Cyborglogging with camera phones: Steps toward equiveillance

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ABSTRACT

We present "**equiveillance**" as a conceptual framework for understanding the balance between **sur**veillance and **sous**veillance. In addition to this conceptual framework we also present a practical embodiment of equiveillance in the form of a new program called "cybor**glogger**" ('glogger) that runs on most modern camera phones, along with a server architecture to support 'glogger. Finally we show how the 'glogger program and server architecture create sousveillance communities. Cyborglogger implements features that are ideal for sousveillance such as including continuous capture and real-time upload aimed at communicating personal day-to-day narratives of everyday experiences. The server architecture includes a custom-built community web site that allows a sousveillance community to interact, in real time, with 'glogs from various users of the system. Participants can use their camera phones to display output from other camera phones, resulting in peer-to-peer sharing of visual narratives. This real-time live monitoring creates a social commentary and discourse that runs parallel to the widespread surveillance already present in the world around us. Unlike surveillance, which often happens in secrecy, our tools for sousveillance are freely available and moves personal experience capture into the realm of the everyday, with an open forum for public discourse. We thus explore how users engaging in sousveillance with the 'glogger application provide a balance to existing well-established surveillance practices by examining the philosophical questions that arise from the new artistic practice of sousveillance.

Categories and Subject Descriptors

H.4.3 [**Information Systems**]: Information Systems Applications—*Communications Applications*; K.8.0 [**Computing Milieux**]: Personal Computing—*General*

General Terms

Design, Human Factors, Security, Legal Aspects

Keywords

Continuous Archival Retrieval, Personal Experiences, Cyborg Logging

1. INTRODUCTION: SURVEILLANCE AND SOUSVEILLANCE

Surveillance literally means (in French) "to watch from above". Research on the topic of surveillance is well established by way of a number of IEEE and ACM conferences as well as various journals, such as Surveillance & Society.

More recently, the notions of "inverse surveillance" as well as personal experience capture (both referred to as "sousveillance") have emerged. Sousveillance stems from the French word sous, meaning "below", and "veiller" ("to watch"). Sousveillance originated with the use of cyborg-logs (i.e. using electric eyeglasses) and other wearable computing devices.

Surveillance connotes a kind of "archicentric" omniscient "eye-in-the-sky" (God's eye or authoritarian view), in which cameras are affixed to buildings or other architectural elements. Conversely, sousveillance involves the recording of an activity by a participant in the activity. Panoptic surveillance often requires secrecy, i.e. as per Bentham's centralized optical system that ensures total transparency in one direction and zero transparency in the other direction.

Sousveillance usually involves a peer-to-peer approach that decentralizes observation to produce transparency in all directions. Sousveillance seeks to reverse the otherwise one-sided panoptic gaze. Sousveillance is related to (even if the opposite of) the tradition of surveillance and the artistic practice explored by surveillance artists like Julie Scher, the Surveillance Camera Players, and the Critical Art Ensemble. The opening keynote for the 15th Annual Conference on Computers, Freedom & Privacy, by the Association of Computing Machinery (ACM CFP 2005) was a panel discussion on Equiveillance [1]. Additionally, a sousveillance workshop, performance, and deployment was coordinated for the conference, including the creation of 500 sousveillance devices that were made and deployed at this event (Fig. 1).

2. EQUIVEILLANCE THROUGH A CAMERA PHONE SYSTEM

In this paper we present a camera phone tool, which we call "Cyborglogger" (or 'glogger for short), that enables camera phones to be used in a sousveillance Cyborglogging system. Cyborglogger is a readily available [1] tool that makes

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[1]Downloadable from http://glogger.eyetap.org
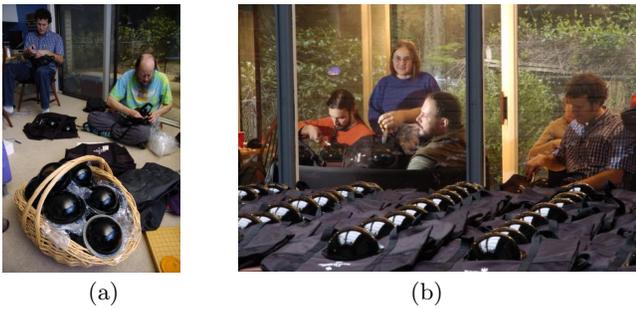
(a)   (b)

