

Presence and mediated interaction: A means to an end?

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ABSTRACT

Promoting a sense of presence is often identified as a prerequisite for mediated interaction. To do so, however, we need a thorough understanding of what presence encompasses and how it can be influenced. The goal of this paper is to elaborate on the different aspects of the sense of presence as identified in the literature, while illustrating whether and how these aspects are promoted in three virtual world cases. We hope to evoke reflection on the link between promoting presence and supporting mediated interaction.

Categories and Subject Descriptors

H.5.3 [Group and Organization Interfaces]: Theory and models

General Terms

Design, Theory.

Keywords

Presence, Mediated interaction, Virtual worlds, Case studies

1. INTRODUCTION

Bronack et al. [2] identify promotion of presence as an essential component of an effectively designed virtual world, that is, a virtual world that enables effortless meaningful communication between and towards its participants. To promote the sense of presence - in the design of virtual worlds and mediated interaction applications in general - we need clarity on what it comprises and what factors determine it.

The complex nature of presence becomes apparent in the statement on this concept issued by The International Society of Presence Research [6]. Summarizing this statement, presence can be described as a variable psychological state or subjective perception that can be part of any technology-mediated experience, that is influenced by factors proper to the medium, the represented content and the user, and that is multi-dimensional.

In our recent work, we consulted the literature on presence (specifically, [1], [4], [5], [8] and [9]) to gain insight on the

various dimensions of presence. From these reference works, we extracted a hypothetical framework that attempts to link the various dimensions of presence and their possible determinants. We then applied this framework to three cases.

The selected cases were three virtual worlds for a young audience: Neopets (www.neopets.com), Chobots (www.chobots.com) and UBFunkeys (www.ubfunkeys.com). Neopets' website offers a virtual world/community where users become the owners of one or more virtual pets. Chobots is a web application offering a family oriented virtual world in which users run about as aliens. UBFunkeys is a software application that comes with tangible toy figures needed to access different parts of the virtual world.

The goal of this paper is to concisely present the various aspects of presence, each time illustrating how these aspects of presence are promoted or counteracted in the selected cases.

2. DIMENSIONS OF PRESENCE

The descriptions of the different aspects of presence in this paper are based primarily on the seminal work of Lombard and Ditton [8], who conducted a review of the literature on presence. Although they wrote their review twelve years ago, the dimensions of presence they identified, are still the main conceptualizations found in the literature today. We adapted their descriptions based on related works referred to in the introduction and based on personal critical arguments.

2.1 Social presence

A first conceptualization of presence that Lombard and Ditton [8] derive from the literature is that of social presence. Biocca et al. [1] identify three seemingly interrelated dimensions of social presence: co-presence, psychological involvement and behavioral engagement. Users first need to become aware that another actor is within range (i.e., co-presence) before a psychological relationship with that other may be established (i.e., psychological involvement). The latter occurs when users pick up (non)verbal cues that signal the other's intentions and thus enable mutual understanding. As a source of such cues, behavioral engagement, such as play, contributes to building psychological rapport.

In the cases we analyzed, co-presence is supported by direct and indirect evidence of other users. In Chobots, for example, the visualization of users in the virtual world as alien avatars provides direct evidence of their presence. In Neopets, the high scores listed in the mini-games implicitly suggest that other players were, and may still be, around.

In the selected cases, users can gain mutual understanding through various means of interaction. For instance, they can engage in chat

or multiplayer games as forms of synchronous verbal and non-verbal interaction. They can start a conversation on the forum or, as on Neopets, exchange items as forms of asynchronous verbal and non-verbal interaction. In addition, the cases show that users can also convey their feelings and beliefs in a non-reciprocal way, for instance, through profile pages and avatar personalization.

2.2 Realism

A second way in which presence has been conceived involves the sense of realism. According to Lombard and Ditton [8] this can refer to two types of realism: perceptual realism and plausibility (or social realism). We believe realism of interaction should be included since the first two only involve realism of representation.

2.2.1 Perceptual realism

This first component of the sense of realism corresponds to the sense that objects, events and people represented by the medium look, sound, feel, taste and smell like the “real” thing.

In the three cases, the cartoon like style of the virtual worlds counteracts the sense of perceptual realism. So does the fact that not all the user’s senses are addressed. Indeed, the cases mainly stimulate the visual and auditory senses, although UBFunkeys adds a tactile dimension to the user experience.

2.2.2 Plausibility

This second component refers to the sense that what is represented is plausible, but not necessarily “real” as described above. According to Connell and Keane [3], a sequence of events is judged to be plausible when it matches users’ prior knowledge and experience.

When our knowledge of the everyday world is taken as the frame of reference, the cases we analyzed do not offer very plausible content. The virtual worlds, its inhabitants and some of their behaviors are clearly fictional. Still, there are parallels with everyday life such as the performance of routine activities (e.g., eating).

2.2.3 Realism of interaction

A third component of the sense of realism is the sense that the way we interact with the objects and people represented by the medium is similar to real world interaction.

The selected cases involve conventional computer interaction, which bears little resemblance with real world interaction. Users navigate and select items using the computer mouse and occasionally use the keyboard (e.g., for chat).

2.3 Transportation

The third conceptualization that Lombard and Ditton [8] distinguish is presence as transportation. This can manifest itself in different forms. Users can have the sense that something is brought to them, e.g., when listening to the radio. In virtual world applications, users often have the experience of being some place other than their physical location. Sometimes, they share that virtual place with other users.

The sense of transportation requires that users are able to mentally construct a space or scene and are then able to accept that they are in it. In the selected cases, the user is given a sense of space by the implementation of depth cues in the visualization of the virtual world, such as occlusion and perspective. A combination of

storyline, visuals and musical ambience helps to set the scene; the emphasis on each of these components varies from case to case.

