

Mobile Devices, Virtual Presence, and Surveillance: Questions Concerning Epistemology and Some New Challenges for Privacy and Data Protection

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Abstract: Mobile devices help people to stay connected across huge distances and to socially interact while in spatially separated environments. However, compared to face-to-face-interaction, communication and interaction via mobile phones currently are still restricted. Therefore, an idea of Mann, Fung, and Lo concerning cyborglogging with camera phones shall be taken a step further. A scenario is described in which a modified version of their design is used to support social interaction across the borders of spatially separated environments in a new manner. It shall be argued that this might create a new understanding of being present at a certain place while at the same time it raises questions concerning privacy, surveillance and authenticity of experience.

Surveillance and Control

Since several years, surveillance and control is a pretty hot topic in scholarly as well as in political debates. To some extent, the 9/11 incident gave birth to these discussions and debates, at least on the political level. However, research on issues of surveillance and control in modern or, as some would say, postmodern societies began much earlier than 9/11. In many respects, one could say that Michel Foucault started this kind of research with the publication of his book "Surveiller et Punir. La Naissance de la Prison" in 1975. And if one takes the scholarly debates concerning privacy into account, one might say that research on surveillance and control started much earlier, for instance with Samuel D. Warren and Louis Brandeis' hallmark paper "The right to privacy", published in 1890.

A large part of this ongoing debates deal with the relation of the state and its citizens. According to Foucault and many other scholars, surveillance and control are methods to govern people. From this point of view, surveillance and control are understood as something repressive, as methods to force people to do things they otherwise would not do. Other scholars like David Lyon (2007) stress that surveillance and control make possible social sorting which means that certain people at certain places are labelled as "[...] 'undesirables' by examining individuals' immediate attributes for disliked characteristics. A person might fall into a pariah category because of what she is wearing, who she is "hanging out" with, or her demographic category", as Kang and Cuff (2005: 122) puts it.

Common understanding of surveillance and control most frequently implies that there is some kind of Orwellian 'Big Brother' who is watching us. Regularly, state authorities like the police or secret services are identified as Big Brothers, but insurance companies, search engine providers like Google and companies running social networks like Facebook – generally speaking private companies – are also very often mentioned. These actors collect, process, and store huge amounts of personal related information and use it in their own interest. Compared to them, we as citizens or consumers are relatively powerless.

Sousveillance and Equiveillance

To abate or even abolish this asymmetric power relation, Steve Mann (2004b: 620) suggests that people should employ information and communication technology for the purpose of 'sousveillance'

which “[...] refers both to hierarchical sousveillance, e.g. citizens photographing police, shoppers photographing shopkeepers, and taxi-cab passengers photographing cab drivers, as well as personal sousveillance (bringing cameras from the lamp posts and ceilings, down to eye-level, for human-centered recording of personal experience).” Additionally, Mann, Fung, and Lo (2006: 177) coined the term ‘equeveillance’ to emphasize “[...] a peer-to-peer approach that decentralizes observation to produce transparency in all directions.”



Figure 1. Evolution of cyborglogging (Mann 2004a: 4).

Briefly speaking, sousveillance and equeveillance are characterized by two aspects. The first one must be understood in a political sense as already pointed out: Sousveillance and equeveillance shall wane or eliminate an asymmetry of power between, for example, state authorities and citizens. Each and every citizen shall be empowered to employ the same surveillance measurements as state authorities and companies do. The second aspect must be understood in more individual as well as social terms: Mann and his colleagues would like to use technology for artistic reasons, to create some kind of multimedia diaries – called ‘cyborglog’ –, and for purposes concerning social interaction.

They demonstrate that ordinary mobile phones can be employed for cyborglogging or ‘glogging’. In principle, they created a client-server-architecture with mobile phones as clients with which pictures can be taken and text can be entered. Pictures and text are sent in real-time to a server on which they are stored. Users of these servers now can access those contents using a web browser in real-time, too. The authors stress (Man, Fung, Lo 2006: 178) that “[i]n contrast to other photosharing sites, where images are uploaded from PCs, ‘glogger uses camera phones which are commonly carried by people in their day to day lives in real-time.” A Microsoft Research project called “Sense-Cam” (<<http://research.microsoft.com/en-us/um/cambridge/projects/sensecam/>>, last visited 2011/04/22) realizes a somehow similar approach although in this case no automatic transmission of photos to a website takes place; instead the photos are stored within the camera.

