

Staying in Touch

Social Presence and Connectedness through Synchronous and Asynchronous Communication Media

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Abstract

The emergence and proliferation of email, mobile communication devices, internet chatrooms, shared virtual environments, advanced tele-conferencing platforms and other telecommunication systems underline the importance of developing measurement methods that are sensitive to the human experience with these systems. In this paper, we discuss the concepts of social presence and connectedness as complementary notions, each relating to a different set of media properties that serve distinct communication needs.

1 Introduction

Human beings are social beings. We have a fundamental need to communicate, to form, maintain and enhance social relationships. This well-known fact is illustrated by the massive success of recent communication media such as email, mobile telephony, and SMS, but the basic insight can be traced back to the days of Aristotle, or even earlier. Maslov's theory of human needs, formulated in the 1950s, illustrates that social interaction is essential to satisfying human needs at several levels, in particular needs for belonging, love, and esteem, although at all other levels the formation of social networks may facilitate the satisfaction of the various needs.

Media technologies have significantly extended our reach across space and time. They enable us to interact with individuals and groups beyond our immediate physical surroundings. An increasing proportion of our daily social interactions is mediated, i.e. occurs with representations of others, with virtual embodiments rather than physical bodies. The extent to which these media interactions can be optimised to be believable, realistic, productive, and satisfying has been the topic of scholarly investigations for several decades – a topic that is only increasing in relevance as new communication media emerge and become ubiquitous.

In order to optimise the range of communication media for different users, contexts (e.g. home, mobile, work), bandwidths, and modalities, we need experiential metrics by which to judge the quality of the appliances, the services, and the interactions they afford. Several measures are already available that allow the assessment of functionality and usability. However, measuring the quality of the mediated interaction itself remains a considerable challenge. How is the mediated interaction experienced? Does it fulfil real communication needs? Does it resonate with the context and the specific user requirements? Does it enable a sense of connectedness, of belonging, of identification? Is it just as good as 'being there' face-to-face, or maybe even better? Or maybe it's a different experience altogether?

We need a theory and measurement methodology that allows us to answer such questions. This clearly requires going beyond technology assessments, and into social psychology, sociology, ethnography, and philosophy of mind (Biocca & Harms, 2002). The concept of social presence, i.e. the sense of being together, provides us with a useful point of departure in this respect, but, as we will argue in this paper, the concept itself is intrinsically limited in its application, such that it cannot account for the whole gamut of experiences associated with communication technologies available today.

2 Social presence and media richness

In their pioneering work, Short, Williams and Christie (1976) conceptualise social presence as a way to analyse mediated communications. Their central hypothesis is that communication media vary in their degree of social presence and that these variations are important in determining the way individuals interact through the medium. Media capacity theories, such as social presence theory and media richness theory, are based on the premise that media have different capacities to carry interpersonal communicative cues. Theorists place the array of audio-visual communication media available to us today along a continuum ranging from face-to-face interaction at the richer, more social end and written communication at the less rich, less social end.

Richer media are traditionally considered to be those that enable the transmission and display of nonverbal communicative cues. In face-to-face communication, the nonverbal channels are continuously attended to and communicate information that is primarily affective in quality and connected with personal relationships. In this respect, the nonverbal channels seem to be less controllable than the verbal channels, i.e. they are more likely to “leak” information about feelings.

Argyle and Dean (1965) argue that interpersonal intimacy is kept at an optimal, equilibrium level through factors as physical distance, smiling, eye contact and personal topics of conversation. Other scholars have added to this list of intimacy behaviours to include factors such as gestures, touching, vocal cues (e.g. tone of voice), turn-taking behaviour in dialogues (e.g. frequency of interruptions), the use of space (e.g. moving towards someone) and verbal expressions directly acknowledging the communicative partner (e.g. ‘How did you do that?’ or ‘I see what you mean’). Wiener and Mehrabian (1968) have applied the concept of immediacy, i.e. the psychological distance a speaker puts between himself and the hearer, to an understanding of speech. They showed that the choice of ‘We...’ as opposed to ‘I...’ or ‘You...’ connote a feeling of closeness and association. Thus, supporting intimacy and immediacy behaviours seems to be particularly relevant for engendering social presence through media.

Biocca and Harms (2002) have made significant advances in developing a more comprehensive theory of social presence. In line with most other definitions, they define social presence as a “sense of being with another in a mediated environment”. They continue their shorthand definition by stating that “social presence is the moment-to-moment awareness of co-presence of a mediated body and the sense of accessibility of the other being’s psychological, emotional, and intentional states” (p.14). Importantly, they distinguish three distinct levels of social presence. Level 1 is the perceptual level – primarily the detection and awareness of the co-presence of the other’s mediated body. The second, or subjective, level entails the sense that the user has of the awareness of the other, and the level of accessibility to the others attentional engagement, emotional state, comprehension, and behavioural interaction. The third level is a dynamic, intersubjective level. It is comprised of the user’s sense of the other’s sense of social presence of them – i.e. the perceived

symmetry of social presence. These theoretical concepts have been translated into a questionnaire measure of social presence that is currently being validated (Biocca, Burgoon, Harms, & Stoner, 2001; Biocca & Harms, 2002).

