

# ISEA2019 Paper: Touched, a penumbra keyboard projection

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## Abstract

The underlying research for this paper recalls the development and presentation of telepresent installations ‘Telematic Dreaming’ and ‘The Telematic Séance’ from 1993. Twenty-five years on I produced the installation ‘Touched’, exhibited in the Digital Encounters Show for the British Science Festival in 2017. Technically, ‘Touched’ worked in exactly the same way as ‘The Telematic Séance’, its layering of keyboard projection, text and image explores a new telematic experience of intimacy where the meaning of the type becomes dependent on the richness of touch. The paper compares this with Myron Krueger’s founding ‘Metaplay’ experiments in the late 1970s involving touching hands on a telepresent screen and the findings of the proprioceptive ‘Rubber Hand Illusion’ developed by Psychologists Matthew Botvinick and Jonathan Cohen. These comparisons concur with the phenomenological outcomes participants experienced in ‘Touched’ where a greater sense of empathy emerges through a shared space of mutual presence.

## Keywords

Telematic, installation, telepresence, proprioceptive, chat, interface, keyboard, cognitive, illusion, intimacy.

## Touched, a penumbra keyboard projection

This recent telematic installation ‘Touched’ converges space and distant audience participants in a third space telepresent environment. The project focuses on the kinaesthetic and proprioceptive nature of audience participation involving a keyboard projection and an online chat conversation. The underlying research for ‘Touched’ recalls the development and presentation of ‘Telematic Dreaming’ in June 1992, an experimental telepresence performance installation produced for the ‘Koti’ exhibition at the Kajaani Art Museum in Finland, curated by Marita Liulia and sponsored by the Finnish Telecom. Shortly after the development of ‘Telematic Dreaming’ I returned to Finland in 1993 to produce a new installation ‘The Telematic Séance’ for the exhibition ‘Interactive Garden’, curated by Erkki Huhtamo at the OTSO Gallery in Espoo, Finland. The installation was derived from the telepresent concept of ‘Telematic Dreaming’ allowing two distant people the opportunity to coexist at the same séance table. What had explored a telematic extension of body scheme through a life size digital other on a bed was used in ‘The Telematic

Séance’ to new effect; echoing ideas of Spiritual Telegraphy in the 1900s that compared the invention of the terrestrial telegraph to connections with the afterlife. Technically the installation functioned in exactly the same way as ‘Telematic Dreaming’, but it was conceptually problematic for the participants involved. The title and séance context was too restrictive, limiting the potential agency within the piece and leaving the participants uncertain about what was being inferred. Twenty-five years on I produced the installation ‘Touched’ in 2017, which technically worked in exactly the same way as ‘The Telematic Séance’, but in this new work the implications were more open. ‘Touched’ involved a computer screen and keyboard, where the projected hands of one person appear on the keyboard of another’s. The hands meet, touch and type together on this penumbra keyboard surface, whilst also appearing as a live computer desktop image upon which a simple command line chat interface is overlaid (see figure 1). This layering of keyboard, text and image explores a new telematic experience of intimacy where the meaning of the type becomes dependent on the richness of touch.



Figure 1. Camera capturing image of participant’s hands on the keyboard below in ‘Touched’. © Paul Sermon.

‘Touched’ was exhibited in the Digital Encounters Show at Horatio’s Bar on Brighton Palace Pier for the British Science Festival in Brighton from the 5th to 9th September 2017. Using standard video cables the installation was linked between two disclosed blacked out booth spaces in the bar, approximately 6 metres apart. Horatio’s Bar and its secluded ornate drinking booths, complete with tables and

velvet seating afforded an apt environment; its fake Edwardian interior assumed a context suggestive of a ‘spiritualist’ encounter of the 1900s, whilst its contrasting 1980’s fabricated exterior provided a postmodern twist to the show.



Figure 2. Projected hands of the remote ‘Touched’ participant on the other participant’s keyboard. © Paul Sermon.

