

The Experience of Presence in 3D Web Environment: An Analysis of Korean Second Life

SungBok Park¹, Ha Sung Hwang^{2,*}, and Myungil Choi³

¹ Hanyang University, visiting professor,
Graduate School of Journalism & Mass Communication
17 Haengdang-dong, Seongdong-gu, Seoul, South Korea
octobernine@hanyang.ac.kr

² Dongguk University, assistant professor, Dept. of Communication Studies
26, 3 Phil-dong, Chung-gu, Seoul, South Korea
hwang@dongguk.edu

³ Namseoul University, full-time lecturer, Dept. of Advertising & Public Relation
21 Mae ju-ri, Seonghwan-eup, Seobuk-gu, Chonan, South Korea
jhmi0410@nsu.ac.kr

Abstract. Second Life is a 3D virtual web environment that has aspects of visualization and sense of presence, as well as text and audio interaction. The whole research aims to explore the sense of presence experienced by online users in Korean Second Life assessing with what ways online users who engage in Korean Second Life perceive a sense of presence. This research leads us to understanding possible factors creating the sense of presence in Korean Second Life as well as in 3D web environments of the near future. Instead of providing specific response from research subjects who have experienced Second Life, this paper presents the theoretical backgrounds to speculate on Second Life constructs and features for enhancing users' feeling of presence.

Keywords: Presence, 3D Web environment, Second Life, Virtual place, Avatar, Emoticons.

1 Introduction

The ways of communication through digital media, especially the Internet, have been changing drastically with 3D virtual technology on the Internet. Second Life is the best known of this 3D online virtual world completely created and owned by its residents.

Second Life has several characteristics differentiating it from other existing online environments. Especially, the combination of all conceivable types of real-time interaction and digital embodiment found in Korean cultural variation may create various virtual human interactions unlike anything else online. Thus, this study aims to explore the sense of presence experienced by online users in Korean Second Life assessing with what ways online users who engage in Korean Second Life perceive a

* Corresponding author.

sense of presence. This study leads us to understanding possible factors creating the sense of presence in Korean Second Life as well as in 3D web environments of the near future.

2 Overview of Second Life

Bing accessible via the Internet, Second Life is an online virtual world initiated by Linden Lab that launched on June 23, 2003. It creates a highly visual, spatial, and auditory chat environment. It is also an excellent example of the current trend toward graphical, interactive domains on the Internet. Thus it is an online 3D virtual world or multi-user virtual environment (MUVE). It provides an immersive environment within which users can create digital characters, and interact with people from around the world. Residents can explore, socialize, meet other people, participate in individual and group activities, and create and trade virtual property and services with one another, or travel throughout the world, which residents refer to as the grid which is a 3D virtual technology platform. As of April, 2008, Second Life has a total number of over 13 million registered members, geographically dispersed around the country. The most recent estimates put the number of Korean users in Second Life at about 200,000.

3 Presence in SL Environment

Advances of web environments in immersive, interactive technology, combined with its increasing availability and quality, have resulted in a practical concern with the manner in which people interact with technologically mediated 3D virtual web environments and online games such as Second Life. Terms of presence or virtual presence are used interchangeably to describe the extent to which people perceive that they are actually present in an artificially created environment. Many attempts have been made to define such an experience - *the feeling of being in an environment that is virtually created* - and identify its determinants.

In the following sub-sections, we will describe the concept of presence and illustrate influential factors affecting users' presence in a technologically mediated environment, Second Life.

3.1 Overview of Presence

First introduced as "Telepresence" by Minsky [1], the term presence is investigated by researchers in a diverse set of disciplines, such as communications, psychology, computer science, engineering, and others. Both terms refer to user's subjective experience of a medium as a sense of "being there." This notion of presence is concerned with the subjective feeling of existence within a mediated environment [2,3,4,5].

