used for the matrix questionnaire. This earlier version of the matrix was made appropriate for this genre and for young male teenagers and adults, and had slight variations to those listed in table 1.

Following game play, players frankly identified their objective in the game as: "kill people", "shoot opponents" and "kill other team". Players had no difficulty identifying their own and their character's emotions, moods and traits except for the anchors for "happy" – "sad" in which four

players were unsure or didn't feel that it was appropriate to select only one because they or their character felt both happy and sad, but at different points in the unfolding scenario. Empathic matches between players' emotions, mood and traits and the ratings for their characters varied with only one having an agreement (i.e. empathic match) below 50% and one with 100%. It seemed irrational that players' with offensive roles and characters with defensive roles or visa versa would have empathy for each other and so no attempt was made to provide a rating for empathic match between them. In general the responses suggested that players adhered to the social and cultural context of the game and observation of players' behavior during their encounter seemed to concur with this.

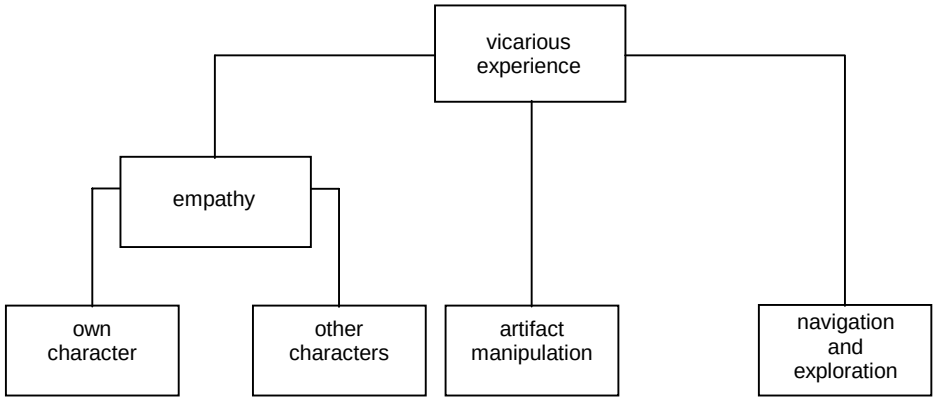

Figure 1. Framework of vicarious experience in three-dimensional digital gaming or mediated environments: navigation and exploration and artifact manipulation (that occur with or without the involvement of character), and empathy.

Table 1. Matrix questionnaire adjective pairings used in the role-playing study

confident	scared
relaxed	tense
calm	angry
happy	sad
strong	weak
brave	cowardly
cheerful	serious
kind	evil
honest	dishonest

Table 2. Empathic accuracy of role-playing characters:

players 1-12 played male characters , players 13-24 played female characters

Players	Male	Female	Sorcerer
1	8	8	5
2	7	7	4
3	9	9	6
4	8	9	2
5	9	8	6
6	7	7	5
7	6	6	5
8	8	9	2
9	6	4	1
10	6	5	3
11	5	5	2
12	9	8	4
13	7	7	5
14	9	9	5
15	7	9	6
16	8	7	2
17	7	6	3
18	9	8	2
19	7	6	4
20	9	7	3
21	5	7	4
22	6	7	6
23	7	7	6
24	9	6	1

Keywords

engagement, empathy, vicarious experience, “vicariously there”

Subject Areas

human-computer interaction, presence, activity theory, social-cultural studies, film