Acceptance of being in the virtual world is believed to be facilitated by seeing (part of) yourself there [4] and by having control over it ([4],[9]). Both Chobots and UBFunkeys provide users with visual evidence of themselves, in particular, by offering them a godlike perspective (i.e., third person perspective). In Neopets, however, users do not see themselves in the virtual world, which is detrimental for the sense of transportation. In all three cases, users mainly have substantial control on their environment in the (mini-)games which are to a greater (Chobots) or lesser extent (Neopets) integrated in the virtual world.

2.4 Immersion

The fourth conceptualization of presence that Lombard and Ditton [8] identify is immersion, which has a sensory and an attentional component. As the authors explain, strong sensory immersion refers to a state in which the user’s senses are all fully addressed by the medium. As such, this component depends on the capacity of the medium to stimulate various senses and shut out outside influences. Strong attentional immersion refers to a state in which the user’s attention is entirely devoted to the mediated content. Thus, this component depends on the availability of content that is salient enough to grab and relevant enough to hold the user’s attention and on the presence of possible distracters (see the literature on bottom-up and top-down attention, e.g., [7]).

In the cases we studied, sensory immersion is not strongly promoted due to their emphasis on visual stimulation and their reliance on the user to reduce the impact of external influences such as environmental noise. While the cases provide colorful content that easily attracts attention, it is difficult to predict whether users will find the content relevant and thus reach attentional immersion. We did observe that in Neopets it is harder to focus because of the abundance of content items, relevant and irrelevant (i.e., advertisements), competing for attention.

2.5 Social actor

The fifth conceptualization of presence listed by Lombard and Ditton [8], relates to phenomena such as interacting with a computer-generated character or replying to a person who is talking on television. Common to these phenomena is that the user responds to or interacts with an entity that is not an autonomous intelligent being and/or is not able to reciprocate the user.

According to Lombard and Ditton, users fail to acknowledge that the entity is not a social actor. However, we believe that users may exhibit this behavior even though they are well aware that the entity they are dealing with is not a social actor. For instance, they may automatically respond to certain social cues (e.g., smiling to the sympathetic person on tv) or they may act with another goal than to actually interact (e.g., venting frustration). If the user indeed believes an encountered entity to be a mediated social actor just like him or her, the experience of that entity’s presence is likely to be the same as what we described in Section 2.1. If this is not the case, however, this experience is likely to differ.

While examining our three cases, repetition and lack of (or limited) interactivity appeared to be clues that a character was computer-generated. Interestingly, a character that was evidently computer-generated, a virtual pet, evoked emotional responses by expressing needs and emotions.

2.6 Medium as social actor

Lombard and Ditton [8] distinguish a sixth conceptualization of presence that relates to phenomena similar to those in 2.5. Here, the medium itself, instead of a mediated entity, is treated as a social actor. Because the focus of our cases studies was on presence within the applications and not on presence of the medium itself, we did not include it and will not discuss it further.

3. LESSONS LEARNT

While looking for potential cases and analyzing the selected cases, we have gained a number of insights that we would like to share.

We found that developers of virtual worlds for children have concerns for the risks tied to social presence, such as harassment. In the selected cases, these concerns are mirrored in the implementation of predefined or moderated chat. We also noticed applications in which access to other users was impossible. This solution seems too radical; although the risks of social presence are reduced, the benefits of social presence are also lost.

The characteristics of the selected cases do not support a realistic experience. However, the apparent success of these and similar cases compels us to nuance the importance of realism. Indeed, it may be more appropriate that the representation and interaction style match the goal and context of use. Also, users might not use knowledge of the everyday world but of the virtual world as a reference. Finally, consistent mapping may be more important for presence than “natural” mapping. This requires further research.

When studying the different cases, we found that a sense of space is evoked by means of occlusion and perspective. Furthermore, users are given evidence of themselves in the virtual world through a third person perspective (at least, in Chobots and UBFunkeys). Interestingly, these factors seem to compensate for the absence of factors more commonly related to the sense of transportation, i.e., 3D stimulation and a first person perspective.

In the cases studied, it was hard to establish whether attentional immersion is promoted, because the relevance of the content depends on the user’s interests. Developers may try to increase the probability that users find something of interest by offering a great variety of content. However, given our experience with the cases, we emphasize that the content should be provided in a structured way, lest the users lose focus. In addition, the application should be marketed appropriately so that new users are not disappointed.

Finally, we found that the virtual characters can have very different roles. Certain characters are simply intended to make the virtual world seem less empty, while others are intended to establish an affective relationship with (e.g., virtual pets). It appears to us that this role can help to determine how much effort should be made to make the character appear to be a social actor.

4. DISCUSSION

In this paper, we gave a brief overview of the various dimensions of presence based on existing literature and we illustrated how these aspects of presence are promoted or inhibited in a selection of virtual world applications appealing to a young audience.

Our examples pertained to medium and content characteristics that are believed to promote or hinder the sense of presence.

However, user and context characteristics may interact with medium and content characteristics so that they enhance, dampen or even eliminate effects of the latter. They may also compensate, to some extent, for a lack of appropriate medium and content characteristics. For instance, the imagination of the user may compensate for the lack of a strong narrative to set the scene.

To conclude, we return to Bronack et al. [2] who argue that promoting presence is essential for meaningful interaction. This begs the question of which dimensions of presence are essential for meaningful interaction? And, what degree of presence is optimal? For instance, it seems straightforward that being able to establish a psychological relationship with others will enhance interaction, but sharing a virtual space may also be beneficial for social interaction. With regard to the second question, we may be tempted to answer that maximal presence is optimal. However, too high presence of users, for example, may actually inhibit interaction. These issues merit further attention of researchers and practitioners who are interested in enhancing mediated interaction.

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