According to Lombard and Ditton [6], presence is considered as a multi-dimensional concept. They identified six different conceptualizations of presence by reviewing a diverse set of literatures. These conceptualizations include, for instance, (1) presence as social richness (e.g., the extent which a medium is perceived as

sociable, warm, sensitive, personal), (2) presence as realism (e.g., the extent to which a medium can produce seemingly accurate representations of objects, events, and people), (3) presence as transportation (the feeling of “you are there”, “It is here”, and/or “we are together” , and (4) immersion (the extent of perceptual and psychological immersion in a mediated environment). Lombard and Ditton [6] combined all of these conceptualizations into a single conceptual definition of presence as the perceptual illusion of nonmediation. An illusion of nonmediation occurs when an individual is willing to overlook or fails to perceive the existence of a medium in his/her communication environment and responds as he/her would if the medium were not there [7]. This illusion leads to the subjective experience of being in environment, even when individual physically inhabit another.

There has been relatively research conducted to investigate factors that contribute to a sense of presence [e.g., 5,6,7,8]. Studies have suggested characteristics of a medium (e.g., dimensionality, interactivity, image quality, and number of sensory outputs) and characteristics of the medium user (personality type, prior experience with the medium, willingness to suspend disbelief) are important factors that contribute a sense of presence. For instance, Steuer [5] argues that the vividness and interactivity found in a medium help to evoke presence, and that identifying these attributes in different media will allow a user to predict the type of presence he/she will experience. Witmer and Singer [8] identify involvement and immersion as necessary psychological states for the experience of presence, and indicate that they are critical determinants of both the learning and performance outcomes from media use. As such, presence is determined by formal features of a medium and characteristics of the medium user [6].

3.2 Sense of Virtual Place from Virtual Constructs in Second Life

There does not exist a specific territoriality in cyberspace, rather there exists only perceived spatiality or territoriality that can be technologically mapped in computer networks enabling a person to perceive that everything exists and is located as in offline space. Rather than examining the Internet as a place for locality, scholars on the specific technical and communications features of the Internet often like to stress its ‘placeless’ nature [9]. Due to the conceptual characteristics of cyberspace placelessness, web environments seem to have no territoriality. Community studies show that a sense of place plays a crucial role in forming and sustaining community attachments and community life [10]. Some scholars also identify an evident sense of place in online communities [11,12,13]. Thus, attachment to specific virtual place in Second Life may, then, be considered to be an important factor in forming and sustaining online users’ feeling of presence. Second Life environment, as the best example to illustrate the implications of territoriality and spatiality of cyberspace, give tacit evidence to this assumption.

Only a few scholars suggest that the geographical elements of physical environments play a key role in virtual environments [13]. Such may be because cyberspace is a computer-generated conceptual space with no necessary geographical analogue. However, it seems that Second Life designers understand the purposes and effects of virtual landscapes. They make systematic efforts to increase the number of choices available to Second Life members or participants.



Fig. 1. Dokdo Island and Korean traditional ancient ships

Currently, text-based systems are giving way to virtual worlds equipped with more advanced 3D graphic interfaces. In Second Life, the metaphor of place and space has a highly visible presence, and produces hyper-real simulations that imitate physical place and space. Such a shift in virtual environments from text-based systems, such as MUDs or MOOs, to advanced 3D virtual systems, such as Second Life and various virtual worlds suggests that virtually constructed geographical landscapes may be essential for virtual environments. In addition, providing fascinating new social spaces that exist only in cyberspace, virtual environment systems can make valuable contributions to the understanding of the geographical structure of virtual space [14].

For instance, Second Life has a number of theme categories in which there are different advanced 3D graphical virtual landscapes and constructs for participants. Second Life is one of a number of commercially developed virtual reality (VR) systems that are publicly available on the web environments. Using avatars, Second Life provides a sense of geographic space, with freedom to move in different directions, and feelings of physicality [14]. In Second Life, users are able to own land and build homesteads, thereby constructing their own places for online social interaction.

The world of Second Life provides the most persuasive example of how a virtually constructed place (as place is one of the essential aspects of a physical environment) plays an important role in web environments. In addition, virtual games and virtual environment systems remind us that although landscapes are virtually constructed, they are patterned on geographical landscapes in the physical world. In more detail, all virtual constructs including weapons, artifacts, landscapes, and even most human actions in Second Life are patterned after those in the physical world. This indicates that the virtual environment itself is *conceptually* constructed on the basis of the physical environment which may provide enhanced feeling of presence.