Mann, Fung, and Lo also discuss the social, moral, and legal aspects of the technology they developed. With regard to the paper at hand one of the most important aspects they bring up is that the cyborglogging system as well creates an asymmetric power relation although it was supposed to mitigate such asymmetries. This accrues from the fact that only the person who wears and utilizes the mobile phone actually knows whether it takes pictures or not. This raises moral and legal concern, as Mann, Fung, and Lo (2006: 179) admit: “Naturally, as with any new technology, there will

be both advocates as well as opposers. When faced with the moral or ethical dilemma of when to run 'glogger, we consider, as a base-level of operation, the notion of *equivoillance*. *Equivoillance* doctrine says that as long as surveillance is present in the environment, that a person ought to have a moral and ethical right to engage in *sousveillance*.”

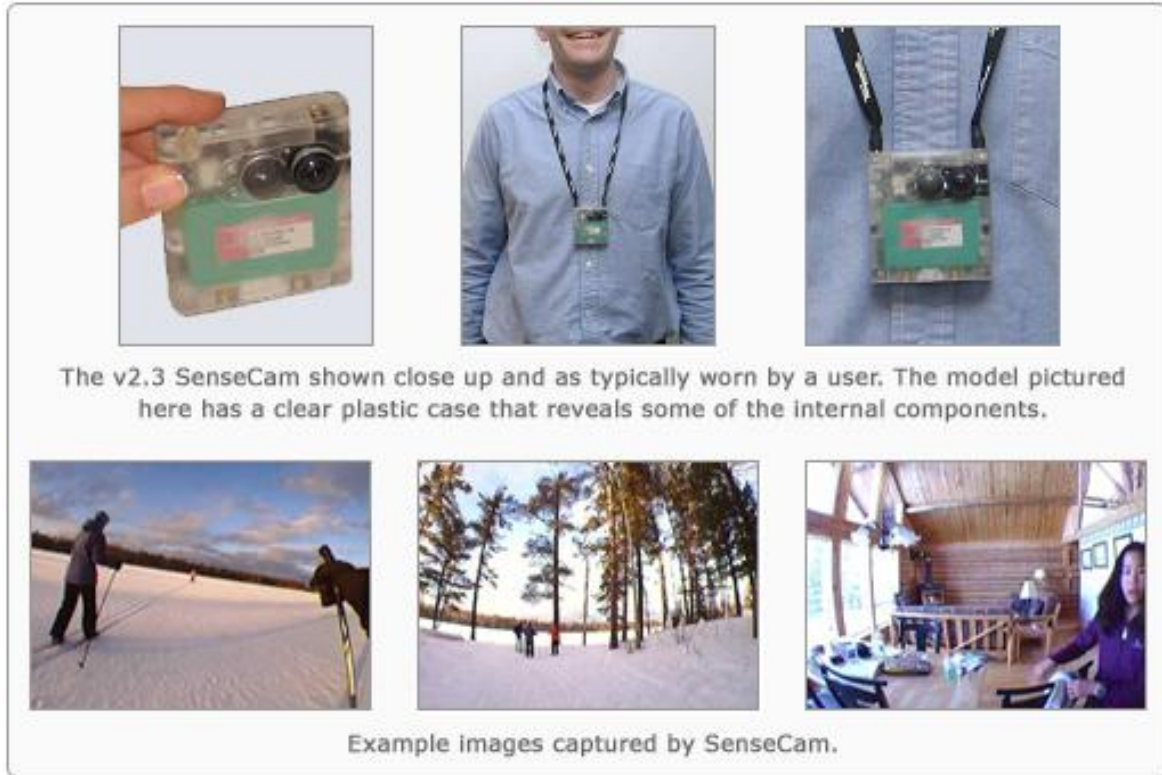


Figure 2. Microsoft SenseCam.

