

*International Journal of Performance Arts and Digital Media*  
(IJPADM) - special issue on *Mixed Reality and Performance*  
(for Digital Resources for the Humanities and Arts DHRA 2010)

***MINDtouch - Embodied Ephemeral Transference:  
mobile media performance research***

Camille C. Baker, MAsc. Interactive Arts; Ph.D. Candidate, SMARTlab Digital Media Institute, University of East London; Lecturer in Broadcast Media, School of Engineering and Design, Brunel University.

**ABSTRACT**

The aim of the author's media art research has been to uncover any new understandings of the sensations of 'liveness' and 'presence' that may emerge in participatory networked performance, using mobile phones and physiological wearable devices. To practically investigate these concepts, a mobile media performance series was created, called *MINDtouch*.

The *MINDtouch* project proposed that the mobile videophone become a new way to communicate non-verbally, visually and sensually across space. It explored notions of ephemeral transference, distance collaboration, and participant as performer to study 'presence' and 'liveness' emerging from the use of wireless mobile technologies within real-time, mobile performance contexts. Through participation by in-person and remote interactors, creating mobile video streamed mixes, the project interweaves and embodies a daisy-chain of technologies through the network space.

As part of a practice-based PhD research conducted at the SMARTlab Digital Media Institute at the University of East London, *MINDtouch* has been under the direction of Professor Lizbeth Goodman and sponsored by BBC R&D. The aim of this article is to discuss the project research, conducted and recently completed for submission, in terms of the technical and aesthetic developments from 2008 to present, as well as the final phase of staging the events from July 2009 to February 2010.

**KEYWORDS**

Liveness/ presence, mobile phones, biofeedback, and performance media.

## RESEARCH OVERVIEW

*MINDtouch* was a participatory media project which used biofeedback sensors and mobile media phones, during live streaming networked events, to *simulate* dream and telepathic exchange. The performance series resulted in a collaborative live visual collage, made with mobile and wearable devices during in-person and remotely accessed networked events.

This media art research project attempted to link diverging areas of media art with performance practices through its approach of using of sensors as the interface to mobile video technologies. The investigation involved corporeal, non-verbal, visual interaction, within participatory, social events as the embodied mode of connection. This telematic, physical-virtual event-system was designed to emulate synaesthetic and embodied dream experience, mimicking a telepathic and affective exchange. This was meant to create a paradox in the notions of liveness and presence, or the feeling of 'being-there'. The project also explored the notion of enabling a more embodied and meaningful, personalized exchange between remote groups of people.

As such *MINDtouch* has been about *connection*: connecting ideas, experiences, body and mind, technology and art, contrasting philosophical and scientific concepts; connecting databases with digital and mobile networks, video with performance differently, performance with mobile phones, body data with streaming video and; connecting dreams with telepathy, telepathy with networks, etc. Yet most of all, it has been about connecting people with each other in intriguing ways. Notions of presence, liveness, and telepathy are connected and interwoven concepts here, as they are each about sensing others: in the room or across vast distance, and in near-to-real-time [1]. The concern has mainly been with sensing at a distance and how it can be done differently through our technologies, enabling us to exchange more familiar experiences, such as the vivid dreams and preconsciousness, emotive or visceral sensations that are hard to express or share other than in their true form of experience. The aim was to observe and understand how or if people could 'connect to each other' through various means of embodying the technology and network, as well as using the system as a visual simulation of telepathic [2] dream exchange. All three domains of the digital, the body, and ephemeral consciousness (dream state) have been connected by the threads of philosophical notions that underpin the work, manifested through the practical exploration and activities of the project.

The practical side of the project tried to exemplify liveness and presence within the context of a series of live, 'staged', iterative, 'scratch' mobile media social events. These 'scratch' or performance experiments involved improvisation and experimentation through generative, participatory, collaboratively mixed mobile video visualisations, triggered by biosensor data from participants' bodies. The live events involved participants engaging in

---

1 Issues regarding and defining live and real-time are complex, but for the purposes of this article we can define 'real-time' as the actual time that an event is unfolding – as it is happening– or as close as possible, given network complexities.

2 Here, the term 'telepathic' is used to mean 'thought or experience transfer through the mind'. To be clear, this research was not trying to 'prove' the existence of telepathy in this research, but to emulate it, which requires a suspension of disbelief on the concept of telepathy for the reader.

improvisation and experimentation with the mobile video activities. It was imperative to understand how bodily sensations, perceptions, interactions and responses might be meaningfully utilized, in novel ways, to visualize the body/mind [3] activity and to aid participants to experience it in a collaborative performance environment. The project also attempted self-reflexivity by being cognizant of the effectiveness of the effect and effectiveness of researcher's facilitation for participants to experience liveness and presence (or not), within these new mobile media social contexts.

The understanding and experience of presence informing this work is a sense of *otherness*, a feltness that can be physically sensed in a room. It is concerned with the *feeling* of others; visceral, physically, and on an intuitive or emotional level, just as one feels when speaking to a friend or loved one who is not actually *there* with them in-person. This presence is akin to a vibration or agitation, felt both viscerally and intuitively. It can be experienced as meeting or sending one's extended body/consciousness or awareness of self or other [4], via invisible, non-corporeal embodiment. While the flesh is not directly stretched over the distance, the mind and body are engaged by both parties across distance, through extended embodiment. This presence is a *togetherness* without necessarily being in the same physical space or place, but with an awareness of another. This connection is key and experienced as emotional—even if those in the exchange are not in a close relationship (i.e. with an uninvolved audience member and an actor on stage). In light of this, psychiatrists Thomas Lewis, Fari Amini, and Richard Lannon in *A General Theory of Love*, (2000) suggest that there is no point in trying to connect remotely if there is no solid relationship established in-person prior as well. To underline their point, friends of mine have claimed that they can feel a sensation of 'transmitting' or receiving warmth from each other through email, texts messages and Skype calls. Lewis et al. address this:

Relatedness is a physiological process that, like digestion or bone growth, admits no plausible acceleration [...] Advances in communication technology foster a false fantasy of togetherness by transmitting the impression of contact – phone calls, faxes, email – without its substance. (2000:205)

Liveness for this work is the sense or experience of an event or person 'in-person', physically present, in the here-and-now, being or taking place at this moment, in front of an audience in a traditional performance context, or remotely (as with live TV broadcast or online event). Liveness is intertwined with time and/or space and physicality simultaneously, and often entails an event or experience that is happening in the same point in time, at the current moment, somewhere, with someone witnessing it. Yet it is not a priority that people are experiencing it in-person or even in the same physical locale as the event itself; or 'in the flesh' at the event location, but the event must be experienced as taking place *now* and must be witnessed *now*, in real-time or within seconds of the event.

---

3 The term 'body/mind' is chosen to acknowledge the studies and theory of Massumi, neurobiologist Antonio Damasio, Benjamin Libet and other philosophers, showing that the mind not only exists in the brain but also the parts of the body, especially the senses, and discussed further within.

4 In reference to Rupert Sheldrake's theory of the Extended Mind in *A Sense of Being Stared At* (2003).

In a digital context, *now-ness* is critical to live events, but physical presence is not: a computer avatar can stand-in to substitute for actual bodily presence, so representing a physical player is acceptable, or using voice-over IP (Skype etc), or video conferencing to replace the corporeal presence can also be considered live.