Fig. 2. The scenery around the South of Gate in Seoul

Second Life comprises recognizable elements like buildings with floors and walls, towns with homes and streets, or landscapes with mountains, boulders, meadows and blue sky backgrounds. Many scenes recreate offline life public meeting places like bars, art galleries, parks and plazas. Second Life can create fantastical creatures of all kinds. Thus, we emphasize the importance of such spatial constructions in the continuity of a feeling of presence in Second Life, such as mediated proximity and belonging which may give us a sense of presence when we are in Second Life.

3.3 Digital Embodiment of Virtual Human: Avatar

In virtual environments, users are generally represented by virtual, or digital, embodiments, commonly referred to as avatars. As a virtual representation of a human being, avatars are graphical icons used to represent online participants, usually in chat rooms with visual interfaces. The use of avatars in cyberspace provides a new mode for rich personal interaction and communication, for the avatars provide the ability to communicate nonverbally. Many sophisticated 3-D avatars in Second Life are animated and change shape according to what the user is 'doing', such as walking or sitting. Avatars' appearance includes the way a person dresses, cuts his or her hair or decorates his or her body.

In Second Life one can choose his or her online representation, although this choice may depend on the software used and the world visited. The uses of avatars can facilitate feelings of "being there" or "being together" and re-introduce spatial elements and nonverbal cues usually deficient in traditional CMC environments [15], so that people tend to regard them as realistic representations in cyberspace. In their early get-acquainted period, online community members are likely to engage in making their online identity solid and positive in cyberspace through various, such as the

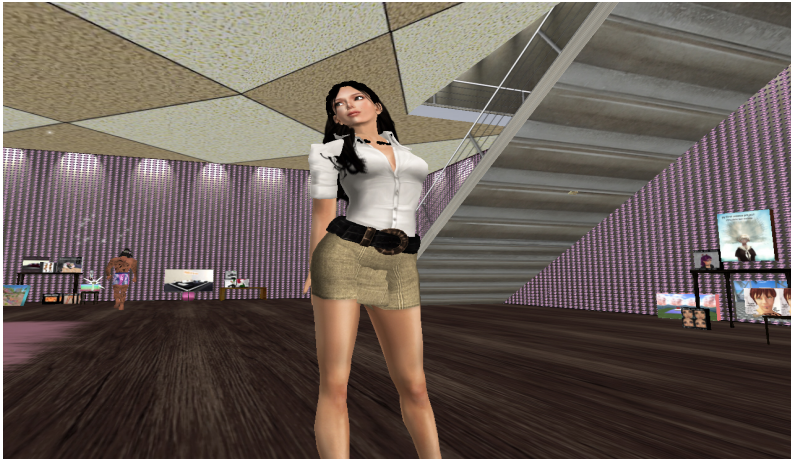


Fig. 3. Example avatar of a Korean user

manipulation and use of textual graphics, the application of other technologies that capture image from audio and visual to the Internet interface, and most importantly, through digital embodiments like avatars.

An avatar is as a virtual representation of human being in cyberspace representing as an online participant in a virtual world. An avatar functions as a virtual body. A visitor uses the avatar to get around the cyber world. When people meet virtually, their presence is partially indicated through their avatars' presence. Visitors interact through the body movements and gestures of the avatars. In a graphical virtual environment, the avatar looks like a human, though not necessarily the human it represents. An observer responds to the other avatar similar to the way they would behave towards another person's physical presence. Visitors move their avatars together when they are speaking with one another and separate them when the conversation ends. They change the avatar's facial expression to indicate emotion. They manipulate the avatar's limbs in order to make gestures.