From the point of view of an ethicist it must be stressed that Mann, Fung, and Lo's position seems to be somehow naïve and therefore must be challenged. For the presence or absence of a moral right does not depend on whether others act according equivalent moral rules. To put it a bit exaggerated but bringing it to the point: One does not have the right to misbehave just because there are people who behave in a morally wrong way. Additionally, it has to be stressed that in some countries, for instance Germany, under certain circumstances it is legally prohibited to take pictures of persons without their informed consent (§823 BGB; §201a StGB; §§22-24, 33, 37, 38, 42-44, 48, 50 KUG). But although these moral and legal aspects are most interesting as well as important, here they shall not be examined anymore.

Mobile Phones and Real-Time Video Streaming

In earlier papers (e.g. Mann 2004a), Steve Mann already brought up the idea of “continuous lifelong capture of personal experience” using video technology. Other scholars mentioned technologies that could be employed to share experiences and to communicate and interact across the borders of spatially separated environments (cf. Brown et al. 2003; Nijholt, Zwiens, Peciva 2007). These ideas and conceptions now shall be put a step further. Let's suppose the following scenario: K. is carrying a Bluetooth headset equipped with a microphone, earphones, and a small head mounted camera. Compared to Mann, Fung, and Lo's setting this would assure that the camera would have almost exactly the same perspective as the person carrying it. A modified version of the technical

infrastructure that Mann and his collaborators presented might be used to transmit and receive video streams in real-time from one 3G mobile device to another or even to a couple of them. Received video streams may be projected on any suitable surface employing a micro beamer. Another option would be to utilize a Tablet PC to show video streams and to transmit own content. A bit more high-tech would be to use head mounted displays.

A first or simple version of this technology would merely transmit video streams and the respective sound; however, it certainly would be possible to augment the visual and acoustic channel with other sensory input, for instance from haptic interfaces, or data concerning environmental conditions such as temperature or humidity. It might also be useful to transmit data about the physiological conditions of users. Yet, it would be rather easy to monitor heart beat frequency, blood pressure, and the like, but it would be much more difficult to bring these data to the attention of the receiving person in an adequate and effective way: Just showing numbers on a display would not provide for a real experience.



Figure 3. A mobile phone as wearable device (Mann, Fung, Lo 2006: 179).

In some situations it might be very useful to record all the above mentioned information in order to evaluate and review them later on, for instance in case of emergency rescue, law enforcement, or even combat missions. However, this kind of usage shall not be discussed further. Instead, the real-time application of such technology shall be evaluated.

Although persons using this setting might be spatially separated by huge distances for them it would be possible to interact with each other in a pretty new way: They would hear and see what there peers would hear and see and vice versa. In fact, one could say that although a person not

really resides at a place she is present. This concept shall be called 'virtual presence'. The difference compared to 'telepresence' or 'copresence' is that these generally require using video-conferencing equipment that is located in a particular room (cf. Pinhanez, Pingali 2004). Moreover, at least the more simple technical solutions of virtual presence would utilize already existing consumer products. However, it must be stressed that not the technology itself shall be focused here but its epistemological consequences.

A New Understanding of Presence

It is obvious that a technology like virtual presence would make moral and legal questions as pressing as the original concept of Mann, Fung, and Lo, particularly with regard to surveillance and control, privacy and data protection. It has to be stressed that the new setting would not abolish the asymmetric power relation between the person employing virtual presence and those who are pictured as long as no additional technological measurements are utilized or respective social rules are enforced. However, such aspects shall not be discussed any further in the paper at hand. Rather, the epistemological consequences of virtual presence shall be evaluated.

The major appeal of virtual presence surely would be that in principle we would be able to communicate and to interact with persons spread across spatially separated environments all over the world; we could 'attend' any event anytime anywhere. But as the famous Science Fiction writer Isaac Asimov already described in 1957 in his novel "The Naked Sun", our understanding of being present might change dramatically: 'to be present' and 'to reside' then would mean something completely different. Furthermore, virtual presence might change our understanding of reality, particularly if high-tech equipment as mentioned above would be utilized.