Embodiment for this work includes the elastic ability of the mind to move beyond the boundaries of the skin and for one to send their presence across distance (Idhe, 2002: 6). It is both inside and out, crossing boundaries of the senses, so that they function separately, entirely outside of the mind (and visa versa), in an elastic sense, but not detached entirely from the body,

Brain and skin form a resonating vessel. Stimulation turns inward, is folded into the body, except that there is no inside to be in, because the body is radically open, absorbing impulses quicker than they can be perceived, and because the entire vibratory event is unconscious, out of mind. (Massumi, 2002: 29)

Technological embodiment is a form of non-corporeality within which virtual connection can be expressed through invisible exchanges of sentiment (Richardson, 2005 6) or through a digital mode of extended mind through projection or by sending the consciousness through technology as a conduit. So embodiment can be 1) being in the body, and the mind/body integration; 2) being in the body, but also sensing and extending the mind beyond the skin during dreams and in altered states, virtual technological space, and in other modes of consciousness [5]. The body was positioned in *MINDtouch* as the primary site of investigation from which technology is embodied.

To identify how or whether liveness and presence could be sensed during these mobile social events, video was the mode of expression, engagement, embodiment used to externalize the internal within live, social, and mediated environments. Mobile media phones have acted: 1) as a conduit for non-literal or abstracted, non-verbal expression of experience and as an extension of the body/mind; 2) as a vehicle to express inner sensations between participants or with one's self. *MINDtouch* was less concerned with the space, location, and geographic or psycho-geographic, mapping aspect of mobile devices used in locative games [6] and other similar projects. Instead, the fascination was primarily with the embodied possibilities of mobile media or the 'situatedness' [7] (Idhe, 2002:68) of a person, their experience within and their attentiveness to themselves and the space or locativeness within their own bodies. This sometimes involves the participants' 'mapping' their body parts or creating an abstracted 'mapping' of their internal thoughts and emotions or physical sensations.

---

5 Here I am referring to virtual in the digital and online context.

6 Many 'locative' game projects now call themselves 'mixed reality', since they mix digital gaming interfaces with live performative tasks and game play, using mobile devices. Such projects like *Uncle Roy All Around You* from the performance group Blast Theory, [http://www.blasttheory.co.uk/bt/work\\_uncleroy.html](http://www.blasttheory.co.uk/bt/work_uncleroy.html).

7 In Don Idhe's sense that "...to be situated entails that the knower is always *embodied*, located, *is a body*..." [his emphasis].

Wearable biosensing devices were incorporated according to the funding imperative based on prior experience with them. However, using them soon became an intriguing opportunity in order to connect participants in a more embodied modality, turning the live connection into a more physicalized connection. It was also an imperative to connect live participants somehow to remote participants and to enable them to sense or ‘feel’ each other more tangibly, sensing each other by sending their body data through the network to ‘touch’ one another with their video expressions of sensations and ‘breathe’ life into the mobile video. This created a feedback loop of body-to-body connection through digital translation interacting with personal interpretations, with mobile networks as the invisible threads to connect people—a digitally embodied touch and exchange.

Sensation was transformed, transduced, or translated into a digital video, to allow participants to ‘touch’ and ‘play’ with others, locally and remotely. It was an imperative to try reveal an intrinsic embodiment within the network using participants’ sensory experiences emerging from these structured activities. As it has turned out, to get to this latter phase it was vital to solve the technological challenges, to enable this mobile participatory interaction to manifest smoothly for participants. The various project threads were unified through the coding to enable the phones and sensors to communicate with one another as close to real-time as possible.



Image #1 © 2008 C. Baker: custom biofeedback visualization software.

Body data and bodily activity was processed through custom mobile software, such as: breath, blood pressure, heart and muscle electricity, as well as skin conductivity (GSR) to indicate stress levels, from body impulses, processes and responses. The body data was used as the conduit for creative play and communication. The wireless sensors acted as the ‘interface’ to translate and embody the data into non-linguistic visual expressivity, resulting in remixed video. Sensations and perceptions were then translated from participants’ bodies into a moving visual form from the ‘mind’s eye’. Instead of a verbal or gestural language, the immediate surroundings of the body, the architecture, and the landscape within the frame became enfolded into the visual or cinematic language of the mobile video camera by participants’ personal interpretations of it. As such, the project practically attempted to interpret or translate conscious and synaesthetic experiences of one’s internal world, through the external environment aided by technology. What is compelling about this is it then makes it possible to see how we can create new, symbolic or visual lexicon, using mobile video. The user, with the phone’s video capabilities, translated the body and emotive sensations visually, but the video also acted as a

simulation of abstract, embodied dreams, sent, and intermingled with others' dreams. This became a new mechanism to express and explore what it would be like to share and play with your own and another's dream sensations—communicating this emotive and visual state [8] over distance.

Critical to the investigation was the facilitation of individual and collective perceptions and embodied sensations within the context of the virtual, invisible-space of mobile networks. Thus, ways to simulate, emulate, or even facilitate connections and the sensing of feltness, presence and/or liveness, co-presence and collaboration were explored with participants within mobile performance events. The activities were guided participants during the events, which were developed to intensify the embodied interaction and engagement. These were manifested through the five performance event experiments from July 2009 to spring 2010.

## **Mobile Performance**

Key thinkers in performance theory have contextualized the current directions in performance practices, and have been essential to identifying where new insights might be found. Sociologist Erving Goffman first brought the common behaviour of individuals to the fore (1956) by focussing on the performativity of everyday life and how we all play a 'role' in each social or personal interaction, and he defined the ways in which we do so. Richard Schechner (1988 [2003]) has become a strong voice in performance studies during the last thirty years. Schechner broadened thinking and previously held views on performance. He brought to the forefront acts of performativity in everyday life and practices, such as in: play, sports, legal proceedings, rituals, and pop culture, validating these practices beyond the more narrow realm of high theatre, dance and performance art. Philip Auslander (1999), on the other hand has focused on how 'liveness' in contrast to mediatization in performance. He has claimed that the concept of liveness did not exist outside the context of the mediatization prior to the Twentieth Century, and that this development is key to understanding performance in the modern era. Meanwhile, pragmatist philosopher Richard Shusterman (2000) has explored the aesthetics of the experience of bodies in performance from the audience perspective, suggesting that traditional audiences and art viewers have felt that the art establishment has lost interest in satisfying their need to have affective, emotional, transformational or aesthetic experiences [9]. He claims that the audience have therefore gravitated to popular art and entertainment in order to meet their affective needs. In contrast, Boal's participatory theatre work has been influential, using his method of

---

8 The definition of dream state used here is as the state of consciousness [...] *that judging by the overall electrical activity of the brain, dreams are a kind of conscious state [...]* (Baars, 1997: 108). After several psychology searches and dictionary, searches there are very little specific definitions of dreams except a semi-aware state of consciousness featuring a series images, thoughts and sensations in one's mind (New Oxford American Dictionary, 2005: online [www.oup.com/us/noad](http://www.oup.com/us/noad)) and rapid eye movement.

9 In addition, it could be argued that some in the art establishment are too elitist for the populous.

challenging and working with actors and non-actors to engage (or reengage) people socially and politically in the world through theatre games.