Vilhjalmsón [16], in an analysis of the conversation transcripts, shows significant improvement in the overall conversational process and significantly fewer messages spent on channel maintenance in the avatar groups. The avatars also significantly improved the users' perception of each others' efforts. Green [17] articulates that being digital of body in cyberspace is one means of embodiment formalized by practices of representation systems. Taylor [18] also admires avatars as digital embodiments of ourselves that can provide the aspects of presence, social integration, and communication. As digital bodies, avatars disclose something about a person in cyberspace. They are public signals of who online participants are. They also shape and realize how users internally experience their selves in cyberspace. Consequently, the digital embodiment and avatar of virtual humans is to give the user as sense of presence and as the representation of one self and other self in cyberspace.

As elements in Second Life, avatars—including their appearance, behaviors and controls—condition the expectations and behaviors of Second Life participants or visitors. Based on extensive databases, geographical information systems,

multi-media and virtual reality modeling, in 3D graphical virtual worlds users can “step into and move around” within these cities, contribute to discussions on different kinds of forums, and run daily errands [19, p.154]. Such virtual avatar worlds are the expression of the desire of humans to create in the digital environment a world as rich as the offline reality in which we live.

Virtual human, computer-generated entity that looks and acts like people and engage in conversation in virtual environments have become prominent in the study of communication. The idea of virtual human envisions future computer systems that are social actors rather than tools. Techniques from artificial intelligence, computer animation, and human-computer interaction are increasingly converging in the field of embodied conversational virtual agents. Such agents are envisioned to have similar properties to humans in face-to-face communication, including the ability to generate simultaneous verbal and non-verbal behaviors.

3.4 Emotional Indicators: Emoticons

As people continue to interact and maintain relationships in cyberspace, they gradually move toward deeper areas of their mutual interpersonal relationships through verbal indicators, such as the emoting function and emoticons, in order to compensate for the limits of social context and the lack of nonverbal cues which may enhance a feeling of presence in virtual environments. In addition, CMC media are shifting away from primarily text-based interaction to more audio and visual-based interaction. In Web environment and in the new multimedia possibilities of the Internet, text, sound, video and image produce a wider range of digitized symbolic cues and these compensate for emotions and presence assumed to be lacking in online interaction.

There are ways to make up for the lack of physical presence in the CMC environment. Using emotional indicators, such as emoting, emoticon, and avatar, can create a sense of presence in which we can identify with the other person. For instance, emoticons (emotional icons) are used to compensate for the inability to convey voice inflections, facial expressions, and bodily gestures in written communication.

Emulating a facial expression and expressing a feeling that supplements the message, emoticons are used most in meet and greet situations where one wants to appear approachable. Some researchers illustrate how emoticons are useful for making up for the lack of nonverbal context cues in virtual environments [20,21,22,23]. Emoticons may indicate the degree of intimacy in a personal relationship. Utz [24] argues that the more emoticons a person use, the more friendships that person builds. Baym [20] also states that community members in cyberspace create expression through emoticons and abbreviations. The combination of multiple features of CMC technology and using emotional indicators in online interaction can be a powerful element for enhancing sense of presence in Second Life.

4 Overview of Research Design

This research used a qualitative analysis of the user experience in Second Life in 4 undergraduate classes. As one of course assignments, total number of students who participant in this research for a week was 214. The process to evaluate the student

experience in Second Life is inductive method using grounded theory and cultural theory as a foundation. Every student was asked a series of open-ended questions designed to gather their views about and experience with Second Life activities. The central question posed to the students for this paper was “in what ways and to what extent do you feel a sense of presence to Second Life?” The generated data were categorized and refined into common themes.

5 Conclusion

Second Life is social spaces formed and maintained by CMC technologies, human interaction, and the individual’s interpretations. Today’s advanced technology provides a user with a unique experience that one has left real world and is now “present” in the virtual environment. This notion of presence in the virtual world has been central to both VR researchers and designers since it is introduced [1]. There have been many attempts to examine what presence is, how it occurs, and what causes and effects are. Yet, the benefits of presence, either to enhance interactive VR design or human performance, have not been clearly discovered. Given that, this paper suggests several interposed factors that may facilitate the perceived presence of users interacting with technologically mediated environments such as Second Life. Because our web environment is still undergoing constant development, future web environment is continuing in the direction of more complicated and enhanced GUI providing an enhanced sense of presence.

