

Photos as Mundane Technology

Connor Graham
Computing Department, Lancaster University
Infolab21, South Drive
Lancaster LA1 4WA
c.graham@lancaster.ac.uk

Mark Rouncefield
Computing Department, Lancaster University
Infolab21, South Drive
Lancaster LA1 4WA
m.rouncefield@lancaster.ac.uk

ABSTRACT

We report on the use of photos in families as an example of a mundane technology. We firstly consider issues regarding mundaneness. We then review some previous work on domestic media and on photos in the home. In the main part of the paper we report on some findings from fieldwork in the UK and China, focusing on the display of family photos in the home. We show that family photos are placed and configured, express relationships and obligations, serve as reminders, and are aesthetically objects in themselves. We then proffer some insights into ‘mundane technologies’ and note the strengths and weaknesses of regarding technology in this way.

Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation (e.g. HCI)]: User Interfaces – *theory and methods, user-centred design*; Miscellaneous

General Terms

Design, Human Factors

Keywords

Photos, family life, mundaneness

1. INTRODUCTION

Digital photos started their life as rather ‘mundane’ objects for researchers. Few, with notable exceptions (e.g. [5]), paid any attention to them. Now they have shifted from being ‘mundane’ to being objects of interest in themselves; not only as a means of representing of the ‘real’ world or a digital prop for failing memory ([11]) but as artifacts around which work and practices are clustered (e.g.[10]).

We have deliberately begun this report on some early fieldwork with an appeal to a notion of ‘mundaneness’, a notion that we believe is slightly different from the way we have framed it in the previous paragraph. Thus in this paper we not only report some findings but also state our position on what we believe a mundane technology to be.

In the first paragraph we have used the word ‘mundane’ to contrast sharply with ‘bleeding edge’ technologies and ‘killer applications’: the ordinary stuff that sits around on our desktops, is lodged into our back pockets and/or bags, is balanced on our knees and held in our hands and with which we, sometimes, do the most extraordinary things. We believe the practices around these technologies are still not fully understood and that viewing

technology as ‘mundane’ is a useful enterprise, steering us away from the doomed pursuit of Sack’s “fantastic new communication machine” ([15]) that will change everything.

The other sense of ‘mundane’ is the ethnomethodological one: the ordinary, things (e.g. actions) that are accountable and observable from the members’ point of view. This is not to say that such actions are not exciting, upsetting i.e. emotional and *experienced*. To claim such would be to commit an error similar to regarding what a photo *depicts* as equivalent to the photo *itself* [4]. Just because actions are *available* and *accountable* does not mean that we, as individuals, do not experience them, first hand as exciting, upsetting etc. We are also being careful here not to make the claim that a ‘perfect’ account in the ‘perfect’ language is equivalent to the experience itself – we would rather avoid such reductionist claims. Instead we hold that investigating the detail of what individual people *do* tells us much about the ordinary affairs of their lives, including the exciting and upsetting bits of them and that this enterprise is useful for establishing a body of knowledge concerning technology use and sketching a landscape against which we can understand how new technologies might be accepted or rejected.

Yet new technologies do bring change and thus a continuing conceptual challenge for us to, at once, acknowledge the mundaneness of technologies and the transformations that they bring due to e.g. how social relationships are sustained, how co-different temporalities co-exist and interconnect. To state that new media has not brought about changes in practices for e.g. distributed families is simply understating their impact. For some (e.g. ethnomethodologists), such change poses no problems – the change which new technology brings merely accentuates and reinforces the organization that is already there. Others balk at underestimating the ‘disruption’ enforced by such influences and stress how the home is fundamentally transformed. Yet, to us at least, it seems that both views are reconcilable: they both intimate a sense of equilibrium or order that is either returned to or distanced from. It seems to us that understanding the nature of the detail of the change *and* the order is important and that different perspectives can help us in this generating this understanding.

The phenomenon we have been studying in is the home, a particular place or set of places be subject to “behavioural appropriateness” and “cultural expectations” ([9]) and where a moral system ([16], [17]) exists. Thus, in this paper, we present some of our work investigating family photo use in different households in different cultures: the main comparison has been between Chinese and UK cultures.