The *MINDtouch* performance research focused on creating a more personal and private performance, without an actual spectator, only with interactors. Yet Peggy Phalen believes that performance eludes mass production, technological mediation, and economic consumption, and that it in its ephemerality goes beyond language, designed only for a defined audience within a confined space and time, leaving 'no visible trace' (1993:148). Phalen sees performance as ephemeral, living only in the memory of the audience because it can never be truly reproduced nor can the experience of it be completely captured or re-embodied by media. Yet still, each 'performance' is subject to so many factors that it can never be duplicated. However, I would argue that this ephemerality, 'nowness' effect or quality of disappearance can be transmitted virtually, if not 'reproduced' through networked media. What is compelling about trying to embody technology is trying to communicate this essence of performance or presence through a network. This becomes a third modality, *between* live and mediated.

From the foundation of this debate and these perspectives, participatory performance has been used by artists to engage the public to experience both technology and the 'real world' simultaneously, in a practice called 'mixed reality', 'locative media' or 'pervasive gaming/media'. Participatory performance has been used in *MINDtouch* as a way to enable people to explore embodying technology through their own sensations and to sense presence over distance, through mobile video. It also serves as a way to (re-)engage people with the physical world through the media tool. As such, it becomes a means to explore the meta-concepts of the research through practice—with specific instances of embodying mobile and wearable technology.

Boal, in *Theatre of the Oppressed* (1992) became a guide to theatre games and helped to clarify how to develop ways to motivate participants and facilitate engagement in the process and the theatrical activities of the performance production. It also helped to clarify how to create a dialogue between the participant performers and the trained performance guides assisting them. Boal's philosophy was deeply considered when working with the bodies of actors and non-actors, in more than the specific exercises developed and similar techniques, such as the *MINDtouch* mind-quieting and body focusing 'warm ups'. His methodologies, while discovered after these activities were created and used, validated my approach. He explains his performance philosophy:

A bodily movement 'is' a thought and a thought expresses itself in a corporeal form [...] the idea of eating can induce salivation, the idea of making love can produce erection [...] The phenomenon is less obvious when it relates to a particular way of walking, sitting, eating, drinking, speaking. And yet all ideas, all mental images, all emotions reveal themselves physically [...] Bodily activities are activities of the whole body. We breathe with our whole body, with our arms, our legs, our feet, etc. (Boal, 1992: 61)

Such factors are critical to consider when working with people to connect them with their bodies, especially in asking them to tune in and interpret their own perceptions and sensations as creative and visual expressions.

Why mobile technology? Mobile phones were used partly due to their powerful new image and video capabilities, which inspire in people more creative and playful potential, enabling participation and mobility in a way that a desktop computer cannot. Yet, the mobile phone was primarily used for its close relationship to the owner's body, and its ability to go anywhere with them that is compelling. In addition, learning new technology is lessened, unlike other software or hardware options for socially networked interaction, such as Second Life. As a performer and video artist, having worked with people in numerous capacities for years, I have always tried to empower people in various ways. This project seemed a natural approach to engage people in performative and creative activities, using their most closely held and fetishized technological objects: to play, collaborate and sense each other over distance.

Low quality and low-resolution video imagery on mobile phones was valued in the project for its immediacy, poor image quality, and pixilated imperfectness -- its own unique aesthetic. The mobile phone was also valued for its innate encouragement of spontaneity, layering of meaning and stream of consciousness, *as well as* as a simulation of telepathy. For those using this new moving image medium, the aesthetic of mobile video is one of imperfection of image quality, as was the case with the early video cameras. However, in exchange for imperfection we are given an immediacy and a form of personal empowerment through the simplicity of the device – the pixilated resolution holds its own beauty and power. In addition, mobile images are often experienced as personal, intimate, private, and once sent, the immediacy of them feels like a giving or blowing a kiss to another through the network or sharing pieces of yourself (depending on the content). This is also my experience. So if a text message is like thought transfer, then an image or video is like sending your sight, your visual experiences, thoughts, feelings, as well as your unique expression and perspective. Hawley suggests that the mobile phone, with its poor, imperfect resolution, pixilated/compressed quality and small aspect ratio, is in some ways, more 'real' [10], in that everyone has access to the medium and can learn it easily, resulting in more imperfect but more personally meaningful images. It is a more intimate and everyday life document, which the ordinary person can relate to, and hence, feels more 'real' to them as it is imbued with memory and emotion. Through its messiness, mobile video at once encourages a more personal, non-expert, 'every-person', frank expression, not possible with the HD or 3D video image.

The key aspects of mobile video making, that observed within this research process, with both participants and personal explorations include these four features:

1. innate performativity, or movement or gestural qualities encouraged by the device size;

---

10 This sense of 'real' refers to: true to common experience or so it feels more close to everyday lived experience.

2. the portability factor (ability to watch or shooting anywhere), with the mundane becoming fascinating and easy to capture;
3. the phenomena that users view the world through the camera 'vision' of the phone screen, rather than their own eyes alone, adding novelty, but also a re-engagement with the world;
4. the innate intimacy of expressivity fostered by the device and predilection for doing close-ups – framing only that which is to be seen.

To exemplify the performativity and intimacy aspect of the mobile recording practice, Terry states that the phone encourages one:

[...] to project [the] **very private space immediately surrounding the body** into meta-space. Many of the videos show objects little more than a few centimetres [sic] beyond the tiny lens, often some body part, like hands or forearms that obscure an unknown, overexposed background space. Other pieces are **gestural performances**, recording the movements required when following a line, or when trying to create shapes by moving the camera in certain ways (2005, my emphasis).

Exactly in this way, the participants in *MINDtouch* tended to capture their experiences and explore the 'meta-space' of the body as the main intrigue and focus of the mobile medium. It appears to be a common approach one takes to mobile video capture. Due to its portability the mobile videophone has an inherent embodied gestural expressivity. The device inherently encourages movement, resulting in blurry, abstracted patterns, and a 'splattering' effect through gesture. This intimate approach to mobile video production is facilitated or afforded by the device size itself. When participants used and worked with the phones, it appeared that their immediate impulse was to wave the device around, as if it was part of their hand, blurring the images intentionally to see the patterns that resulted. It was observed that the phone inspires a playful, gestural or performative exploration. So a new shooting aesthetic may be unfolding just from the mere size of the device and how it lends itself to movement, gesture and exploring the streaking imagery.

During the live events, the cinematic dreamlike quality of the output collage came from the mixing of personal mobile video clip on a remote server. Lev Manovich had several experiments in creating generative narrative, using a non-linear video structure. His work informed the creation of a database of mobile videos from *MINDtouch* workshops, which was the basis of the performance collage, where the videos were mixed, effected in real-time then sent back out over the network. The database was also necessary for the temporary caching (temporary storage) of the live-streamed media clips, as they made their way to the server during the live events. This generative behaviour controlled by the custom software, is also similar to the techniques used by Live Cinema/audiovisual performers, who make specialized VJ/ visual mixing software with programming environments such as MAX/MSP/JITTER or Pure Data. In this way, during the live performative events, programmed and semi-generative elements are intertwined. The generative aspect for *MINDtouch* comes from the body data sent to the server to access and mix archived and live footage together with specific visual effects added. Originally, the project was not meant to be in any way generative. Everything was to be controlled through

participant interaction, but that changed as the project progressed. Conceptual aspects of the 'database', along with visual methods for tagging and categorizing for network use became part of the work as well. The database approach, inspired by Manovich's *Soft Cinema*, were involved in the storage, retrieval and mixing of the mobile videos.