The installation consisted of a keyboard and computer screen on a table with a video camera situated directly above it, picking up a birds eye view of the table top and keyboard below. This image was sent to a video projector and projected directly down onto another table and keyboard at exactly same scale and location as the original (see figure 2). A video camera situated next to the projector picks up an image of the projected keyboard and the aligned actual keyboard and sends it to desktop computer screens on the tables in each of the booth spaces. A Unix command line chat interface is then composited on top of the live video image allowing the two separate participants to communicate via text over a Secure Shell (SSH) connection (SSH also known as Secure Socket Shell, is a network protocol that gives users, particularly system administrators, a secure way to access a computer over an unsecured network). This provided a very simple raw text-messaging interface overlaying the live video image (see figure 3), without any further distracting interface design. As each person begins to type and chat his or her hands meet and visually mix on this telepresent keyboard surface where dialogues, games, and encounters unfold.

Whilst on the one hand it is a completely simple set up it is on the other an entirely new physical encounter; echoing palmist conversations that suggest the convergence of virtual spirits and contemporary digital chat-room environments composited on screen. Our typing hands do not normally have any further role or function other than pressing keys, but ‘Touched’ turns our webcam chat attention away from our talking heads to focus on our hands, located on a shared telepresent keyboard, as a backdrop to a new space of remote intimacy. A space that was once the domain of textual exchanges now becomes the space of performance, abstract poetry, and handheld encounters as a

new sensation of being touched by text. The Brighton Pier venue and British Science Festival event attracted a diverse range of participants, from academics, local families and teenage groups to seaside day-trippers and the occasional hen party. No one really knew what to expect, many participants were initially shocked and surprised, finding the opportunity to type messages a reassuring way of sharing their alarm. But playful encounters then unfolded. Participants played with aligning the keyboards, using them as props, as well other objects they might have on their person. One participant referred to it as ‘keyboard ballet’ in a text message. Hand clapping games and ‘rock-paper-scissors’ were also attempted, as well as the occasional rude hand gesture. Some people used their mobile phones to take and show photographs to each other. It also included putting their heads on the table, where profiles could meet and kiss. And it proved a good opportunity to discuss nail polish as well as a sense of proprioception. One member of a hen party turned up with a pack of Tarot cards, she moved the keyboard to one side and proceeded to make ‘telepresent readings’ for other members of the group. The table top alone provided an open platform to develop endless opportunities for engagement. The agency in ‘Touched’ was exploited in its secluded setting and contrasting context that was simultaneously artwork, invention, amusement and fantasy.

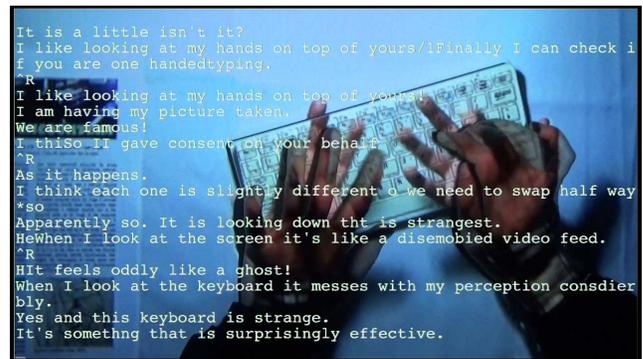


Figure 3. Video still of line out video feed from installation, with Unix chat interface overlaid on converged hands. © Paul Sermon.

In 1983 pioneering interactive digital media artist Myron Krueger wrote about his initial founding ‘Metaplay’ experiments in the late 1970s (Krueger 1991 [1983], 34) and the unexpected telepresent outcomes that led to his later VIDEOPLACE installations in the 1980s (Krueger 1991 [1983], 34–64). The encounter he described in those early experiments involving touching hands on a telepresent screen completely concurs with the phenomenological outcomes participants experienced in ‘Touched’. Myron Krueger and his colleague were on the telephone discussing a waveform.

“After a few minutes of frustrating discussion, we realized that we had a far more powerful means of communication available. Using a two-way video link we turned the cameras on ourselves seated at our respective computers.

