Reflecting on Oneself and on Others: Multiple Perspectives via SenseCam

Siân E. Lindley

Microsoft Research Cambridge

7 JJ Thomson Avenue

Cambridge, CB3 0FB, UK

v-silind@microsoft.com

Dave Randall

Department of Sociology

Manchester Metropolitan University

Geoffrey Manton Building

Manchester, M16 5LL, UK

d.randall@mmu.ac.uk

Maxine Glancy

BBC Research & Innovation

London, W12 7TP, UK

maxine.glancy@bbc.co.uk

Nicola Smyth

BBC Research & Innovation

London, W12 7TP, UK

nicola.smyth@bbc.co.uk

Richard Harper

Microsoft Research Cambridge

7 JJ Thomson Avenue

Cambridge, CB3 0FB, UK

r.harper@microsoft.com

Abstract

Six households were given multiple SenseCams, a life-logging device, to use over the course of one week. This paper presents an exploration of how the resulting image streams were used to trigger reflections, both on the users' own lives and on those of each other, and to offer new insights into the everyday. Further, reflection was invited not only by the images that were captured, but also when wearing, or seeing others wear, the camera. These reflections pertained to aspects of everyday life, to elements of one's own character, and to the way that oneself is presented to others.

Keywords

Reflection, life-log, camera, photo, photo sharing, mundane, strange, ambiguity, self-presentation, identity, control, censor.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Devices that capture and record everyday life, with the aim of providing some kind of life-log, are often thought about in terms of offering support to memory. However, research by Harper and colleagues [3, 4] has shown that such devices, at least when used in the short-term, also motivate users to reflect back on their

daily experiences when looking at logged images. Further, certain aspects of those images, such as the way that time is depicted, or the way that scenes are rendered in a slightly unusual way, encourage users to explore previous events anew, and to interpret them from alternative perspectives.

In this paper, we present preliminary results from a field trial that aims to extend these previous findings. Like the study previously reported [3, 4], our users were provided with SenseCams (see Fig. 1). SenseCam [5] is a wearable camera with a wide-angle lens, which takes photographs at regular intervals. Up to 3000 images might be recorded in a typical day, and the resulting image sequences can be 'played back' using bespoke software. However, the study reported here has one important difference to that conducted previously. We were interested to see what would happen if not only individuals were provided with SenseCams, but if households were loaned multiple cameras that could be worn simultaneously. This was partly motivated by previous findings, in which participants have discussed the idea of using SenseCam to gain new insights into the lives of others [3, 4].

Six households were given multiple SenseCams to allow us to explore whether users would reflect on the lives of each other, how they might consider their own experiences when juxtaposed with those of their fellow householders, and whether SenseCams were indeed successful at providing new insights into everyday life. We will show that reflection was invited not only by the images that were captured, but also by the mere presence of SenseCam, when worn by oneself but also when seen on others.

Fig. 1. SenseCam.

The Field Trial

The field study took place over the course of one week, during which time researchers interviewed the participants twice. As part of the first interview, two researchers visited the participants at home and demonstrated SenseCam to them. Each household was then loaned multiple SenseCams and a laptop. The laptops had bespoke software installed to permit the downloading and viewing of SenseCam images. Once a week had passed, the researchers returned to discuss with the householders how they had used the devices and whether they felt that they had encouraged reflection. Participants were also asked to keep diaries over the course of the week, and these were collected at the final session.

Households

Six households took part in the field study, four of which were families with young children. The composition of these families was as follows.

Three of the families knew each other and were interviewed together. These consisted of a lesbian couple and their two children, a girl aged 7 and a boy aged 1; a husband, wife and two girls aged 7 and 4; and a husband, wife, boy aged 10 and girl aged 8. Due to the age of the youngest children in the first two families, they were provided with three SenseCams between them; the final family was given four.

The fourth family consisted of a married couple and their two children aged 11 and 13, and the final two households comprised of two couples in their early 30s. These participants were given a SenseCam each.

Findings

Much has been written previously on the attributes of SenseCam images and why they might be conducive to reflection [e.g. 3, 4]. These attributes include the unusual quality of images of daily life taken through a fish-eye lens, the representation of time spent engaging in mundane activities, the recording of negative aspects of behaviour, and the candid nature of SenseCam photos. Here we offer an extension of these findings, with a particular focus on how the dynamic of having multiple SenseCams in the same household influences reflection. However, we will begin by touching on why SenseCam images might invite reflections on one's own life.