References

1. Minsky, M.: Telepresence. *Omni* 3, 45–51 (1980)
2. Heeter, C.: Being there: The subjective experience of presence. *Presence: Teleoperators and Virtual Environments* 1(2), 262–271 (1992)
3. Kim, Biocca: Telepresence via Television: Two dimensions of Telepresence May Have Different Connections to Memory and Persuasion. *Journal of Computer-Mediated Communication* 3(2) (1997), <http://www.ascusc.org.jcmc/v03/issue2/>
4. Sheridan, T.B.: Musings on telepresence and virtual presence. *Presence: Teleoperators and Virtual Environments* 1(1), 120–126 (1992)
5. Steuer, J.: Defining virtual reality: Dimensions determining telepresence. *Journal of Communication* 42(4), 73–93 (1992)
6. Lombard, M., Ditton, T.B.: At the Heart of it all: The concept of presence. *Journal of Computer-mediated communication* 3(2) (1997), <http://www.ascusc.org.jcmc/v013/issue2/>
7. Lombard, M., Reich, R.D., Grabe, M.E., Bracken, C., Ditton, T.B.: Presence and Television: The role of screen size. *Human Communication Research* 26(1) (2000)
8. Witmer, B.G., Singer, M.J.: Measuring presence in virtual environments: A presence questionnaire. *Presence: Teleoperators and Virtual Environments* 7, 225–240 (1998)
9. Rheingold, H.: *The virtual community: Homesteading on the electronic frontier*, revised eds. The MIT Press, Cambridge (2000)
10. McMillan, D.W., Chavis, D.M.: Sense of community: A definition and theory. *Journal of Community Psychology* 14(1), 6–23 (1986)

11. Baym, K.N.: The emergence of on-line community. In: Jones, S.G. (ed.) *Cybersociety 2.0: Revisiting Computer-Mediated Communication and Community*, pp. 35–68. SAGE, Thousand Oaks (1998)
12. Baym, K.N.: *Tune in, Log on: Soaps, Fandom, and Online community*. SAGE Publications, Thousand Oaks (2000)
13. Gotved, S.: Spatial dimensions in online communities. *Space & Culture* 5(4), 405–414 (2002)
14. Dodge, M.: Explorations in Alpha World: The geography of 3-D virtual worlds on the Internet. In: *The RGS-IBG Annual Conference for Virtual Reality in Geography-Workshop and Special Session*, Leicester, England, January 4-7 (1998)
15. Mantovani, G.: The Psychological construction of the Internet: From information foraging to social gathering to cultural mediation. *CyberPsychology & Behavior* 4(1), 47–56 (2001)
16. Vilhjalmsson, H.H.: *Avatar augmented online conversation*. Doctoral dissertation. Program in Media Arts and Sciences at the Massachusetts Institutes of Technology (2003)
17. Green, N.: *Beyond Being Digital: Representation and virtual corporeality*. In: Holmes, D. (ed.) *Virtual politics: Identity & Community in Cyberspace*, pp. 59–78. SAGE, London (1997)
18. Taylor, T.L.: *Living Digitally: Embodiment in Virtual Worlds*. In: Schroeder, R. (ed.) *The social life of avatars: Presence and interaction in shared virtual environments*, Springer, London (2002), <http://www.itu.dk/~tlrtaylor/papers/Taylor-LivingDigitally.pdf> (Retrieved on January 20, 2009)
19. Ridell, S.: The web as a space for local agency. *Communications* 27, 147–169 (2002)
20. December, J.: Units of analysis for Internet communication. *Journal of Communication* 46, 14–38 (1996)
21. Talamo, A., Ligorio, M.: Identity in the cyberspace: The social construction of identity through on-line virtual interaction. In: *1st Dialogical Self conference*, Nijmegen, June 23-26 (2000)
22. Wolf, A.: Emotional expression online: Gender differences in emoticon use. *CyberPsychology & Behavior* 3, 827–833 (2000)
23. Utz, S.: Social information processing in MUDs: The development of friendships in virtual worlds. *Journal of Online Behavior* 1 (2000), <http://www.behavio.net/JOB/v1n1/utz.html>