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# Primary and Secondary Context in Mobile Video Communication

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**Abstract**

The new video capabilities of mobile phones are starting to change the field of mobile communication. It is now dramatically easier to publish video in quasi-real time. We discuss how this change will affect the way people perceive video recording, in terms of privacy, transparency, and context. We use a model of primary and secondary contexts to analyze use situations, highlighting newly relevant research issues.

**Keywords**

Video recording, mobile phones, camera phones, context, privacy, publishing

**ACM Classification Keywords**

H.5.2 [Information Interfaces and Presentation (e.g., HCI)]: User Interfaces – Theory and methods, User-centered design.

H.1.2 [Models and Principles]: User/Machine Systems – Human factors.

**Introduction**

Video recording in public spaces is increasingly common with the ever rising popularity of videocams and camera-enabled mobile phones. While waiting for technical issues to clear, video conferencing is still a key driver for the new 3G mobile networks. There are new channels for publishing the video material, such as video blogs. Because of the always-with characteristics

of the camera phone, there are new populations of people recording video in new kinds of situations. Easy publishing with video cameras makes it possible to distribute even live material with minor effort.

Since the whole mobile content chain from capturing to consumption can now be done using one device, we believe that the way we perceive video recording will change. We discuss how the notion of context changes with the advent of ubiquitous video cameras.

### Related work

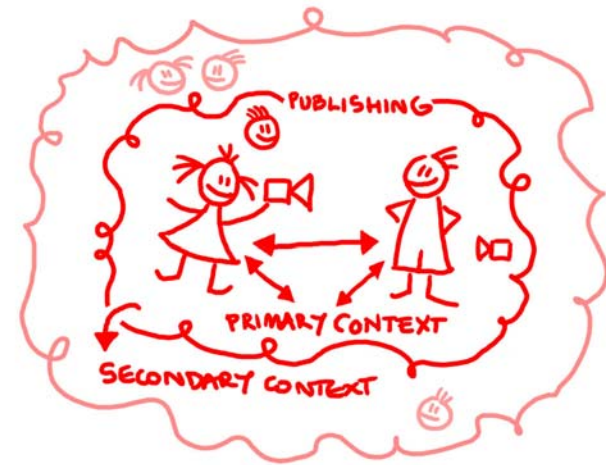
Camera phones are challenging the established models of communication. However, the existing body of work in visual communications and media science still applies in this new situation. For instance, Huhtamo [1] notes that already in the 19<sup>th</sup> century, a camera used to have a de-humanizing effect on the person carrying it. The potential of publishing has always affected subjects.

Although there is as yet little research about video phones, the studies of imaging with mobile phones give hints to the expected developments. For instance, more material is shared, and the sharing takes place relatively soon [2]. Kindberg et al [3] classify images by their social and individual uses, helping with affectional and functional tasks. Their work could be used to enhance our context models. Koskinen [4] observed that people familiar to each other rely on mutual trust for controlling sharing of sensitive material.

Dey et al [5] also divide contexts to primary and secondary. However, as most context research, their model focuses to the properties of the context information, not that of the user.

### Context as a container

We model the situations where mobile video is recorded and consumed as different contexts. The act of publishing (and thus the camera) defines the limit between *primary* and *secondary* contexts (Figure 1).



**Figure 1.** Publishing defines the boundary between primary and secondary contexts of video use.

Here, the *primary context* means the immediate surroundings; a situation where people can communicate in shared time and space without help from technical devices. As we add cameras in to the situation, it becomes possible to publish the recorded material, and so move beyond the primary context.

The *secondary context* is any (remote) situation where the recorded video is used. The material may be live or time-delayed, may be saved or not, may be shared with a small or an arbitrarily large audience, may be only retained for creators' personal uses. The people

within the primary context may be unaware of the existence of the secondary context. The people in both contexts may be the same or different ones.

Publishing implies that the material is transferred in space. Telepresence seeks to break down this physical barrier of places, i.e. merge the contexts. The “Hole in space” experiment [6] is illustrative of this approach.