Narrative was not a key element of the project and any narrative connections were either those of the participants making the video clips or in the minds of the viewers of the final layered collage of the different videos. Just as a dream may only be meaningful to the dreamer, here the narrative and meaning was made in the mind of the viewer of the final layered piece. Connections were constructed between the video content, the sensors and the visual effects applied to the videos, but these were more emotional, conceptual and sensory connections that were specifically applied, narrative connections being arbitrary or personal. The narrativity of the collaborative live, database-supported, live cinema performance that enabled in the project was a narrativity made through the abstraction of the participants' minds as 'body mixers', video creators and as viewers. This is akin to making dream visuals with implicit meaning, embodied through the biofeedback sensors and mobile video capturing and streaming.

## **Project Development Phases**

The phases of the *MINDtouch* development have been:

- 1) *Phase one* – conducting the mobile video workshops to collect the media. Participants in this first phase of the video collection workshops were asked to visually explore their physical sensations, perceptions, emotions, thoughts and impressions, in a non-verbal / non-textual way using the mobile video recording phones, to later share with others in final visual remix;
- 2) *Phase two* – was the technical development of the custom mobile software to receive the physiological data. This phase also included creating the video mixing software, assembling custom electronics, and wearable sensors systems, then embedding these into suitable custom garments;
- 3) *Phase three* – was the staging of the live, participatory, social visualization events or 'VJing' using the sensors embedded garments on participants. These triggered both the workshop videoclips and the live streamed, mobile video 'clips' from the event space using *qik* (proprietary 3<sup>rd</sup> party software). Then these videos were mixed a new collage that was streamed back to local and remote participants.

Each mobile media social event started with a short, guided improvisation activity to inspire participants to relax, tune into their bodies and explore creatively. Some participants used their bodies in a range of expressive, non-verbal/ non-textual, gestural modalities that were translated into the visual mix.

This final media performance phase involved staging several mobile media events to utilize the database of archived streamed video clips from the video collection workshops, to be retrieved and remixed during the live 'visuals' events. Each event resulted in a collaborative, non-linear montage or 'remix' installation, streamed out to the network. Participants wore the biosensors garment and 'performed' or 'VJ' the visuals live, creating the unique 'mixes' from a video archive with their body data. The customized mobile software through a series of interactions triggers the video clips on the database, then the modified visuals are sent back to the remote networked audience simultaneously; like a conversation between the body and the audience.

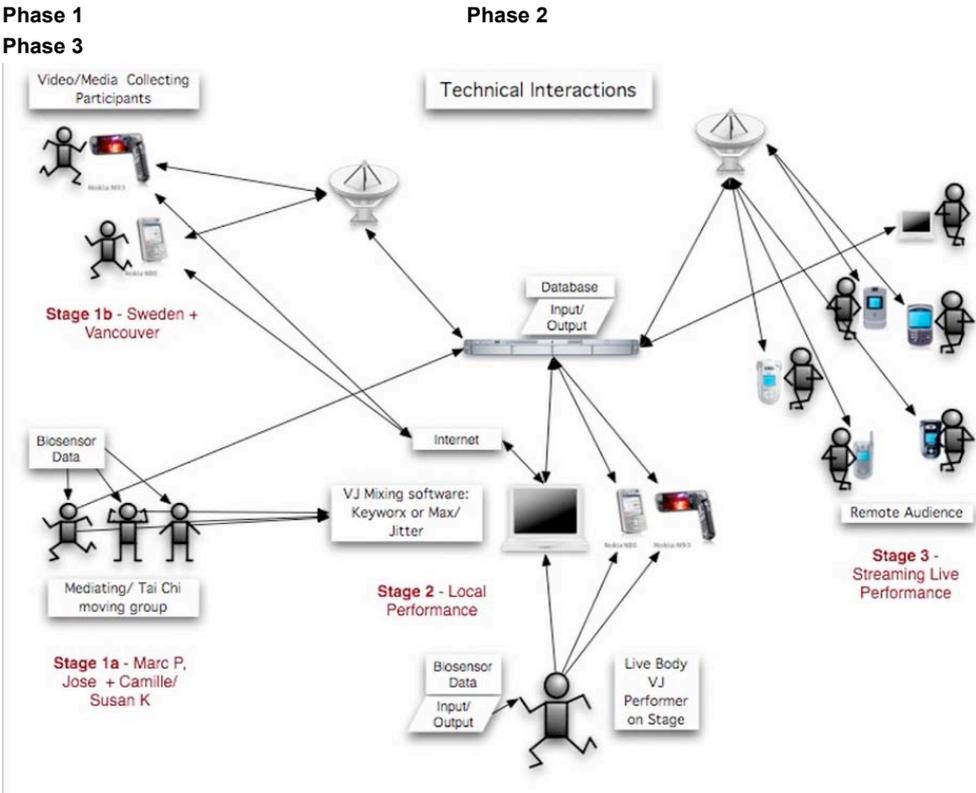


Figure # 1 © 2007 C. Baker - early technical diagram of system development phases and interactions

The video collage was an attempt to bring together previously distinct technologies and practices, and the different forms of 'presence' together into the visual mix, simulating 'collective consciousness' [11]. The resulting remixed video collage was then restreamed to the Internet and participants' phones, in as close to 'live' as was possible, yet the network was very slow in some locations. As such, there were delays and lags that are often inherent in the network, as well some insurmountable security issues that come with such a project.

11 This is referring to the well-known Jungian sense of the phrase used frequently in popular culture today, defined here to mean minds coming together to a form of unity over distance.

## Live Social Events

The initial live experimental participatory events took place from July 2009 to February 2010, involving participants wearing biofeedback sensors interacting with mobile devices during the events. These *Phase three* performance events were organized to create a social, non-linear, abstract, 'remix' collaboration to be enjoyed by local and remote audience participants'. These events attempted *real-time* video mixing and streaming that in practice resulted in significant lag and delay due to insurmountable institutional network and security barriers.

The performance events were mostly conducted with student groups, peers or acquaintances, who were more easily accessible. These social events and parties were the best options to piggyback upon for the *MINDtouch* activities. However, they may not have been the most likely representative of the general public, which was preferable for this work. Yet, many participants were representative of the public, and had there had been more time for these experimental participatory events, there would have been a wider sample to draw from.