Indeed, the idea that a mind-independent reality does not exist is widespread among social scientists and philosophers (e.g. Berger, Luckmann 1966). But even if one sticks to the idea that there is a mind-independent reality most scholars would agree that to a certain extent our experience of reality is a theory-driven creation, construction, or fabrication of our brain determined by our knowledge, prejudice, and expectations. What we, for instance, see is not something like a representation of the world as it is but rather an image that, to a large extent, our brain creates. Moreover, it is widely accepted among most scholars that media of any kind strongly influence the process of constructing a worldview. Therefore, since virtual presence is a kind of media, it would affect our worldview, too. But the totality of virtual presence seems to introduce a leap in quality if compared to other media like broadcasting or television. If anything, the experience of virtual presence might only be weighed against the total immersion that can take place while playing computer games or going through virtual realities (cf. Cranny-Francis 2007).

One other difference compared to media like broadcasting or television is that it would not make sense anymore to talk about content of (digital) media. For this content will be integrated in our own experience in such a way that one cannot talk about a representation or mapping of reality (cf. May, Hearn 2005: 200). Hence, at least to some extent, the dualism of I and world might be abrogated because the distinction of world on the one hand and information or knowledge about the world on the other hand could not be drawn anymore. Virtual presence just might taken for granted the same way like today the possibility to talk with distance others via mobile phone. Current findings already suggest that using mobile phones shows deep impacts to psychological traits of their users (Perterra 2005; García-Montes, Caballero-Muñoz, Pérez-Álvarez 2006). At least it can be stated that virtual presence probably would blur the borders of virtual and embodied or physical space and would help to create what often is called 'hybrid space' (e.g. de Souza e Silva 2006).

Truth and Falsity of Images

In his famous novel "1984" George Orwell not only described a society characterized by ubiquitous surveillance and control but he also depicted the methods of historical misrepresentation by manipulation of documents of any kind. One of these methods is photomontage. In our times we know

the verb 'to photoshop': Its use shall indicate that a digital picture was modified to increase, for instance, its quality. But pictures can be manipulated to the extent that they do not show truth anymore.

It is seductive to believe that as long as we know all steps of the production and reproduction of a picture – or any other kind of document that shall represent reality – we would be able to authenticate the validity of this particular picture. But even if we assume that a picture actually can represent reality, we have to learn that the validity of a picture must be authenticated not only by technical means but by socially defined rules. As observers we must rely on that a picture in fact shows reality as it is. In this regard, Escudero Chauvel (1997) coined the term 'media contract' for the rules which shall authenticate the validity of documents that shall represent reality. In case of, for instance, traditional journalism, one might say that this media contract actually more or less performs successful. But one could be skeptical whether equivalent rules can be defined, implemented, and enforced in the case of virtual presence.

For one has to learn that virtual presence probably will come together with the disposability of huge computing capacities on the server side as well as on the client side. Current mobile devices already provide for computing power comparable to that of personal computers less than five or six years ago. The respective computing power would suffice to employ at least simple real-time video manipulation and filtering. Moreover, on the server side cloud computing can provide for pretty cheap and massive computing capacities. These can be utilized to manipulate transmitted pictures and video streams in real-time or with minute delays only. For the recipients of such content it would be very difficult or even unfeasible to determine whether it is authentic or manipulated.

Hence, from the point of view of epistemology it might be still possible to determine what is real and what is a construction based on technology. But reasonably, one might be skeptical whether we as users of virtual presence would be able to decide if the transmitted information is authentic or manipulated.

Further Research

As previously pointed out, technologies like virtual presence raise serious moral and legal questions concerning privacy, data protection, power relations, and the like that could not have been discussed in the paper at hand. To answer those questions, at first it would be necessary to clarify which moral and legal norms and rules would be affected by virtual presence. But additionally, it would be mandatory to evaluate users expectations, hopes, fears, and of course reactions with regard to such a technology because it would not make sense to be concerned about virtual presence if its potential users would decline to apply it.

Furthermore, bandwidth available for consumers using mobile devices would allow for services that would not only employ visual and acoustic channels for communication and interaction. Technology could provide for other sensory input applying, for instance, haptic interfaces. Therefore, it would be essential to empirically evaluate which interfaces in which situations and for which uses cases would be most appropriate for interaction across spatially separated environments.