Similarly, recording implies the aim to transfer the material in time. Archived material may only surface years (or millennia) later. Many people record autobiographical video, while some use it for reminders [3]. In general, the aim is to recover some of the primary context into the secondary context.

### Subject awareness as function of context

Camera phones make publishing easier for many everyday situations where cameras were previously not present. It therefore means that secondary context can now have a greater effect for many new situations. This may change the way people behave in such situations.

Depending on how well aware the subject of the recording may be of (the possibility of) publishing and how natural the situation may be for the subject, different situations can present different risk levels for her.

Figure 2 shows a chart comparing some well-known situations where people behave naturally vs. artificially related to their awareness of cameras. The more aware the subject is of cameras and the more artificially the person is behaving, the safer the situation is for her. Similarly, the more aware the subject is of the secondary context, the safer the situation.

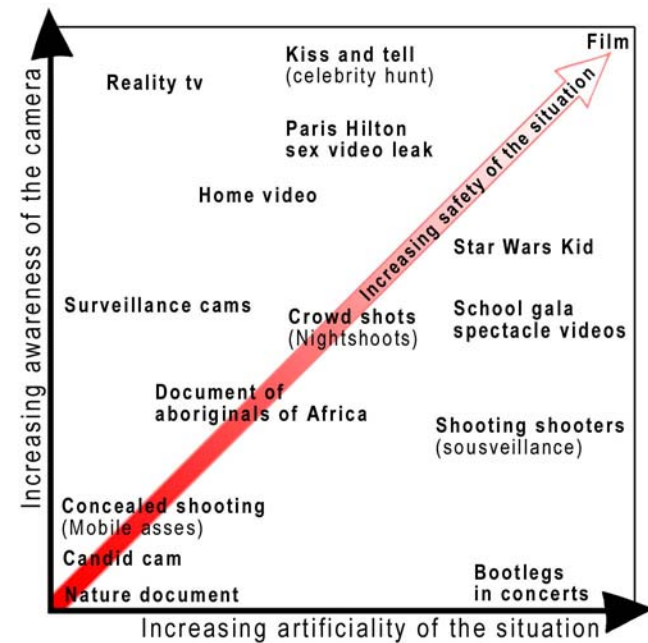


Figure 2. The “safety” of a recording situation varies as a function of the subject’s awareness of the camera and the artificiality of the situation.

For instance, a staged movie is safe, since it’s assumed that the material will be published in a very controlled manner. On the contrary, a candid camera can be risky, since the subject is acting naturally without knowledge of the recording. Most practical situations fall in between these extremes. Reality TV is stretching the perceptions of naturality and awareness; for instance, in the Big Brother TV show the subjects are quite aware of the cameras and the artificial situation, but their behavior still tends to become more natural over time.

### The impact of mobility

In our view, the rise of mobile video will change the way people behave in many everyday situations. In other words, the existence of potential secondary context affects people in the primary context. For instance, the Star Wars kid [7] might never have recorded his exercises, had he known that the material would spread widely on the net.

Easier recording and easier publishing implies a greater perceived level of risk. How significant will this be for everyday life? While research does not yet give answers, we see telltale signs related to this issue. Some nightclubs do not allow use of camera phones. In Japan, it is mandatory to have shutter sounds in digital cameras. On the other hand, the slightly *risque* website [www.mobileasses.com](http://www.mobileasses.com) only became popular with camera phones.

In general, digitally recorded material can be considered more risky, since it can be more easily published to larger audiences. Digital content can also be published almost instantaneously even on the move, thanks to mobile communications.

One factor affecting the perceived risk level is how familiar the subject is with the shooter (who records the video). We trust people we know well, and assume that they will better control the distribution of recorded material. Strangers recording strangers have less moral obligations to restrict publishing [4]. With increases in mobile imaging, this issue is becoming more relevant.

It is possible that people will give up control of their privacy, given sufficiently wide spread but socially

accepted use of recording. This is evident with surveillance cameras – what are then the mobile video applications that will win the public acceptance?

We are now analysing various use situations in the awareness vs. artificiality space, through the model of primary and secondary context. We believe this analysis will give fresh theoretical tools to discuss mobile video communication and its impact.

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