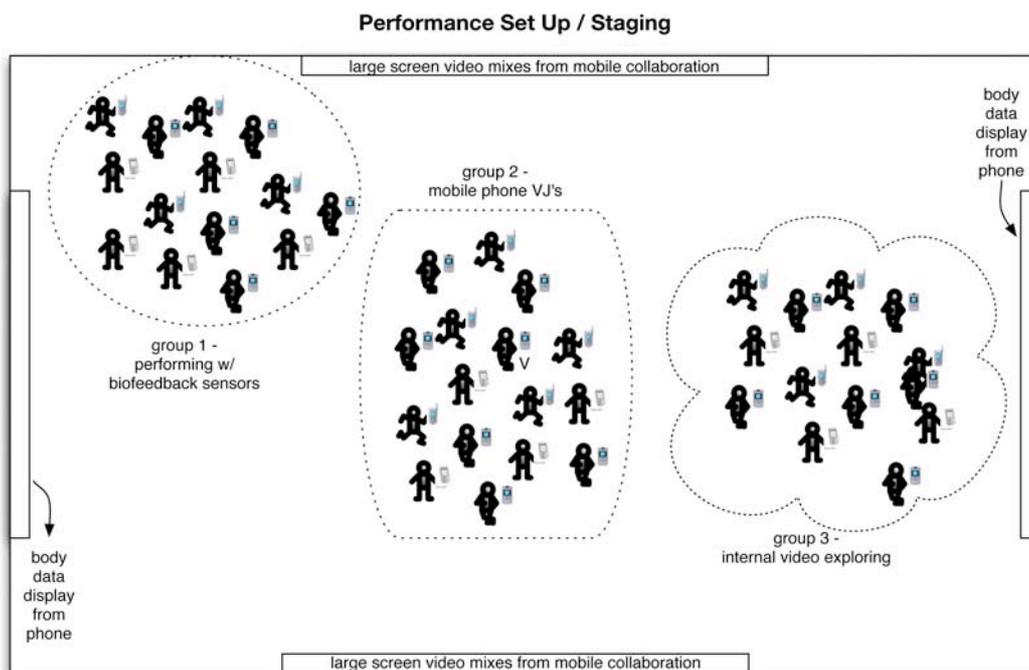


Figure # 2 © 2009 C. Baker – the staging and organization of the performing groups in the live context.

In the live setting, the body data that controlled the video effects and mixing was displayed on a LCD monitor or projection for the live participants, and streamed for remote participants. This video collage became a collaborative, narrative and global mobile-cast, converging distinct technologies and practices, bringing all the different virtual 'presences' together on the visual mix, simulating 'collective consciousness'.

Live events were organized for groups to engage in via improvisation and experimentation with their mobile videophones and collaborative, generative VJing activities using the

network. Within these events, the goal was to see which activities and techniques worked best with participants and which did not, especially in sensing others in the network. This primary series of mobile media performance events were developed and implemented, with the participants' responses on their experiences collected and analyzed for the final dissertation. They were interviewed understand their first-person impressions of their experiences, for analysis on whether they felt or experienced liveness and presence differently from traditional performances.

During the initial event, three different groups were a part of the 'party-like' environment in the space, where they were greeted by a guide, who walked them through various activities:

1) *Group 1* - Participants wore the sensor garments and were guided through various movement activities, to activate the sensors in various ways, triggering the remote system's visual effects to be applied to the live and archived video in the database. Simultaneously, the effected video was displayed on screens around the room. There were only two garments and two sets of sensors, [12] so this group was small, with only one or two participants each event [13].

The participatory activities involved:

- a) Movement activities, and
- b) Theatre games (see guiding activities scripts in the appendix);



Images # 2 and 3 © 2009 C. Baker – stills from July 2009 first performance

2) *Group 2* - This group was guided in video streaming activities using on their mobile phones – like earlier workshops, but with fewer, shorter activities and simplified ways of 'speaking' by visualizing internal sensations. These were streamed using *qik* software on the phones to the qik.com website, to then be transferred [14] with a custom PHP script to the server, and then to mix and the stream-ready database folders. The diagram below

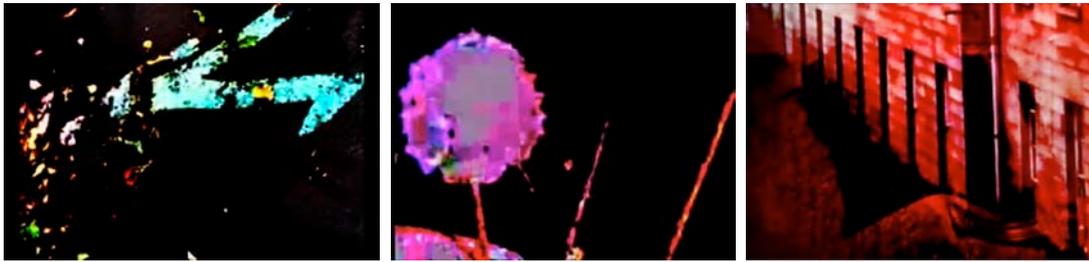
---

12 In Figure 2, one can see that at least 4-6 or more were envisioned for this group. However, with limited funding and resources for this research, only a limited number of sensor sets and a limited number of garments were made. Also due to the Bluetooth pairing limitations each garment / sensor set could only be paired with one computer or one phone at a time. There were also a limited number of phones, often used for the video streaming, since many participants did not often bring the compatibles phones for it (and I did not want to prevent participation, trying to accommodate everyone).

13 In future iterations, there will be more sets.

14 This did not connect completely, due in part to a conflict on the server, and firewall issues that were unsolvable and beyond my control.

shows the three groups and technical interactions envisioned to work together live and remote with Group 2 eventually becoming the remote participants and those shown above as group 1 and 2 merging as one group.



Images #4, 5 and 6 © 2009 C. Baker

3) *Group 3* - This group was initially to be those who mixed the video from the database, with custom software on their phone (downloaded as part of the activity).