3 Face-to-face and beyond

The majority of tele-relating studies to date have focussed on audio- and videoconferencing systems in the context of professional, work-related meetings and computer-supported collaborative work (CSCW). Using such systems, participants typically appear in video-windows on a desktop system, or on adjoining monitors, and may work on shared applications that are shown simultaneously on each participant's screen. Examples include the work of Bly, Harrison, & Irwin (1993), Fish et al. (1992), and Gaver et al. (1992). As more bandwidth becomes available (e.g. Internet2), the design ideal that is guiding much of the R&D effort in the telecommunication industry is to mimic face-to-face communication as closely as possible, and to address the challenges associated with supporting non-verbal communication cues such as eye contact, facial expressions and postural movements. These challenges are addressed in projects such as the National Tele-Immersion Initiative (Lanier, 2001), VIRTUE (Kauff, Schäfer & Schreer, 2000), and TELEPORT (Gibbs, Arapis & Breiteneder, 1999), where the aim of such systems is to provide the remotely located participants with a sense of being together .

Complementary to this approach however, is the appreciation and utilisation of the considerable potential of communication media to provide features typically unavailable in face-to-face situations, such as saving the history of interactions, or changing the representation of self and others (Hollan & Stornetta, 1992; Clark & Brennan, 1993; Heeter, 1999). Clark and Brennan (1993) have characterised different properties that communication media may offer (p.229): co-presence (A and B share the same environment), visibility (A and B are visible to each other), audibility (A and B can communicate through speaking to each other), co-temporality (B receives at roughly the same time as A presents, i.e. synchronous communication), simultaneity (A and B can send and receive at once and simultaneously), sequentiality (A's and B's turns cannot get out of sequence as in asynchronous communication), reviewability (B can review A's message), and revisability (A can revise messages for B). Interestingly, these properties indicate that face-to-face communication lacks opportunities offered by some telecommunication media. For example, reviewing a message before sending it proves to be difficult in face-to-face conversation, while email supports such functionality. Inasmuch as these functionalities go beyond mimicking face-to-face encounters, social presence measures need to be complemented to properly account for the user experience in this regard.

4 Staying in Touch

A more recent focus of research in HCI and CSCW, influenced by previous work in Media Spaces (Bly, Harrison & Irwin, 1993) and Portholes (Dourish & Bly, 1992), as well as current trends in ambient intelligence, are *awareness systems* for use in personal settings – either home or mobile. Here, lightweight, emotional, informal forms of communication are being facilitated by systems that help people to effortlessly maintain awareness of each other's whereabouts and activities. Examples include the work by Hindus et al. (2001) and Markopoulos et al. (2003). In line with Marc Weiser's notion of calm computing (Brown & Weiser, 1996), such systems can typically be always-on, yet be very gentle or calm in terms of attentional demands. When attention is asked, it should typically move from background to foreground in an unobtrusive manner. As the attentional demands are kept to a minimum, these systems should blend into the background and

are effectively intended to be ignored until the user feels like communicating, i.e. asynchronous communication.

The current generation of awareness systems are all experimental. Field tests have been limited to the workplace, or to Wizard-of-Oz type evaluations of limited functionality prototypes in the home. To date, awareness needs have been served by existing media, such as the telephone. Markopoulos et al. (2003) explored some of the limitations of existing media for awareness purposes, in particular aimed at the elderly as a special interest user group. Reported drawbacks of using existing media for staying in touch included their synchronous nature (not practical for both parties at the same time) and their need to be tied with explicit communication interactions (e.g., needing an excuse to communicate). In addition, with regard to video communication, Bouwhuis (2000) found that it could be perceived to threaten privacy, in particular because the camera would be capturing private information not explicitly intended to be communicated, e.g. certain valuable properties, untidiness of the home or the clothing, presence of visitors, etc.

The aim of awareness systems is often simply to stay in touch, i.e. to be reassured about the well-being of others, to let others share your experiences, to let someone know you're thinking of him/her, or to create opportunities for synchronous communication. In other words, for this type of communication, the informational content of the message is of secondary importance to the emotional, relational content that is being transmitted. What is important to note here is that the concept of social presence may not be the best applicable experiential metric. In effect, when considering the theoretical framework described by Biocca & Harms (2002), outlined previously, the most basic level of perceptual awareness is almost absent. From a media richness point of view, awareness systems may be very poor, and social presence measured along richness dimensions will be low. Yet the sense of connectedness, the feeling of being in touch with the other can be strong and the experience highly appealing. In order to be sensitive to this dimension of human communication, we are currently in the process of developing a *Connectedness Questionnaire* that will not focus on the sense of being together as such (following the face-to-face model), but rather focus on the affective benefits of the awareness systems. Hypothesized affective benefits include a feeling of having company, a stronger group attraction, a feeling of staying in touch, of keeping up-to-date with other people's lives, and a sense of sharing, belonging, and intimacy. In short, awareness systems are not seen as replacing existing communication means, but rather as enriching them, strengthening existing social bonds and enabling new kinds of interactions.

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