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Video Mediated Communication (VMC)

Producing a sense of presence between individuals in a shared virtual reality

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Abstract. One of the main objectives of the use of video mediated distance communication is the production of a sense presence and togetherness between the participants as well as a shared sense of space. In a series of test-case studies with asynchronous and synchronous distance techniques we have seen that the feeling of participation and presence are less dependent on technological fidelity factors than on dramaturgy and storytelling techniques.

An experienced sense of presence and immersion can be produced with relatively simple technical means. In this paper a communication model, a set of determining factors of presence, and examples from a test-case study are presented.

Keywords: Virtual reality, video, media, communication, storytelling, narration, distance communication.

1. INTRODUCTION

In this paper I hope to contribute to the discussions on the building of models for comparison of research results within video mediated communication. I also want to pay tribute to all creative use of moving images and audio, contributing to the sense of presence, emotion, trust and confidence, these basic needs in life.

2. A COMMUNICATION MODEL – the telepresence view

A definition of video communication, not based on technology, might be needed to permit variation across technologies along a number of dimensions as video technology changes and becomes one of many mediators. The traditional communication model [1] may preferably be replaced by the communication model of Steuer after Krueger [2].

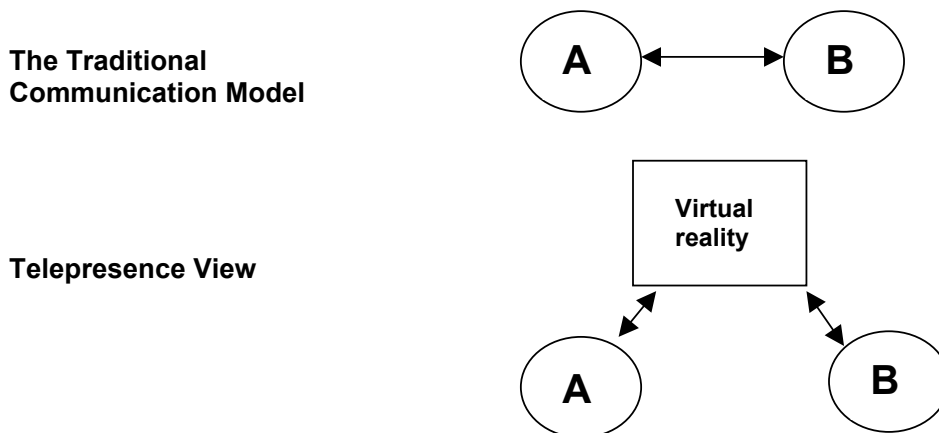


Figure 1 Two models of mediated communication between A and B, the Traditional Communication Model and "The Telepresence View"

In this model the term “Virtual reality” is tied to an experience rather than to a machine. This can be the experience of being together in a shared virtual environment. Telepresence is defined as the subjective experience of being together in one place when one is geographically situated in another (after the classic paper by Minsky) [3]. According to the model, telepresence or presence can be experienced through virtually any technology used in mediated communication. Newspapers, letters, and magazines place the reader in a space in which the writer is telling a story; television places the viewer in a virtual space in which both viewer and on-screen objects are present; and video games create virtual spaces in which the game-player is an actor [2].

3. THE BUILDING BLOCKS OF PRESENCE PRODUCTION

Enlund proposes three basic factors that determine the sense of presence and reality in the consumer, or receiver, of virtual reality products or services: the sensory environment, the individual preconditions present, and the characteristics of the content delivered [4]. Figure 3 illustrates these factors and it is suggested that these factors can be further sub-divided according to the dimensions of Steuer and others.

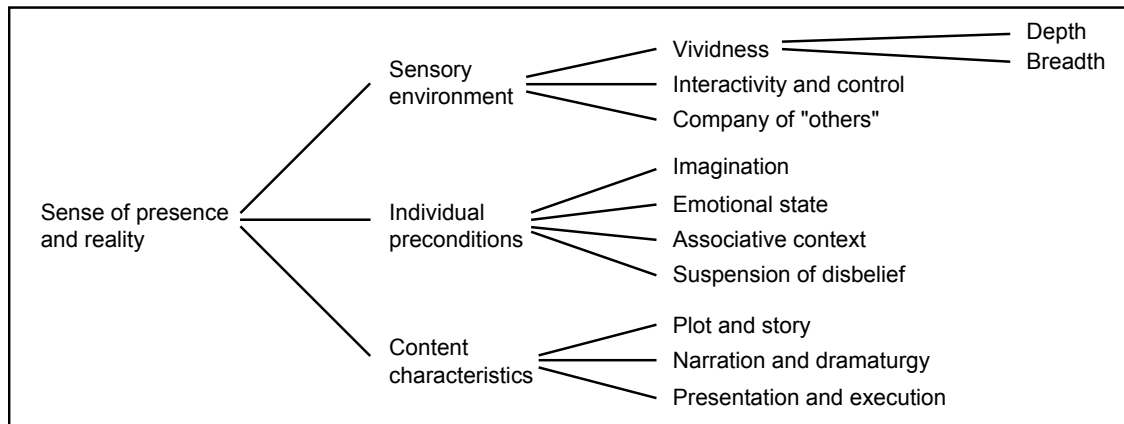


Figure 2 Factors creating a sense of presence and reality [4].

The producer of virtual reality may mainly influence the sensory environment and the content characteristics, although, e.g., special designed physical entrances to virtual reality performance spaces may influence the individuals’ emotional state. But still the producers of virtual reality or presence should concentrate their efforts on the technical skills needed to improve the sensory environment for the users as well as on learning how to produce quality content that will support the creation of a strong sense of presence and reality [5].