Figure 1: Preparing for ACM-CFP 2005 Opening Keynote: The Opening Keynote address was a panel discussion on equiveillance. Additionally, a "maybecamera" sousveillance device was given to each attendee. (a) **ACM CFP 2005 Dome sewing party** Alex Cameron (upper left), John Gilmore (at right), and numerous others participated in the dome sewing party organized by ACM CFP 2005 conference Chair, Deborah Pierce. (b) **Manufacture of ACM CFP 2005 sousveillance bags** Five hundred "maybecameras" were manufactured for ACM's CFP 2005. The domes were made by a vacuum forming process, on a mandrel that could handle four at a time. They were then laser-drilled, using an automated CNC process. Finally, a team of approximately 20 volunteers hand-assembled the units by sewing them onto the conference bags, (one for each each conference attendee). Wearable wireless video cameras were inserted into some, but not all of the bags (hence the name "maybe camera"). Additionally, some (but not all) of the bags that had no cameras in them had flashing red LEDs and other "fake" circuitboards. During the conference, images from the real working camera bags were broadcast over the Web and in various places throughout the conference hall and surrounding hotel space, on large screens.

possible an artistic form of personal expression. It allows the practice of Sousveillance to be performed and resulting images and narratives to be produced. The creation of such a tool that is freely available moves the exploration of Sousveillance a step forward from previous work.

Cyborglogger is a J2ME program and has been successfully tested on Nokia Series 60v2 phones[2] and Sony Ericsson phones[3] with 176x220 resolution. Additionally phones which support the MIDP2.0 and CLDC1.0 profiles as well as JSR135 or later should be supported. Server side support is implemented through HTTP protocols. The server side is built using PHP, and several new XML descriptions were developed to support user commenting, and the creation of story-like narratives. click" image features for Sousveillance and continuous personal capturing that promote a different usage from typical point and shoot camera phone usage. Cyborglogger can be set to capture continuously without any key presses or user interaction. The camera phone may be worn, say dangling around the neck, and the camera will capture a first-person perspective set of images from the user's daily life (see Fig. 2).

The 'glogger system has several differences from other online photosharing communities. Firstly, 'glogger is aimed at creating real-time personal narratives. These are images and text taken by the person and published at the time the person is experiencing them (see Fig. 3). This differs from

[2]Nokia 3230, 6260, 6600, 6620, 6630, 6670, 6680, 6681, 7610, N70, N80

[3]Sony-Ericsson D750, K600, K608, K700, K750, V600, W550i, W600, W800i, Z1010

photo sharing sites which focus on online, web-accessible albums, but do not necessarily emphasize real-time upload or developing narrative. For example a 'glogger user may take a series of many images to describe the event as it develops in time, whereas traditional photographic sharing may seek to take only a few descriptive images of an event.

Realtime automatically-generated panoramas provide a new way to make sense of what 'gloggers can see. The field of view capturing an experience is expanded through the 'glogger system. Moreover, these panoramas automate the task of aggregating similar pictures (i.e. through automatic scene-change detection) into the same "orbit". The upper left portion of Fig. 5 shows an orbit taken with the system.

The camera phone becomes a "great equalizer" not merely in the sense of a political "weapon" but more importantly in the balanced sense of equilibrium that it can afford. Thus, although it is tempting to see SUR and SOUS as binary, us-versus-them opposites, we are hoping to build a system of equiveillance [2], that is, the possibility that these two very different social practices might somehow result in some kind of equilibrium. This paper contributes to the discussion of the use of ubiquitous cameras and 'glogging of events by discussing them within the context of Sur/Sousveillance and Equiveillance and the surrounding legal and ethical issues.

2.1 Concomitant cover activity

In 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. This further allows the exploration of "concomitant cover activity." The main force of equiveillance comes from an uncertainty as to whether or not the device is being used as a camera at any given moment. This stems from its various other uses. The other non–picture–taking purpose of the device provides for a concomitant cover activity.