Again, we have been deliberate in our use of ‘family’, ‘home’ and ‘household’. ‘Family’ emphasizes the members comprising it,

such as how many there are, and the relationships between/among them: single people living alone; the nuclear family; a stem family; and the extended family ([19]). In China, for example, notions of the ‘ideal family’ have changed from a general aspiration towards five generations living under one roof to the reality of more nuclear and stem families in urban areas at least ([19]). ‘Home’ emphasizes the place where family life is played out (including the technologies situated there), ‘household’ the particular characteristics of a family (including relationships, organization etc), living in a particular place. We consider that family occurs in and across different households and homes in which people live and have an experience of family life in.

This paper firstly considers some of the issues that emerge from previous studies of the home and photos. We then briefly consider a few studies, without in any way attempting to be complete, of the use of photos: specifically amateur photography and religious photos in homes, in Asia. In doing so we attempt to sketch a relief against which to place our work, if not as entirely new then as different enough to what has been done to warrant being done. We then, through the presentation of some initial findings, explore notions related of ‘photowork’ ([10]) – specifically how family photos are ‘used’ in the home – and how this kind of work differs across the two different cultures we have considered. Through this presentation we explore what an adequate account might be in this kind of research, given that the artefacts and practices that we are investigating are also our primary source of data on which we perform our ‘analytic work’ ([3]).

2. PREVIOUS WORK

Early work on the domestic environment ([13]) has established that the home is a highly configured, socially organized environment in which ‘work’ is done and that there is an evolving relationship between the social and technological landscape therein ([18]). O’Brien et al ([13]) stress the importance of daily routines in the home and how technology is closely emeshed with these routines – e.g. the watching of a particular television program at a particular time. Closely aligned to this finding they also describe how particular spaces are ‘owned’ at particular times and that particular interactions with technologies occur there. They report too that, although activities involving technology and activity in general are distributed throughout the home, certain media consumption is regulated and that particular media are invested with particular values, such as being ‘antisocial’ or invasive.

Others’ work (e.g. [16]) has proposed general models describing stages of how technology (e.g. the television) is “made at home” ([15]), or in Silverstone’s ([16]) terms “domesticated” through incorporation into and redefinition according to the households’ own values and interests. Thus technologies are ‘shaped’ through a process of appropriation through ownership, objectification through display, incorporation through use, and conversion or having impact outside the boundary of the home. Whether these stages of this model represent a complete account of how domestication occurs or are generalisable across households is currently of less interest to us than the general idea that the relationship between households and technology is an evolving one.

2.1 Previous studies of photo use (by families)

David Frolich ([5]) and his colleagues at Hewlett Packard studied family photo use in the days before it became fashionable. They describe aspects of photoware: archiving; sending; remote sharing; and co-present sharing. They also describe how conversations took place around co-present sharing of photos that can be characterized as storytelling and reminiscing.

Kirk et al ([10]) build on Frolich’s work, focusing on digital photos to develop a notion of ‘photowork’. ‘Photowork’ involves a ‘lifecycle’ involving three stages: pre-download, at-download, and pre-share. These stages describe the key activities in ‘photowork’ beginning with capture and ending with sharing. They suggest design implications that range from supporting intelligent search, allowing filtering according to specific metadata, and support for organization work based on time and events.

Liechti and Ichikawa ([12]) have argued for an interpersonal framework supporting implicit communication in the home. They present a number of arguments, loosely based on field studies, justifying the development of such awareness technology, including the reduction of social isolation, the need to reduce the clogging of particular channels of attention (e.g. visual) and the pervasiveness of interpersonal technologies supported through the Internet. They continue to argue that photographs are “social artifacts that trigger affective processes” and that the sharing of photos supports connections between people. They also describe how still photography is, at times, preferred over ‘richer’ media (e.g. video) because this medium better supports synchronous interaction. From this they establish that “it is not necessary to develop a explicit, synchronous medium to create links between people.”

Finally Taylor et al ([17]) describe three main examples drawn from fieldwork related to the display of photos in the home. They describe firstly that ‘photowork’ is a *collaborative activity* involving different family members with particular roles. They also note that photos are often places on display due to the need to be seen, or due to *obligations*. Finally, relating to the first finding, they describe how one particular family member tends to take control of the display of photos in the home, ensuring that e.g. particular obligations were met through their display: *curatorial control*. The then proceed to present three designs emerging from these findings.