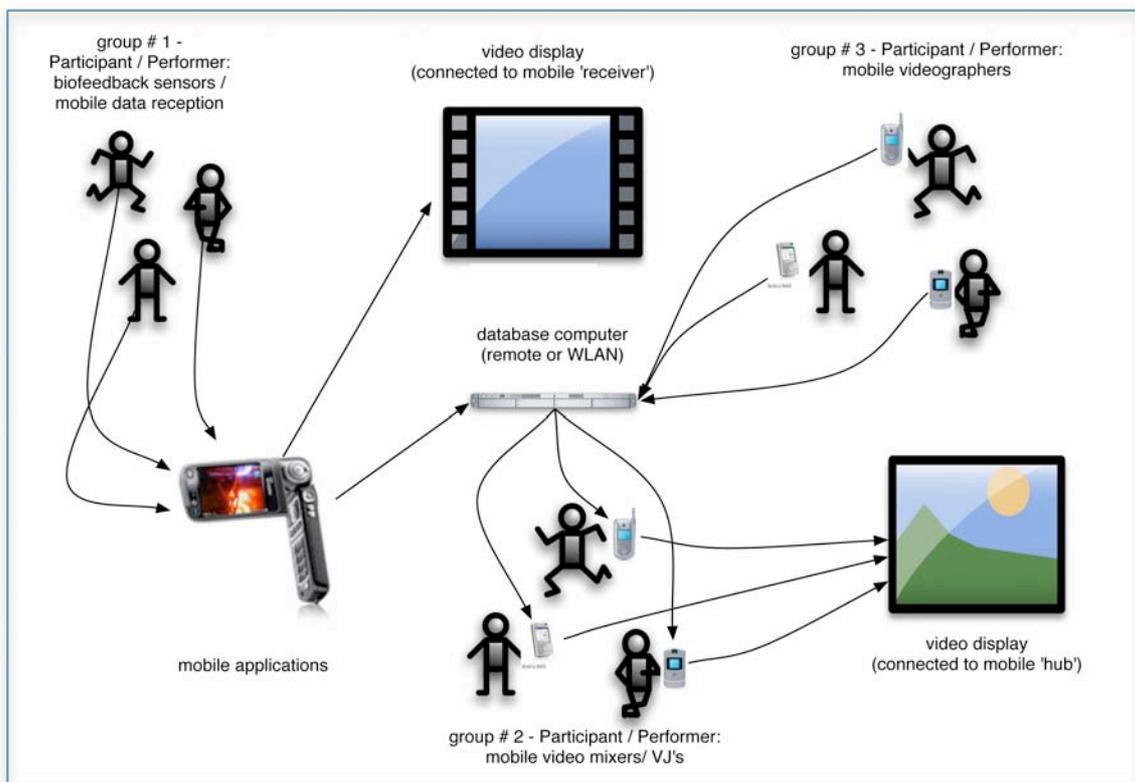
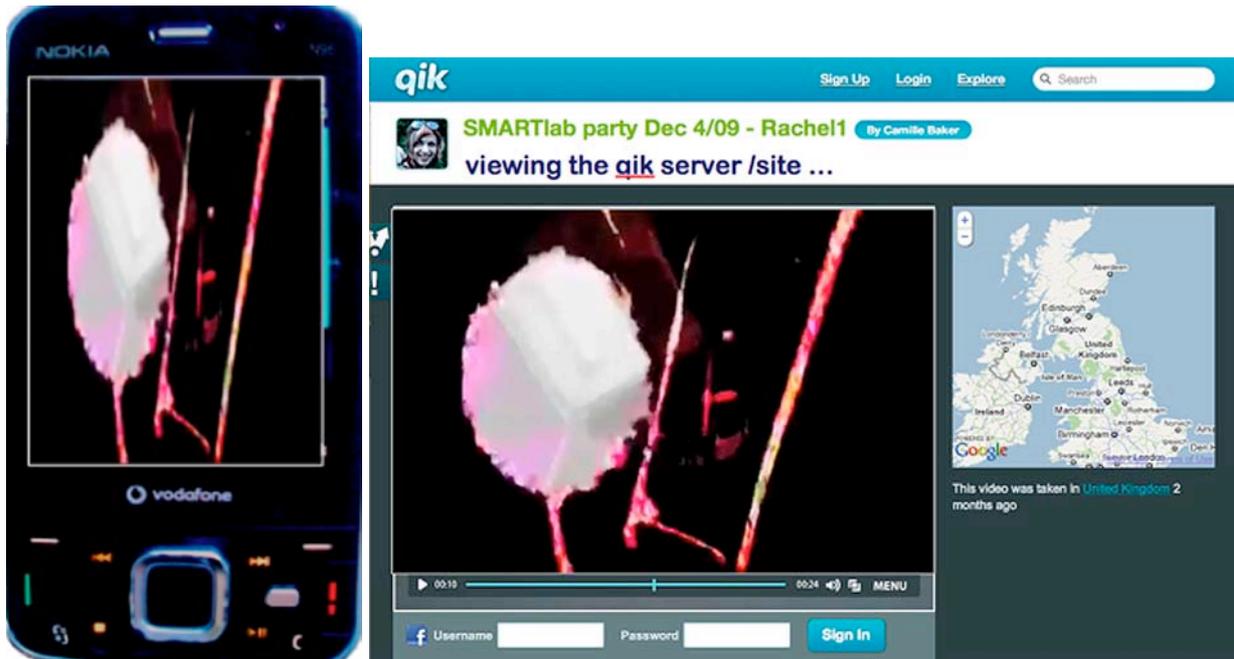


Figure #3 © 2009 C. Baker - technical diagram of the networked performance interaction

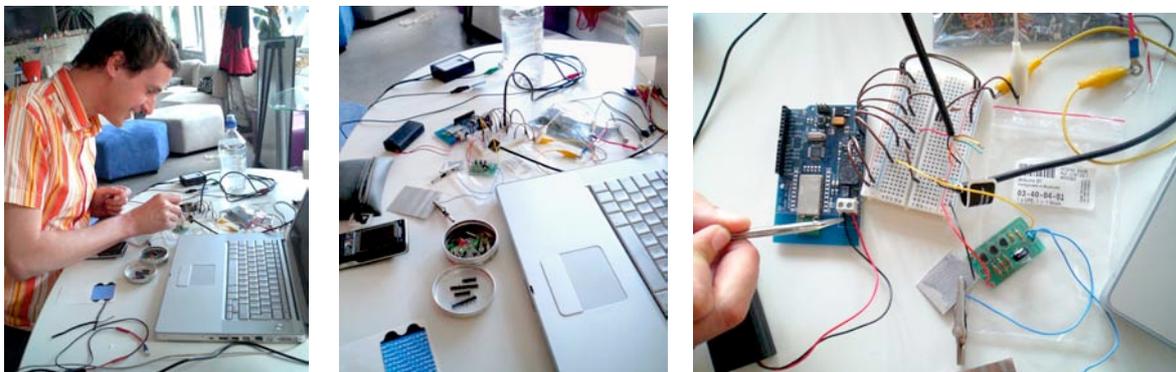
In practice, however we discovered that the phone models we were using and their operating systems were not yet capable to implement and operate this type of custom software (see vision interface Image 5 above). Group 3 became the remote group who viewed the live streams online on the *MINDtouch's qik* page and RealPlayer on their phones.



Images #7 and 8 © 2010 C. Baker – still from final mixes on phone and qik.com interface

It was discovered that most of the remote participants chose to watch, with only a couple contributing their own video streams during the last event.

## Technical Design



Images #9, 10, and 11 © 2008 C. Baker: Michael Markert and custom biofeedback sensor electronics development

German electronic musician/creative electronics artist, Java and mobile programmer Michael Markert, joined the project in Spring 2008. He assembled and created the DIY biofeedback sensor system to use with a Bluetooth Arduino system. The data is sent to mobile phone or the computer to receive, process, and visualize the data. The software Michael Markert developed for the phones worked well with the sensors.

Others helped to embed the sensors within customized clothing designed and constructed by two fashion designer contacts. They created garments to embed the sensor system,

allowing for flexible, less encumbered movement, in a more aesthetic piece for social and performance contexts [15].

Fashion designers Tara Mooney and Rachel Lasebikan started working on the project in July 2008 until the fall of 2009, as part of the SMARTlab wearable research group. Their aim was to design lightweight, flexible and fun garments to embed the sensors within. [16] What resulted, due to limited time and resources available for this aspect of the research, were attractive iterative pieces that attempted to hide the electronics.



(Sensor vest designed and made by Tara Mooney and Rachel Lasebikan)

**Image #12 © 2009 C. Baker: Alpha / Garment 1 with embedded sensors**

The final garment system was designed to tighten around the chest of the participant, so that the breath sensor can measure the rise and fall of the ribcage each with inhalation and exhalation. In hindsight, working with an already researched, designed, and tested garment for more cost might have saved time, effort, and energy needed to focus on the performative elements that were the thrust of the project, all part of the research process. However, the work by these two talented designers was excellent and appreciated.



**Images #13, 14, and 15 © 2009 C. Baker: Beta / Garment 2 with embedded sponsors**

---

15 This proved more difficult than expected in practice. Ultimately I would have had no wires and use conductive threads and materials, which would be the best approach, but this was outside the time constraints and resources of the *MINDtouch* project.

16 Both of the versions of the garment made were designed with the electronics in mind.

Additional software was developed for the live mixing, and streaming of the videos and delivery to the server database for real-time collaborative video collage. The concept was of a custom mobile VJ tool that was distributed across multiple mobile phones in the mobile network to audio/ visual performers/VJ together playfully. However, to make VJ software of the sophistication desired, was not and is still is not possible, on current mobile operating systems and phone models (it may be possible for the iPhone or others in the very near future). So instead, I proceeded to work with another programmer to make VJ software that at least integrated the sensor data into the mixing process.