In photography (and in movie and video production), it is desirable to capture events in a natural manner with minimal intervention and disturbance. Current "point and click" photographic or video apparatus create a visual disturbance to others and attract considerable attention on account of the gesture of bringing the camera up to the eye. Even if the size of the camera could be reduced to the point of being negligible (e.g. no bigger than the eyecup of a typical camera viewfinder, for example), the very gesture of bringing a device up to the eye is unnatural and attracts considerable attention, especially in establishments such as gambling casinos or department stores where photography is often prohibited.

The 'glogger system's continuous capture allows a camera phone to be worn, without giving an unusual appearance to others (such as a potential assailant). Such an apparatus might also be of use in personal safety. Although there are a growing number of video surveillance cameras installed in the environment allegedly for "public safety", there have been recent questions as to the true benefit of such centralized surveillance infrastructures. Most notably there have been several examples in which such centralized infrastructure has been abused by the owners of it (as in roundups and detainment of peaceful demonstrators). Moreover, "public safety" systems may fail to protect individuals against crimes committed by the organizations that installed the systems. The apparatus of this invention allows the storage and retrieval of images by transmitting and recording images

(a)   (b)   (c)

Figure 2: The art of sousveillance brings down the cameras from the ceilings guard towers, and lamp posts (see (a)), and re-situates them in a human-centered rather than architecture-centered context, down from the heavens, and down-to-earth, at the level of the average person (see (b)). The camera phone becomes a wearable device, worn from a strap around the neck. The camera, when resting, has an upside down ergonomic design (see (c)).
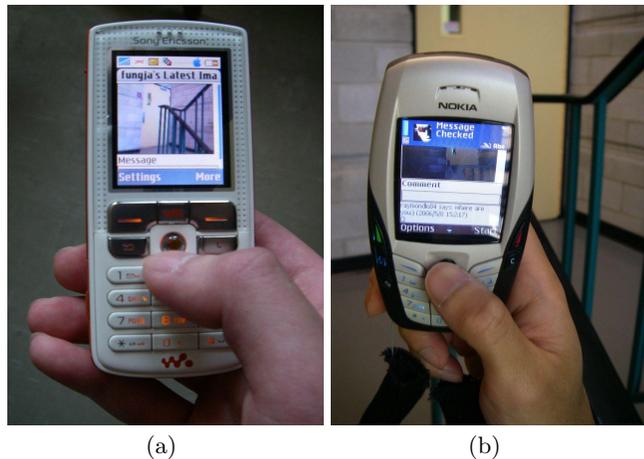

(a)   (b)

Figure 3: Cyborglogger instant communications through images and text directly on the camera phone

at one or more remote locations. Images may be transmitted and recorded in different countries, so that they would be difficult to destroy, in the event that the perpetrator of a crime might wish to do so.

Moreover, as an artistic tool of personal expression, the apparatus allows the user to record, from a first–person–perspective, experiences that have been difficult to so record in the past. As a result, the system can be used to capture everyday life without the conscious thought or effort of the user. Alternatively, if the user wishes to manually override the automated cyborglogging system, he or she can make deliberate narratives, complete with annotations, as illustrated in Fig. 4.

3. PHILOSOPHICAL, MORAL, AND ETHICAL QUESTIONS

One of the virtues of equiveillance is an increased reciprocal transparency in the operations of powerful entities engaged in surveillance. Such reciprocal transparency has become necessary, in part, because surveillance often takes

TTC Strike

Got myself to finch station and figured that TTC was on strike.

Uploaded:July 28, 2006, 5:39 pm by raymondlo84

Surprised at the subway. Found the doors locked, a sign saying no service. Unannounced transit strike.

Uploaded:July 28, 2006, 5:42 pm by fungja

Cannot go anywhere except going back home. Wasted two YRT tickets and 2 hours for nothing.

Uploaded:July 28, 2006, 5:46 pm by raymondlo84

Figure 4: Example of a deliberately constructed, communal narrative, as an alternative to a free-running cyborglog.

place surreptitiously, i.e., without the knowledge and consent of the people who are being surveilled, whereas sousveillance tends to be a more open process.

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 equiveillance. Equiveillance 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.