From these studies it is clear that working with photos involves particular ordinary activities that have particular meaning for individuals in the context of their homes. These studies very much focus on the ‘mundaneness’ of photos but is this all there is to photo use in families?

2.2 Previous studies of photos in Asia

We will report briefly on two studies of photos have been conducted in Asia, namely in Japan and Tibetan communities in northern India. Chalfren ([1], [2]) conducted a number of studies in Japan involving various fieldwork: informal observations, home visits, examination of photo albums, personal interviews and examination of written reports. We will describe one here: a study of Japanese amateur photography. Harris [8] reports on ethnographic observations among exiled Tibetan communities and their particular uses of photographs in the home.

Chalfren ([1]) found that the Japanese families he studied liked to duplicate and share their photos to several people on a regular basis through a sense of obligation. He also found that personal photos were rarely displayed in Japanese homes through a strong sense of discretion and protection of ‘inside knowledge’ of the family. However, they did display photos of recently deceased relatives and ancestors. He found too that Japanese people tended not to display personal photos at work but instead photos of work colleagues and events. He also found that Japanese people generally didn’t carry photos in their wallets and were unwilling to show him their wallets in the first place!

Harris ([8]) reports how photographs, of the Dalai Lama in particular, among exiled Tibetan families have been used in particular ways in homes: to mark the fact that he, and to some extent they, are exiled; and to maintain a material connection to their leader and their homeland. She also describes how photos of the Dalai Lama are circulated and exchanged in a process of acquiring merit or status: this is extended to both the recipient and the giver. She also reports how such photographs are positioned carefully with height and size denoting importance: the Dalai Lama’s is photograph is the most visible and is usually substantially enlarged and positioned above others’. The Dalai Lama is usually portrayed in a particular way in photographs too, with the body remaining as photographed, the head and the hands (those parts clearly revealing the identity) left untouched and the remainder over-painted. Harris also reports that photographs also have significance for Tibetans because of their ability to venerate the dead through a particular form of depiction and as a form of reincarnation of the subject(s).

3. OUR STUDY OF FAMILY PHOTO USE

Our work to date has involved 4 households: 2 households in the UK and 2 in China. Our premise is that individual participants represent their household’s life and the everyday activities in their home. The households have a strong connection to one of the investigators – given the intimate nature of the research and the difficulty with building trust in such research settings we consider this an advantage not a difficulty. All households are regularly separated from the same investigator – they all live, and in the case of Households 2 and 3, also work in different countries (the two participants in the other households are retired). The strength of the connection between the households varies – some regularly meet and interact and others rarely communicate. One member of each household engaged in the study, although Household 1 and 2 talked about it with each other. A summary of the households involved is in Table 1 below (bold italic indicates a strong connection, parenthesis a weak connection).

Table 1. Overview of the 4 households

Participant	1	2	3	4
Location	China	China	UK	UK
No. in home	2	3	1	2
Connected to	2, 3, (4)	I, 3, (4)	4, 1, (2)	3, (1), (2)
Age	65+	40+	40+	65+
Gender	Female	Female	Female	Male
Work	Retired	Part-time	Retired	Full-time

Language	Mandarin, dialect	Mandarin, dialect, English	English	English

The table above shows that Household 1 is closely related to 2. The regularly interact and communicate in face-to-face settings and via phone and email. Households 3 and 4 are also closely connected.

3.1 Approach

We have adopted and adapted ‘Probe’ approaches ([6]). Tables 1a and 1b below summarise the data we have collected through this approach. Each of the four families has been involved in the study over a period of at least three months and used the materials issued to produce considerable probe returns which have provided excellent starting points for further discussion of their lives.

Table 2a. Overview of data collected by participant

Participant/Data	1	2	3	4
Probe pack	13 pages 33 photos 13 days	13 pages 32 photos 12 days	25 pages 58 photos 17 days	15 pages 12 photos 29 days
Entries*	14	13	17	10
Digital photos	33		34	39
Interview 1 (mins)	48	48	30	30
Interview 2	Chat: 243 words	N/A	Email: 214 words	Phone: 21 mins

*separately dated and/or grouped item(s)

Table 2b. Timeline of data collected by month

Month/Data	Apr	May	Jun	Jul	Aug
Probe pack	1, 2	3, 4	-	-	-
Interview 1		3	4		1, 2
Interview 2					1, 3, 4

The process of assembling the probe returns and the work and uncertainty involved has forced participants to generate personal, if at times mundane (in both sense of the word), accounts of photo use. Their returns also are “a story they tell themselves about themselves” [7] both the particular photos that they took and the process they engaged in through us. For in the story that their photos tell there is a very real sense that they are their own audience – both in the practices that they capture and in the act of capturing and presenting these practices to us they tell us much about the “ordinary affairs” (ibid) of their households.