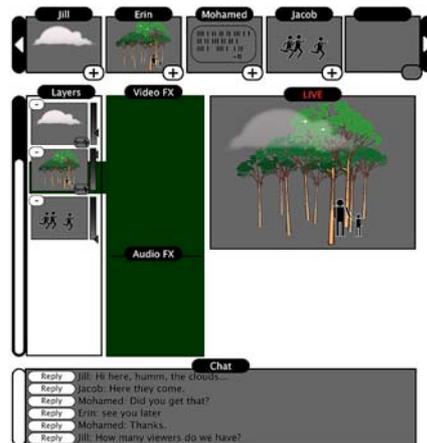


Figure #4 © 2007 Brady Marks with permission: vision of the mobile interface for social VJing

The software created takes the body data from the sensors, to mix and stream the video from the database of clips, adds visual effects then the streams the mixed video back out through the server, ideally in real-time. The software accesses and mixes videoclips from four folders of videoclips into one mixed video, then QuickTime Streaming Server streams the video on the web and to RealPlayer or web-enabled phones. This allows the remote audience members to share and interact with the generative visuals collage of other people's video. Then Evan Raskob came onto the team to assist with the network integration of the project.

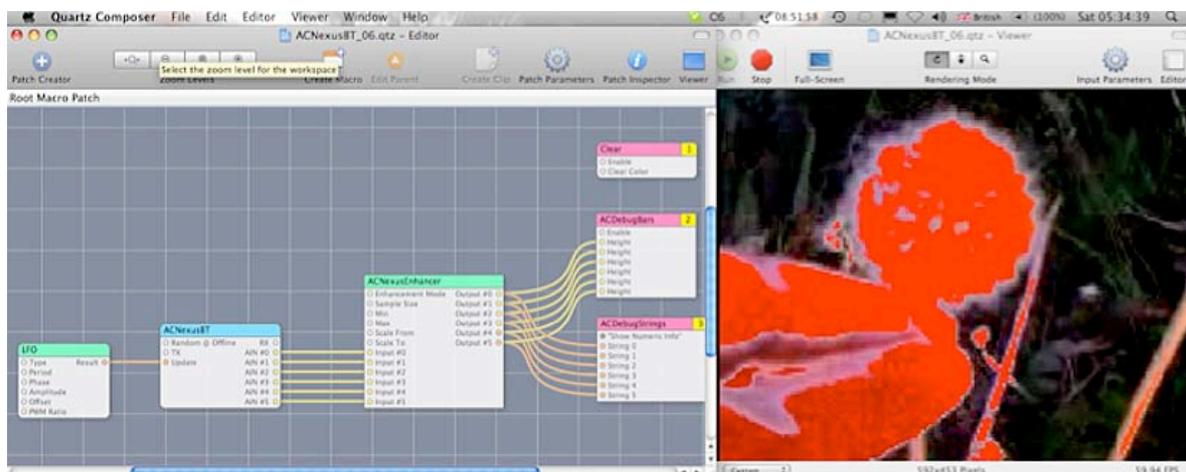


Image #16 © 2009 C. Baker: Quartz Composer early software patch view

Ideally, this is meant to be a two-hour event, but it was discovered that it could be made shorter depending on the social event and the attention span, enthusiasm and creativity of the participants. The key focus was the performance, not on the technology, so the technology was meant only as an experience facilitator. The events were designed to be mainly about exchange, non-linguistic visual play, collaboration, participation, and interaction, exploring movement and spontaneity.

## Conclusions

This project brought together diverging areas of new media research and media art/performance practices, and contributes to additional ways of working with wearable devices, mobile phones and video in performance and participatory activities. It also contributed new ways of thinking about presence and embodiment in the digital media context with respect to 'interfacing' the various technologies, practices and ideas. The goal has been to interface technologies to aid in connecting remote groups, enabling them to re-engage with each other, affectively and expressively in new non-verbal/textual creative ways.

This practice-based work has been a way to explore the concepts of presence, liveness and embodiment in the network in a practical project using mobile video and biofeedback through participatory engagement. It developed a system to aid people to tune into their bodies and translate their sensations and perceptions visually and playfully using their mobile devices. It asked people to attempt to communicate non-verbally and visually, repurposing their relationship to mobile devices. The project developed a system for socially creative practice, available to anyone with a video capable phone, enabling them to share their visual expressions over digital networks, in real-time (optimally). It also explored ways that people can communicate intimately in social contexts with each other, across distance, as another method to embody technology, transmitting their presence and emotion remotely, through a new mobile visual modality.

The main discoveries during the *MINDtouch* media art research emerged from observing mobile video capturing behaviour in the phase 1 workshops and the last phase participatory events, that resulted in a new mobile media screen aesthetic. Some of the observed behaviours include: the ease of expression of video capture on the mobile; the intimacy [17] and *affective* [18] nature of mobile devices, the inherent gestural qualities

---

17 In the context of this project and my work overall, the term 'intimacy' is used in a generic, common, dictionary use of it, meaning: closeness, private, personal, familiar, in relationship to or on the body, or between two bodies/ people in relationship.

18 'Affect' and the use of it here are particularly reference Massumi, Merleau-Ponty, and Grosz's interpretations of it. Briefly, Brian Massumi's definition is that: *Affect [...] as couched in its perceptions and cognitions [...] implying a participation of the senses in each other: the measure of a living thing's potential interactions is its ability to transform the effects of one sensory mode into those of another (tactility and vision being the most obvious but by no means the only examples; interoceptive senses, especially proprioception, are crucial) [...] Formed, qualified, situated perceptions and cognitions fulfilling functions of actual connection or blockage are the capture and closure of affect. Emotion is the most intense [...] expression of that capture [...]* (Massumi, 2002: 35)

implied by the size and portability of the phones, as well as the ubiquity and accessibility of them.

The practical outcomes of the project also include: the development of new techniques to encourage people to connect to remotely to each other to re-engage each other and with the world affectively, in non-verbal, visual, non-textual ways through the mobile phone during networked activities. Participants seemed comfortable to use their bodies, as well as a range of expressive, gestural means to communicate, visually using the mobile devices. What was learned as a researcher was that the embodiment of technology, extension of presence, consciously directed emotional, and interpersonal connection through the mobile devices and activities occurred differently than anticipated. The participants were successful in exploring their own consciousness, non-verbal emotional, affective senses of embodiment, when using of mobile video tools to express themselves. Online participants seemed to experience some liveness of the stream of video, in real-time, even though they were unaware that the mixed footage that they were seeing was not the same as live videos upstreaming from the event at times. What was often seen was a live mix of the archived videos, which they unaware were not live. However, this still accounted for manifestations of experienced liveness, but more work need to be done to be conclusive in this exploration. Through intent and desire to connect, participants were able to send and transform their presence through the device, as one does through Internet engagement, and through these qualities it became clear that we can embody or send our presence through our mobile technologies over distance, beyond the typical voice and text modalities.

This experiment continues beyond the PhD and is closer to manifesting full interaction and network connection, to complete the technological loop of a body-to-video to body-through-video interaction, even though for the technological development had to be paused to complete the thesis. More still needs to be done to investigate the nature of the presence and liveness experienced by participants in the mobile performance context: in future versions within various social contexts and with various different groups.