As we did this, we used our hands to point to various features on the composite display (...). It was exactly as if we were sitting together at a table with a piece of paper between us. After a while, I realized that I was seeing more than an illusion. As I moved my hand to point to the data my friend had just sent, the image of my hand briefly overlapped the image of his. He moved his hand (...). I was struck with the thought that he was uncomfortable about the image of my hand touching the image of his (...). The inescapable conclusion was that the same etiquette of personal space and avoidance of touching that exists in the real world was operating at that moment in this purely visual experience.” (Krueger 1991 [1983], 34)

Both the awkward intimacy that Krueger experienced in ‘Metaplay’ and the converged images of hands and fingers playing, dancing and caressing upon the keyboard in ‘Touched’ are clearly present in the findings of proprioceptive experiments in other discourses, namely the ‘Rubber Hand Illusion’ developed by Psychologists Matthew Botvinick and Jonathan Cohen from Pittsburgh in the early 1990s. This now classic ‘body transfer’ experiment was performed on myself by a team of neuroscience researchers from the University of Manchester in 2003. I was positioned at a table so that one of my hands was out of sight under a small wooden bed tray, with a black tablecloth draped over it, from my shoulder to across the table. However my hand was still visible and accessible to the researcher sitting opposite me. A rubber hand was then placed on top of the tablecloth approximately 30cm to the left of my real hand, conceivably connected to my own arm under the draped tablecloth. The researcher then gently stroked both my hidden hand and the visible rubber hand simultaneously with a paintbrush in each of their hands. As I focused on the rubber hand in front of me the neuroscientist synchronously stroked the same parts of each hand, along each finger and across the back of my hand. After about 10 minutes I was then asked to close my eyes and with my other hand point towards the index finger of my hand resting on the table. I pointed directly at the index finger of the rubber hand, which had clearly been incorporated into my own body scheme through this experiment. The same conclusive results also occurred extensively in the original ‘Rubber Hand Illusion’ experiment (Botvinick and Cohen 1998, 756). What Maurice Merleau-Ponty identified as the ‘extension of the bodily synthesis’ in 1945 (Merleau-Ponty 2012 [1945], 154) is now commonplace in what neuroscience and cognitive science refers to as ‘body transfer’ or ‘body ownership’ through experiments such as the ‘Rubber Hand Illusion’, as well as discussions on virtual reality and presence research.

It is this unique sensory experience that offers my biggest contribution to knowledge in the field of interactive media arts, but from a public engagement perspective it provides most impact on those participating directly in the work, where a greater sense of empathy emerges through a shared space of mutual presence. At its most basic, the act of moving our eyesight from the internalised position in our head to a third-person view outside of our own body

offers an entirely new sense of self and conscious experience. Combined with another (geographically distant) participant, that objective sense is shared and co-experienced, paving the way for a greater sense of empathy between them.

## References

- Botvinick, Matthew, and Jonathan Cohen. 1998. “Rubber hands ‘feel’ touch that eyes see.” In *Nature*, Vol 391, 19 February 1998, 756. Macmillan Publishers Ltd.
- Heidegger, Martin. 2001 [1953]. *Being and Time*. Translated by John Macquarrie and Edward Robinson. Oxford: Blackwell Publishers Ltd.
- Krueger, Myron. 1991 [1983]. *Artificial Reality II*. Reading, Massachusetts: Addison-Wesley Publishing Limited.
- Merleau-Ponty, Maurice. 2012 [1945]. *Phenomenology of perception*. Translated by Donald A. Landes. London: Routledge.
- Sartre, Jean-Paul. 2003 [1943]. *Being and Nothingness: an essay in phenomenological ontology*. Translated by Hazel E. Barnes. London: Routledge.

## Author Biography

**Paul Sermon** was awarded the Prix Ars Electronica Golden Nica, in the category of interactive art, for the hyper media installation 'Think about the People now' in Linz, Austria, 1991. Produced the ISDN videoconference installation 'Telematic Vision' as an Artist in Residence at the ZKM Center for Art and Media in Karlsruhe, Germany in 1993. Received the Sparky Award from the Interactive Media Festival in Los Angeles for the telepresent installation 'Telematic Dreaming', June 1994. From 1993 to 1999 worked as Dozent for Media Art at the HGB Academy of Fine Arts Leipzig, Germany. From 2000 to 2013 Professor of Creative Technology at the University of Salford, School of Arts & Media. From 1997 to 2001 Guest Professor for Performance and Environment at The University of Art and Design in Linz, Austria. Since September 2013 Professor of Visual Communication in the School of Art at the University of Brighton, United Kingdom.