Data collection and analysis is ongoing across the 4 households. We have also recently interviewed three further families in China concerning their photo use. One of us conducted all interviews, the interviews with the Chinese families being conducted through a translator. We have verified the accuracy of the translation of the interviews discussed here by presenting a written transcript and audio recording of the interviews to the same translator to correct. As we used a translator for the Chinese families, we present all quotations from them using the third person i.e. we

quote the translator's English translation at the interviews. In the Findings section below, we also refer to participants and things they said during interviews by number (e.g. *P1, Quotation 1* for Participant 1's – see Table 1 – first quotation).

3.2 Findings

Space precludes a complete discussion of our findings here. A broad observation concerning 'photowork' [10] is that in all households particular people managed the photos of their family e.g. in both Chinese homes women managed photos. In two cases, as the participants lived alone, they had little choice. However, in the Chinese households the practices of 'photowork' [10] were very much meshed into their everyday lives such that they expressed almost instinctual obligation through their use e.g. sharing photos when visiting other members of the family after they had visited a place. This is, as we will discuss more below, slightly different from Taylor et al's [17] discussion of obligation: there was little sense of impression management in what they did. They simply shared photos because they wanted to. There was also a very real sense in which they did not regard 'photowork' [10] as 'work' but simply something they found time to do – this accords with Rosenfeld's [14] finding that unremunerated work inside Chinese households is often not seen as work. As one informant noted how "she didn't set time aside specially" to organize her photos "but every time when she, after she has pictures she will...squeeze time out to do this."

Beyond this broad observation, we present three main themes concerning family photo use – specifically display – in the home. We also note differences in family photo use across the four families, at times contrasting the findings from the UK and Chinese households. In addition, at points we describe how our findings (do not) resonate with other studies of photo use.

3.2.1 They are placed and configured

We found that in the Chinese households family photos were particularly carefully placed and organized. Two concerns emerged as important in this placement: privacy and sharing. The households in the UK did not express these concerns as explicitly but instead described how their photos on display were very much for themselves.



Figure 1. Participant 2: "These photos on the wall and table are displayed in my home"

Participant 2 took the above photograph. When asked about what she thought about when she placed a photograph in a particular place she described, in relation to the photographs in this figure:

"...this one, because it's privacy, private room, so, uh, only the pictures of, uh, she and her husband will appear... So the pictures normally are romantic and private." [P2, Quotation 1]

She described particular intimate photographs of a couple were placed in their private space while less intimate photos of individuals were placed in public areas:

"...this [pointing to some photos of herself], this place is actually for everybody, it's actually a public place...so she puts pictures [here] that people can share... so that everyone can share..." [P2, Quotation 2]

Thus, there was at least an awareness of public and private when displaying family photographs. This resembles the tendency in Japanese homes to protect the private but is different in that personal photos of living family members are put on display at all [1]. The careful placement also resembles the Tibetan practice of arranging religious photos in particular ways [8].



Figure 2. Participant 3: "HOME DISPLAY"

This contrasts with Participant 3's comments about the above photograph during an interview:

"Yes, now the first photograph that, I'd say those are the people who are important to me and, eh, I like when I go into my sitting room to have those photographs around me. I think that I would say from that point of view all of those photographs are important, important photographs that I want to display and I don't really think about other people sort of looking at them, it's just the fact that I like them to be there because they are important to me." [P3, Quotation 1]

This resonated with Participant 4's comments on the family photographs he had on display:

"Well, these, these are, uh, these are typical of, um, photographs that, uh, are on display or were on display in my, in my home... were on display in my flat previously, uh, just photographs of family." [P4, Quotation 1]

He later noted how it was:

"Good to have a few photos of the family to remind me of them." [P4, Quotation 2]

Subsequent fieldwork – visits to and interviews with 3 Chinese households – has confirmed that it is unusual for Chinese people to display personal family photos in public areas. Participant 1 is unusual in this regard (see below).