Reflections on Oneself

As mentioned above, arguments have previously been made regarding the strangeness of SenseCam images, and how this can be a trigger for reflection [3, 4]. These arguments have largely been based around the visual qualities of SenseCam photos. However, another property, that of the lack of sound in the photo streams, was also mentioned by many of our participants. This may seem an odd observation (photos tend not to be associated with sound, although see [1]), but sequences of SenseCam photos can be played back in a way that is similar to video. For the young couples in our sample, the lack of sound seemed to support reflection by allowing them space to think:

"I think you can make a story up, you can imagine what's been said rather than it all being really blatant, if you watch a video there's nothing left to your imagination" (female);

"You get a lot of thoughts and feelings from one still image; I think video can be… a bit too overwhelming" (male).

In contrast, for the families the omission of sound drew attention to the impact that its presence usually had:

"I found the sound a big deal, cos it made me realise how large a part of our lives music is; story tapes, talking, singing, you know it's constant chatter, constant dialogue with the children" (mother).

However, while the strangeness of a world rendered silent supported reflection on the role that sound usually plays, it also had ramifications for the ways in which participants felt they were being presented through the image sequences.

Presenting Oneself to Others

Unlike in previous research, in the current study participants were encouraged to share their SenseCam images with others close to them. We have written elsewhere on how narratives are constructed around SenseCam images [6], and how this pertains to the projection of identity to others. For the stay-at-home mothers in this study, it was significant that the busy nature of their everyday lives was not distorted by the format of the data that was logged. As one mother said,

"Suddenly it made it look like there was silence".

It is important then, that one's day is not misrepresented to others. Indeed, the working partners of these women seemed to face a similar difficulty. Office work, comprising a relative lack of perceptible

Fig 2. SenseCam image taken in the home.

Fig 3. SenseCam image taken at work.

activity, was often simply not recorded, despite complaints from others:

"At home, we'd have been interested to see what you did at work" (mother).

When office work was captured, it triggered the following diary entry from a stay-at-home mother:

"Really interesting to find out about [partner's] day – how much of the time she spends on her own or doing her own things. I barely sit down most days!"

It seems then that many of the participants who were engaged in office work felt that a photo sequence of their day would be dull, and so turned their SenseCams off. McCarthy and Wright [7], in their consideration of technology as experience, have argued that ongoing experience is partly characterised by reflections on how unfolding events might later be presented to others. In this instance, it seems that the events were considered to be not worthy of recounting, or at least that their recounting would not be supported by images of office work. Thus, SenseCam not only stimulated reflection when looking back at images, but also during, or through the control of, image capture.

Finally, reflections on self-presentation were triggered as participants found themselves to be frequently the subject of SenseCam images taken by others. One mother, slightly perturbed by the possibility of being photographed before she was properly dressed or ready for the day, commented:

"It makes you realise your identity and how you present yourself".

Reflections on Others
Our participants' attempts to control the ways in which they were presented through SenseCam are unsurprising, given that the photos did indeed become a resource for reflection by others. This was true both for images of others captured by one's own SenseCam, and when viewing the image streams captured by others. These reflections tended to very personal, drawing on existing knowledge about the people depicted in the images, as these quotes about family dinners illustrate:

"The family tea is just the best thing we filmed I think […] how long does [my daughter] take to eat three pieces of cheese?" (mother);

"[My daughter] kept disappearing; it's a really true reflection of, 'Ooh, can I just get down for a minute'" (mother).

There was a sense that the images captured something about the character of close others, but also about the group, or family, as a whole:

"It made me realise how much I do know 'us' and how routine-oriented we are" (mother);

"Our use of the cameras […] entirely reflected our lives, it just seemed incredibly haphazard and uncontrollable and 'oh where are they', and 'oh god it's another thing we've got to do'" (mother).

Photo streams captured by others were also used to gain new insights, and it seemed to be the case that these were particularly prevalent when SenseCam was worn by children, due to factors as simple as the height

Fig 4. Child's perspective of cheese tasting at a cheese factory.

Fig 5. Child's perspective from the backseat of a car.

or angle from which the images were taken. One mother's diary included the following entries (see also Figs. 4 and 5):

"We compared shots of the cheese factory (child vs. adult) and felt the sea of legs met by the children in the crowds waiting for the cheese-tasting was very much reflected in their change of mood at the time (relaxed, independent to clingy and silent)";

"Our 4 year old in the car appears to struggle with seeing out of the windows, so we have sat her on a cushion to raise her a little".

Here, SenseCam images were used to achieve new understandings of past events, and to trigger changes so as to overcome previously unrecognised problems. Another mother described how she used SenseCam to gain an understanding of how she appeared to her one-year old son:

"I hung it around my son's neck to see his viewpoint, and we're just so enormous. You're coming to bend over him and there's this thing coming… Whoa! And then you're angry too!"