4. EXAMPLES FROM A TEST-CASE STUDY

The main goal of the test case studies was to investigate presence through a set of different contexts experimenting with shared person and/or task spaces [6]. The content of a course given jointly at the Royal Institute of Technology (KTH) in Stockholm, Sweden and Gjøvik University College in Norway called Telepresence production [7] is related to the continuous ongoing investigation on the phenomenon of presence. From 1997 to 2002, more than 300 students have been learning about storytelling, results from presence research and

characteristics of different distance technologies in order to gather basic knowledge for their projects and exams. Practical examples were presented in lectures given both at a distance from Sweden and locally in Norway. The students' project-based exams, lectures and tutoring have been used as a test bed for new development, experiments, observation and analyses connected to presence research work [8], e.g. questionnaires for measuring Immersive Tendencies (ITQ), Presence (PQ) and Social Presence (SPQ) [9]. The courses have, in general, been "meta" courses, using video mediated presence from Stockholm to teach the students in Norway about the main principles of producing video mediated presence.

The experiments can be summarised by the types of exam projects that the remote students at Gjøvik University College have undertaken:

- *Games, competitions*, e.g. "Who wants to be a millionaire?" and "bit by bit", a game between two competing groups at a distance trying first to recognize an object coming up on the computer screen piece by piece.
- *Instruction*, e.g. software education or support, origami, LEGO building, guitar playing, card tricks and computer work ergonomics.
- *Role play and ceremonies*, e.g. court trials, and theatre plays, such as "Superman".
- *Multipoint cooperation*, e.g. controlling a building process and composition of music.
- *Interactive information packages*, e.g. interactive TV news and travel agency services.

The results of the experiments indicate that many factors such as good storytelling, interaction and control let the participants forget the existence of a medium during the low budget technological mediated experience – the experience of the perceptual illusion of non-mediation defined as presence by Lombard and Ditton [10].

Role play and ceremonies – a virtual marriage

I will here present in more detail an experiment related to role play and ceremonies – the virtual marriage. In this exam production three physical spaces were interconnected with video and audio communication on ISDN (256 Kbps) and direct links. The synopsis described a couple wishing to get married but because the bridegroom was in prison (space A) and could not physically be present in the church with his bride (Space B) they had decided to

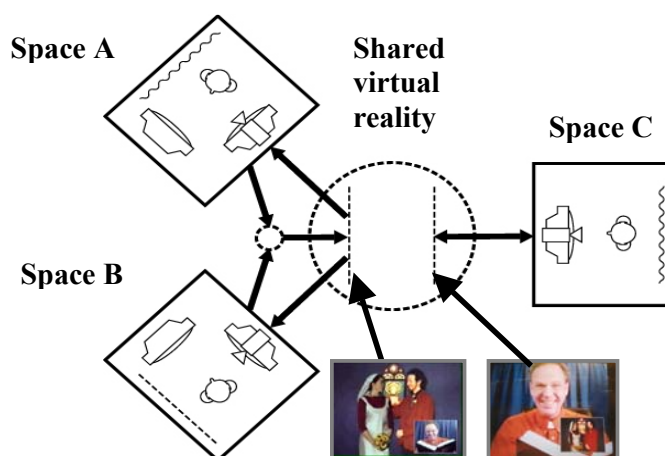


Figure 3 Virtual marriage - video mediated togetherness in a "virtual church".

carry out the ceremony at a distance. The “minister”, willing to marry them, was in Stockholm (Space C).

Simple color-key techniques were used to mix the person in space A into space B. The secondary monitors supported the transmission of gaze, gesture and facial expressions between the couple and the “minister”. The distance techniques also supported eye-contact between the participants, and the motivation for the selected composition of the different images were compensating for differences of screen sizes and body placement used in the communication. The speed of interaction, also called response time between the participants, was less than 200 mS and acceptable for the video mediated communication skill [11]. The means of expression considered relevant for the experiment – the elements of the narrative – could be divided into two categories: those belonging to the Plan of Event (How we see and hear as we interact) and those belonging to the Plan of Discourse (What we see and hear as we interact) [12].

The participants reported a strong emotional experience of togetherness in the shared virtual space, the “virtual church”. The results from this experiment and also from other studies support the hypothesis that even simple technology may be used to achieve a good sense of presence and reality at a distance. The key factor seems to be storytelling and with good storytelling even simple technology works [5].



Figure 4 A computer generated shared virtual reality “person space”.



Figure 5 A video mediated shared virtual reality “task space”.

Figure 3 and 4 are pictures from another exam project called “Estonian Easter traditions”. One interpreter is seen as a living picture on the wall in the “traditional” room behind the Norwegian and Estonian girls dressed in national costumes. Three geographically separated spaces with participants were, in this production, interconnected including the interpreter, the girls and two participants in Stockholm, not visible in figure 3 but sitting in front of the table. The interpreter translates the dialogue in the room and the girl to the left turns her head, as is natural in a real situation, to pay attention when the other girl talks. In figure 4, color-key technology has been used to share a common task space for “egg rolling”. The hand on the left belongs to the participant in Stockholm and the girl on the right is sitting in Norway. The results from the exam indicated a strong sense of presence and reality both related to the shared virtual person space and the shared virtual task space. Again, quite simple technology was used and storytelling seemed to be the most important factor for creating presence.

5. CONCLUSION

The basic factors producing feelings of presence and reality in virtual reality or media applications and services are related to sensory environment, individual preconditions and storytelling. The key factor is storytelling. With good storytelling, even simple technology

works. This is best illustrated by the simple fact that a tale well told will transport the audience into “another world” even if the medium is “low tech”, e.g., a traditional book or a bedtime story read aloud” [4], [5], [7], [13].

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