3.2.2 They express relationships and obligations

We found that all families used photos to put relationships with family members on display, making them visible. The notion of ‘audience’ differed though: the two UK families described how the primary consumer of these photos was themselves, as shown by the 3 quotations above – they were less committal concerning display for others. When asked if it was important to make certain things visible with family photographs, Participant 3 noted:

“Walls are very unattractive with nothing on them and I think that pictures are lovely too but if you’ve got family photographs that are really nice and look well I think it’s an excellent way of decorating your home.” [P3, Quotation 2]

However, when probed regarding when a photograph would be added to her display, the same participant described how:

“...any other family new members, coming into the family, like, little babies that are coming into the family the photographs are usually passed round the, the members of the family. So it is, it’s good, it’s good manners to, when you get one of these lovely wee photographs is to display them. So, em, yes and any other events like weddings or anything like that – those would be important as well.” [P3, Quotation 3]

This suggests a sense of obligation regarding the display of family photos that resonates with Taylor et al’s [17] notions of ‘obligation’ and ‘curatorial control’. The two quotations above and those in the previous section also suggest, at least in the 2 UK households involved in this study, that this sense of obligation was not a primary motivation for displaying family photos in the home.

Participant 1 was very specific regarding how she chose photos to be put on display:

“I put on these pictures according to three considerations. First I have already recovered from the death of my husband therefore I want to look at him every day and therefore I centralise my husband and chose the meaningful photos during our life around him. Secondly my grandson [her grandson’s name] was about to go to Vancouver with his Mum and my husband was very fond of [her grandson’s name] and thought he was very important so in order to let [her grandson’s name] remember his grandfather forever and also realise grandfather’s expectation of him so I chose lots of pictures of [her grandson’s name] and grandfather together. Thirdly my granddaughter [her granddaughter’s name] birth brought the whole family a lot of joy. In order to introduce her to everybody I chose some pictures from [her granddaughter’s name] birth until she was 2 years old to put on the wall.” [P1, Quotation 1]

Here, she is quite explicit regarding her display of family photos as putting her relationship with her deceased husband on display. This participant also expresses a different notion of obligation from that discussed in Taylor et al’s work [17] – that the family photos on display make visible her grandson’s obligations to the family and not necessarily that she is fulfilling any obligations through displaying these photos. Finally she describes the desire to put her granddaughter on display, not through any sense of obligation to her daughter to display the photos, but to simply let others know she had arrived in the family.

This idea of sharing experiences and happiness in photos was evident in Participant 2’s comments too. She noted, regarding the more public photos, that she put them on display:

“Because the time she shared with her friends are all recorded in this picture so everybody will understand, will know, will recall the beautiful time they spent together.” [P2, Quotation 3]

This seems a different sense of obligation, again: the obligation to share (and perhaps relive) the moment captured in the photo with the others there.

3.2.3 They serve as ‘reminders’

Many of the quotations already produced from all participants show that family photos on display serve as ‘reminders’ – keeping people in view so they can feel close to them or so they can remember specific times (e.g. P1, Quotation 1; P2, Quotation 3; P3, Quotation 1; P4, Quotation 2).



Figure 3. Participant 1: “The pictures of my family members are all hanging on the wall”

Participant 1 was particularly eloquent about this issue of photos serving as ‘reminders’ with regard to the selection of family photos for display (Figure 3):

“When she puts them on the wall she was thinking “Time flies, my youth passed by so quickly, it was just like yesterday,” and...within a very short time I’m not young anymore and... although these people are not, these people, they are, are all my loved ones, although they are not living with me anymore but they are always in her mind.” [P1, Quotation 2]

This remembering and reliving of particular times and relationships can be singular as with Participant 1 above or involve conversations around the photos: all families described how they would have conversations around the family photos they had on display when asked. However, no participant explicitly volunteered that they would talk about their family photos despite ‘sharing’ (sharing or viewing photos with others) being the most common category of photo included in 3 returns.

3.2.4 They are aesthetic objects

For most households, aesthetics was a strong motivation for displaying family photos. This suggests that they, like Edwards and Hart [4], recognise the importance of photographs as everyday objects, living and lived in-the-world and not simply as a means of representing people in their families.

Participant 2 noted, regarding a picture in her daughter’s room:

“...the daughter’s picture is, of course, placed in the daughter’s room, it’s, um, reasonable and it’s a lovely picture so she wants to put it up.” [Participant 2, Quotation 4].