Discussion
The findings presented above illustrate a number of ways in which life-logging devices such as SenseCam might foster reflection. First of all, and in an extension to previous findings [3, 4], the strangeness, and further, ambiguity, associated with SenseCam photo streams supported and encouraged reflections on everyday life. Others have argued about the importance of ambiguity and its role in interpretation [e.g. 2], and the silent nature of the photo streams was

noted as one feature that could potentially underpin sense-making.

Reflections on the mundane were inherently personal, drawing on our participants' exiting understandings and beliefs, but new insights were also made. Participants expressed an interest in learning about each other's days, and seemed to make new discoveries particularly when watching back photo streams captured by their children. It was adults who seemed more concerned about how their lives might be depicted through a SenseCam lens, and who were keenest to control when the camera was turned on or off.

In this sense, reflections seemed to be triggered not only when looking back at SenseCam images, but also by the mere presence of a SenseCam, either round one's own neck or around that of another. Image capture was often suspended so as not to record boring image sequences, and the lack of control over what is captured when the lens is turned on you caused some participants to reflect on how they like to present themselves. While these effects might fade over a longer period of time, or if life-logging devices were in fact ubiquitous, they were very apparent in this study.

However, there were some limitations to the ways in which SenseCam images supported reflection here. Many of these were practical. For example, watching back multiple photo streams every day it is rather time-consuming, particularly in the context of busy family life. Further, due to the constraints of the equipment we provided, participants were not able to juxtapose image streams or watch multiple photo logs simultaneously. The possibility to do so might have allowed different perspectives of the same event to be

understood more easily, or encouraged joint reflections on how the day had unfolded.

Another difficulty is the fact that SenseCam photo streams can be hard to make sense of when they lack context. Indeed, participants in this study seemed concerned about being misrepresented through their photo logs. We have argued elsewhere about the importance of image selection when constructing narratives and presenting oneself to others [6]. Thus it seems that some element of control needs to be maintained when allowing even (or perhaps especially) close others to view image streams captured by one's own life logging device.

In designing to support reflection then, it is necessary to consider the way in which life-logging content is captured, and the level of freedom that the user has to control or stage its use. Automatic image capture has implications for the willingness of users to share and reflect on their data with others, particularly when that data is ambiguous. Importantly though, elements of incongruity within SenseCam images seem to invite reflection. Therefore an understanding needs to be reached on how to support a level of 'strangeness' in the content that is captured, while guarding against users being wary of making it available to others.

Related to this, the ways in which content can be viewed, stored and archived over time are also relevant when designing for reflection. Time constraints associated with viewing life logs, controls over who may see the data, and the ability to censor (and for this censorship to be manageable), may all have implications for the willingness of users to engage in reflections with others. For life-logging devices such as SenseCam, the sheer amount of data makes such usage prohibitive, even over a short space of time. Indeed, SenseCam was not designed for such usage. Nevertheless, the provision of multiple SenseCams in this study has given a number of insights into how such data can and does invite reflection, both on oneself and on others, and points to future possibilities for design.

Acknowledgements

References
[1]   Frohlich, D.M. *Audiophotography: Bringing photos to life with sounds*. Kluwer Academic Publishers, The Netherlands, 2004.

[2]   Gaver, W.W., Beaver, J. and Benford, S. Ambiguity as a resource for design. *Proc. CHI 2003*, ACM Press (2003), 233-240.

[3]   Harper, R., Randall, D., Smyth, N., Evans, C., Heledd, L. and Moore, R. Thanks for the memory. *Proc. HCI 2007 Vol. 2*, British Computer Society (2007).

[4]   Harper, R., Randall, D., Smyth, N., Evans, C., Heledd, L. and Moore, R. The past is a different place: They do things differently there. *Proc. DIS 2008*, ACM Press (2008), 271-280.

[5]   Hodges, S., Williams, L., Berry, E., Izadi, S., Srinivasan, J., Butler, A., Smyth, G., Kapur, N. and Wood, K., SenseCam: A Retrospective Memory Aid. *Proc. Ubicomp 2006*, Springer (2006), 177-193.

[6]   Lindley, S.E., Randall, D., Sharrock, W., Glancy, M., Smyth, N. and Harper, R. Narrative, memory and practice: Tensions and choices in the use of a digital artefact. (Submitted).

[7]   McCarthy, J. and Wright, P. *Technology as experience*. MIT Press, London, 2004.