These philosophical questions are addressed in the following[4]:

- What legal remedies might be provided to deal with those who attempt to obstruct equiveillance? Do information rights extend to those who wish to have a record of their own personal experiences? For example, what remedies are available to a person who is prohibited from capturing personal experiences (e.g. "no photographs allowed")?

- Is requiring a person to turn off recording devices ever akin to "tampering with evidence"? If the result of such an incident is that the surveiller has a record but the sousveiller does not, ought there to be some sort

[4]For complete paper, see http://wearcam.org/anonequiveillance.htm or http://www.anonequity.org/weblog/ archives/2006/01/exploring_equiv_1.php

The Glogger Community

home | forums | about 'Glogger' | *Get the Mobile Phone Glogger program: browse your phone to http://m.eyetap.org*

raymondlo84's 'Glog

Featured Picture

Uploaded On: 2006/5/27 2:33:00
By: raymondlo84

Comments

raymondlo84 said @ 2006/5/27 2:33:26
Added another image that's in the same orbit

**fungja** said @ 2006/5/27 3:55:1
Hey looks like it turned out great.

daftcyborg said @ 2006/5/27 9:13:5
sweet, that looks great. i'll have to dig up the brochure i did on video orbits and put it online.

daftcyborg said @ 2006/5/27 10:8:14
more pics like this would be cool, i think that's a big distinction of glogger vs other sites. the ability to take panoramic images, the image processing.

raymondlo84 said @ 2006/5/27 10:51:57
Took me many trials before getting this orbit done... I've twisted the -steps to 2 2 48

Log in to comment on this picture.

raymondlo84's Pictures
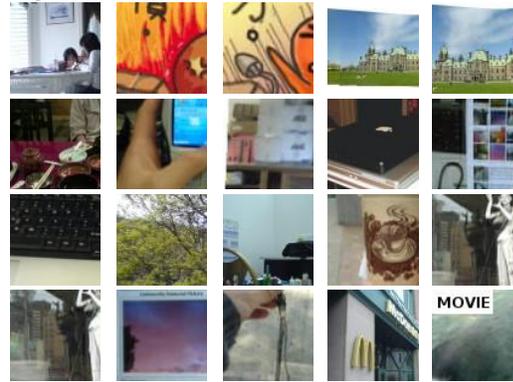
Latest | < 200 | < 100 | < 20 | browse | > 20 | > 100 | > 200

raymondlo84 said @2006/5/28 18:31:18:
But well, girl's mind is always hard to catch.
[Read more and Comment]

raymondlo84 said @2006/5/28 13:35:57:
That chinese character means angry.
[Read more and Comment]

krisabelle said @2006/5/28 12:42:42:
So cute :)
[Read more and Comment]

raymondlo84 said @2006/5/27 10:51:57:
Took me many trials before getting this orbit done... I've twisted the -steps to 2 2 48
[Read more and Comment]

raymondlo84 said @2006/5/27 1:43:16:
Another Orbits experiment. FFT is used.
[Read more and Comment]

Figure 5: A Cyborglog showing annotated images

of legal recourse to the sousveiller? Is there a rule of evidence or equity that could support equiveillance in such a situation? Consider, for example, a situation in which entities "A" and "B" would have each recorded their own version of qqthe truth" (i.e. their own choices of camera angle, etc., when they are interacting with each other), but for the fact that "A" prohibits "B" from recording. In this case, "A" has the only recording, because it has instituted a monopoly on the "recording of fact". Might a reasonable legal remedy to the possible conflict-of-interest inherent in such recording monopoly be to dismiss any such recordings made by "A" as inadmissible evidence in a trial or proceeding against "B"?

4. CONCLUSION

We have presented "equiveillance" as a conceptual framework, along with a practical embodiment by way of a program called 'glogger, and a server architecture for 'glogger. This work has explored the balance between surveillance and sousveillance, and presented a discussion of the need for this balance. We have shown how new technologies, such as camera phones, can be used to create "sousveillance" communities that can lead us toward equiveillance by providing a counterpoint to the existing well-established surveillance practice.

5. REFERENCES

[1] *CFP '05: Proceedings of the 15th annual conference on Computers, freedom and privacy*, New York, NY, USA, 2002. ACM Press.

[2] D. S. Pantagis. Sousveilance blog. *http://sousveillance.org.*