Participant 3 described her motivations for displaying 2 separate groups of family photos in her home as including how they looked:

“...this is a display here of, uh, shelves, it’s a shelving unit and, eh, I had, uh, various things in that and I thought the photographs looked better than anything else that I had in it – I had books in it at one stage and then I had thought...it’s just from an aesthetic point of view actually that, that particular display.” [Participant 3, Quotation 4].

“Uh, this one here is...there’re important as well, but...that is an entrance hall and that would probably...I just group those because I thought the shapes were quite good.” [Participant 3, Quotation 5].

Participant 4, when asked if he had a kind of method or approach to grouping his photos and setting them in places, replied:

“I mean, you know, it’s, it’s sort of an aesthetic thing really.” [Participant 4, Quotation 3].

For Participant 1, aesthetics did not seem important when choosing which family photos to put on display (see P1, Quotation 1). This was also not a very explicit motivation for displaying and grouping particular family photos for Participant 2. Thus, although family photos were carefully placed and often very attractive displays for the outsider, the Chinese households did not articulate aesthetics as a primary concern when selecting and arranging family photos for display in their homes.

4. INSIGHTS INTO THE MUNDANE

Although we have just presented a few findings from our fieldwork on family photos in the home, we believe that we have shown the practices around these ‘mundane technologies’ to be noteworthy (if perhaps familiar) and the kind of concerns that might be quite useful for designers of new digital technologies supporting photo use in the home. We have also been quite surprised that such ordinary things and the observable practices around them can evoke the responses we have obtained from participants – one participant even started crying during an interview when discussing the process of selecting photos she had placed on her wall. That such a ‘mundane’ practice could be so ‘emotional’ was genuinely surprising for us.

We have had our own concerns about the adequacy of our approach but have been satisfied through home visits and interviews – both to the households described in detail here and to 3 new households – that our approach, for the Chinese families at least, has been appropriate and even engaging for participants. Ongoing problems for the approach are that our deployments have been modality specific, focusing on the visual. Thus and for example we have been unable to access the detail of the conversations that surround photos. We also continue to attempt to find ways to engage participants longitudinally – many seem to simply be suffering from ‘research fatigue’ at this stage.

We are aware that here we have largely focused on the display of family photos. In subsequent work we plan to explore notions of more ‘social’ action, sharing in particular, around photos in families. However, when considering notions of ‘mundaneness’ and ‘social interaction’, display is particularly interesting for us –

these photos on display make available, if not in real-time then after-the-fact, the things that these families regard as important in the moral universe of their households. Even the act of not putting family photos on display has been informative with regard to their views on the private aspects of family relationships.

What insights do the above findings and review offer into mundane technologies and social interaction? Firstly we believe that photos (and particularly digital photos) have been absorbed into family life to different degrees but often to the point they are almost an unnoticed and unremarkable part of it. Thus what they afford (in terms of e.g. expressing obligation) seems remarkably well worked out given the relative recentness of the technology. Secondly we believe this ‘working out’ has been and continues to be a joint accomplishment of the people involved in using them. Thirdly we believe that we have shown that examining the particular *ordinary* practices surrounding these mundane technologies provides insights into their social and even emotional role in e.g. families.

However, we also believe that there are limitations to focusing on new technologies as mundane objects. Firstly, we can easily avoid or circumvent the emotional aspects of practices around such technologies – the evocative aspects can, *but need not necessarily*, be easily glossed over in a report focusing on the “ordinary”. Secondly, we can easily understate the importance of new, emerging social practices evolving around ordinary technologies by focusing on their ‘mundaneness’. Finally, examining *how* a technology comes to be mundane is something we can easily understate – the temporal aspects of use, how use evolves over time, and ‘tipping points’ in domestication [16] are all to often what those who we serve and fund us want to know.

5. ACKNOWLEDGMENTS

This research was supported by a Microsoft European Research Fellowship (*Social Interaction and Mundane Technologies*) and a Nokia University Donation (*Mobile Phones as Probes, Props and Prototypes For Life Change*). Enormous appreciation to our participants for their ongoing engagement and time. Thanks to reviewers for reviewing this paper at the last minute. A very special thanks to translator extraordinaire, YG.