Conclusion

Mann, Fung, and Lo's conception of a technology that makes feasible sousveillance and equiveillance was presented to show that ubiquitous computing technology not necessarily supports surveillance and control in an Orwellian sense. Virtual presence as a modification and extension of the cyborglogging design was introduced which shall support communication and interaction of persons residing in spatially separated environments. It was demonstrated that without further technological means or respective social rules the new setting raises the same moral and legal concern as Mann, Fung, and Lo's design. Moreover, it was talked about epistemological theories of reality and that our understanding of presence would substantially change if virtual presence would be employed. Final-

ly, it was stressed that users of virtual presence probably will not be able to determine whether that what they experience would be an authentic or manipulated reproduction of reality.

References

- Berger, Peter L.; Luckmann, Thomas (1966): *The Social Construction of Reality. A Treatise in the Sociology of Knowledge*. New York: Random House.
- Brown, Barry; MacColl, Ian; Chalmers, Matthew; Galani, Areti; Randell, Cliff; Steed, Anthony (2003): *Lessons from the Lighthouse: Collaboration in a Shared Mixed Reality System*. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. Fort Lauderdale: ACM, 577-584.
- Cranny-Francis, Anne (2007): *Ecce Techno, or, Suiting the Biomechanical Platform: Immersion and Contemporary Embodiment*. In: Visual Communication 6 (2): 156-169.
- de Souza e Silva, Adriana (2006): *From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces*. In: Space and Culture 9 (3): 261-278.
- Escudero Chauvel, Lucrecia (1997): *The Media Contract*. In: Nöth, Winfried (ed.): Semiotics of the Media. State of the Art, Projects, and Perspectives. Berlin, New York: de Gruyter, 99-107.
- Foucault, Michel (1995): *Surveiller et Punir. La Naissance de la Prison*. Paris: Editions Gallimard.
- García-Montes, José M.; Caballero-Muñoz, Domingo; Pérez-Álvarez, Marino (2006): *Changes in the self resulting from the use of mobile phones*. In: Media, Culture & Society 28 (1): 67-82.
- Kang, Jeffrey, Cuff, Dana (2005): *Pervasive Computing: Embedding the Public Sphere*. In: Washington & Lee Law Review 62: 93-146.
- Lyon, David (2007): *Surveillance, Security and Social Sorting: Emerging Research Priorities*. In: International Criminal Justice Review 17 (3): 161-170.
- Mann, Steve (2004a): *Continuous Lifelong Capture of Personal Experience with EyeTap*. In: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences. ACM: 1-21.
- Mann, Steve (2004b): *"Sousveillance": Inverse Surveillance in Multimedia Imaging*. In: Proceedings of the 12th Annual ACM International Conference on Multimedia. New York: ACM, 620-627.
- Mann, Steve; Fung, James; Lo, Raymond (2006): *Cyborglogging with Camera Phones: Steps toward Equiveillance*. In: Proceedings of the 14th Annual ACM International Conference on Multimedia. Santa Barbara: ACM, 177-180.
- May, Harvey; Hearn, Greg (2005): *The Mobile Phone as Media*. In: International Journal of Cultural Studies 8 (2): 195-211.
- Nijholt, Anton; Zwiers, Job; Peciva, Jan (2007): *Mixed Reality Participants in Smart Meeting Rooms and Smart Home Environments*. In: Personal and Ubiquitous Computing 13 (1): 85-94.
- Pertierra, Raul (2005): *Mobile phones, identity and discursive intimacy*. In: Human Technology. An Interdisciplinary Journal on Humans in ICT Environments 11: 23-44.
- Pinhanez, Claudio; Pingali, Gopal (2004): *Projector-camera systems for telepresence*. In: Proceedings of the 2004 ACM SIGMM Workshop on Effective Telepresence. New York: ACM, 63-66.
- Warren, Samuel; Brandeis, Louis D. (1890): *The Right to Privacy*. In: Harvard Law Review 4 (5): 193-220.