## BIBLIOGRAPHY

- Auslander, P. (1999). *Liveness: Performance in a Mediatized Culture*, London and New York: Routledge.
- Auslander, P. (1997). 'Ontology vs. History: Making Distinctions Between the Live and the Mediatized', In *The School of Literature, Communication & Culture*, Georgia Institute of Technology: The 3rd Annual Performance Studies Conference, Atlanta, Georgia: Conference Archives. [Online] Available at <http://webcast.gatech.edu/papers/arch/Auslander.html> (Accessed 11 July 2006).
- Blast Theory (2003). *Uncle Roy All Around You* from performance group from Brighton, UK [Online] Available at [http://www.blasttheory.co.uk/bt/work\\_uncleroy.html](http://www.blasttheory.co.uk/bt/work_uncleroy.html) (Accessed July 2006).
- Boal, A., Jackson, A. (trans.) (1992). *Games for Actors and Non-Actors*, London and New York: Routledge.
- Bourriaud, N. (1998, 2002). *Relational Aesthetics*, Dijon: Les Presses du Réel pp. 84-102.
- Christensen, M. S. (2006). *As We May Feel: Interpreting The Cultural of Emerging Personal Affective Mobile Media*, PhD Dissertation, Denmark: Department of Innovative Communication at the IT University of Copenhagen.
- Damasio, A. (1999). *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. New York, San Diego, London: Harcourt Brace & Company.
- Dixon, S. (2007). *Digital Performance: A History of New Media in Theatre, Dance, Performance Art, and Installation*, Cambridge, Massachusetts: MIT Press.
- Goffman, E. (1959). *The Presentation of Self in Everyday Life*, New York: Bantam Dell Pub Group.
- Hawley, H. (2004) *Speech Marks*, mobile video installation. Available online at <http://www.artdes.mmu.ac.uk/profile/shawley/image/10349> (Accessed March 20, 2010)
- Idhe, D. (2002). *Bodies in Technology*, Electronic Mediations Vol. 5, Minneapolis, Minnesota: University of Minnesota Press.
- Kozel, S. (2007). *Closer: Performance, Technologies, Phenomenology*, Cambridge, Massachusetts: The MIT Press.
- Libet, B. (2004) *Mind Time: The Temporal Factor In Consciousness*, Cambridge, Massachusetts: Harvard University Press.
- Manovich, L. (2005), *Soft-Cinema*, interactive art project [Online] Available at [www.manovich.net](http://www.manovich.net) and <http://www.softcinema.net/movies.htm> or [http://www.manovich.net/cinema\\_future/toc.htm](http://www.manovich.net/cinema_future/toc.htm) (Accessed August 2009).
- Manovich, L. (2001), *The Language of New Media*, Cambridge, Massachusetts: MIT Press.
- Massumi, B. (2002). *Parables for the Virtual: Movement, Affect, Sensation*, Durham and London: Duke University Press.
- Merleau-Ponty, M. (1958, reprinted 2002) *Phenomenology of Perception*, London and New York: Routledge.
- Mitchell, W. (2003). *Me++: The Cyborg Self and the Networked City*, Cambridge, Massachusetts: MIT Press.
- Presence Project* (2006-2009), research project, [Online] Available at <http://presence.stanford.edu/> (Accessed July 2009), Stanford University, Palo Alto, Ca; Exeter, UK: University of Exeter and London: University College of London.
- Phelan, P. (1993) *Unmarked: The Politics Of Performance*, London; New York: Routledge.
- Schechner, R. (1988, 2003). *Performance Theory*, London and New York: Routledge.
- Schiphorst, T and Anderson, K. (2004), *Between Bodies: using Experience Modeling to Create Gestural Protocols for Physiological Data Transfer*, International Conference For

Human-Computer Interaction Systems, Vienna, Austria: Conference Proceedings for CHI 2004.

Schleser, M., Baker, C. and Molga, K. (2009) 'Aesthetics of Mobile Media Art', In *Intellect: Journal of Media Practice*, Vol 10 (2&3), [Online] Available at <http://www.intellectbooks.co.uk/journals/view-Article.id=8520/> (Accessed May 2010), Bristol, UK: Intellect Press, pp. 101–122.

Shusterman, R. (2008), *Body Consciousness: A Philosophy of Mindfulness and Somaesthetics*, New York, NY: Cambridge University Press.

Shusterman, R. (2000), *Performing Live: Aesthetic Alternatives for the Ends of Art*, Ithaca and London: Cornell University Press.

Varela, F., Thompson, E., Rosch, E. (1991) *The Embodied Mind: Cognitive Science and Human Experience*, Cambridge, Massachusetts: MIT Press.

*whisper(s) project* (2002-2006). Lead by Thecla Schiphorst, School of Interactive Arts and Technology, Simon Fraser University, Surrey, BC Canada.

## **METADATA**

### **BIOGRAPHY**

Camille Baker is a cross-disciplinary digital media artist-performer/researcher/ curator working with: mobile devices, video art, live cinema, performance and interactive media, responsive environments, media art installation, telematics, new media curating and networked communities. She has a fascination with all things emotional, embodied, felt, sensed, the visceral, physical, relational, and participatory, using video, communication devices and biofeedback. She has been on a continuous quest to work with new technologies, expressive methods, via art and performance, in order to find new ways to connect people with each other, over distance better and in more embodied, emotional ways.

Camille's background includes: music composition and performance; electronic and media art; online video and animation; media art instruction; Executive Director/Curator of The Escape Artists Society in Vancouver, Canada; Lead Curator, Conference Director and Co-Performance Art Curator for New Forms Festival in Vancouver; documentary production; editor-in-chief of an online pop-culture relationship support magazine - *Tales of Slacker Bonding* (2000-2003); web design /development; visual arts curating; sculpture and modern dance performance.

Camille recently presented at the *DRHA 2010 Sensual Technologies Conference*, London, September 5-8<sup>th</sup>, *EVA Conference 2010 London*, *TEXTURES*, SLSAe 6<sup>th</sup> Annual Conference, Riga, Latvia, June 15-20<sup>th</sup>, 2010; ISEA 2009 in Belfast, Performing Presence Conference in Exeter, March 27-20 2009; at Kinetica, for the London Science Museum's: *Man and Machine Series*, November 2008; *MobileFest* in Sao Paulo, Brazil, November 2008; *FilMobile* Conference and Exhibition, London, April 2008; *MobileFest* London December 2007; Cultural Studies NOW Conference 2007, University East London; Knowledge London 2007, University of Westminster, London; The New Forms Festival 2006: *TRANSFORMATIONS*, *ArtCamp: un-Conference on Art*, Vancouver, Canada; The Planetary Collegium's *Consciousness Reframed 2004: Qi and Complexity Conference*, Beijing, China, November 2004. See her portfolio online at [www.swampgirl67.net](http://www.swampgirl67.net)

### **CONTACT DETAILS**

#### **(work)**

Lecturer, Multimedia Broadcast Design, School of Engineering and Design  
Brunel University, Uxbridge, Middlesex, UB8 3PH, United Kingdom  
Tel (office) 01895 266550 // [Camille.Baker@brunel.ac.uk](mailto:Camille.Baker@brunel.ac.uk)

#### **(home)**

Flat 14, 58 West End Lane, West Hampstead, London, NW6 2NE, United Kingdom  
email: [camille@swampgirl67.net](mailto:camille@swampgirl67.net) / mobile: +4478 4768 1127