6. REFERENCES

- [1] Chalfen, R. 1997. Japanese Home Media as Popular Culture. In Proceedings of Japanese Popular Culture Conference, Victoria, British Columbia, Canada. Available from: <http://www.richardchalfen.com/wip-jhm.html>
- [2] Chalfen, R. and Murni, M. 2004. Print Club Photography in Japan: Framing Social Relationships. In Edwards, E. and Hart, J. (eds). *Photograph Object Histories: On the Materiality of Images*. Routledge, New York, 166-185.
- [3] Crabtree, A., French, A., Greenhalgh, C., Benford, S., Cheverst, K., Fitton, D., Rouncefield, M. and Graham, C. Developing Digital Records: Early Experiences of Record and Replay. *Computer Supported Cooperative Work*, 15, (2006), 281–319.
- [4] Edwards, E. and Hart, J. 2004. Introduction: Photographs as objects. In Edwards, E. and Hart, J. (eds). *Photograph Object Histories: On the Materiality of Images*. Routledge, New York, 1-15.

- [5] Fröhlich, D., Kuchinsky, A., Pering, C., Don, A. and Ariss, S. 2002. Requirements for photoware. In Proceedings of the ACM conference on Computer Supported Cooperative Work (New Orleans, LA, USA). CSCW '02. ACM Press, New York, 166-175.
- [6] Gaver, W., Dunne, A., Pacenti, E. 1999. Design: Cultural Probes. *Interactions: New Visions of Human-Computer Interaction*, 6, 1, 21-29.
- [7] Geertz, C. 1973. *The Interpretation of Cultures: Selected Essays*. Basic Books, New York.
- [8] Harris, C. 2004. The Photograph Reincarnate: The Dynamics of Tibetan Relationships with Photography. In Edwards, E. and Hart, J. (eds). *Photograph Object Histories: On the Materiality of Images*. Routledge, New York, 132-147.
- [9] Harrison, S. and Dourish, P. Re-Placing Space: The Roles of Place Collaborative Systems and Space. In Proceedings of Computer Supported Cooperative Work 1996 (CSCSW'06) (Cambridge MA USA). ACM Press, New York, NY, 1996, 67-76.
- [10] Kirk, D.S., Sellen, A.J., Rother, C., and Wood, K.R. 2006. Understanding photowork. In Proceedings of the SIGCHI conference on Human factors in Computing Systems (CHI '06) (Montréal, Canada). ACM Press, New York, 761-770.
- [11] Lamming M., Brown, P., Carter, K., Eldridge, M., Flynn, M., Louie, G., Robinson, P., and Sellen, A. 1994. The Design of a Human Memory Prosthesis. *The Computer Journal*, 37, 3, 153-163.
- [12] Leichti, O. and Ichikawa, T. 2000. A Digital Photography Framework Enabling Affective Awareness in Home Communication. *Personal Technologies* 4, 1, 6-24.
- [13] O'Brien, J., Rodden, T., Rouncefield, M., Hughes, J. 1999. At Home with the Technology: An Ethnographic Study of a Set-Top-Box Trial. *ACM Transactions on Computer-Human Interaction*, 6, 3 (September), 282-308.
- [14] Rosenfeld, R.A. 2000. What is Work? Comparative Perspectives from the Social Sciences. In Entwistle, B., and Henderson, G.E. (eds). *Re-drawing Boundaries: Work, Households, and Gender in China*. University of California Press, Berkeley, 51-66.
- [15] Sacks, H. 1992. "A single instance of a phone-call opening", in Jefferson, G. (ed) *Lectures on Conversation Volume II*. Blackwell, Oxford, 542-553.
- [16] Silverstone, R. 2005. "Domesticating Domestication. Reflections on the Life of Concept", in Berker, T. Hartmann, M., Punie, Y. and Ward, K. (eds) *Domestication of Media and Technologies*. Open University Press, Maidenhead, 229-248.
- [17] Taylor, A., Swan, L., and Durrant, A. 2007. Designing family photo displays. In Proceedings of the European conference on computer-supported cooperative work). (ECSCW '07) (Limerick, Ireland). Springer-Verlag, London, 79-98.
- [18] Venkatesh, A. 1996. Computers and other interactive technologies for the home. *Communications of the ACM* 39, 12 (December), 47-54.
- [19] Zang, Xiawei. 2003. Family, Kinship, Marriage, and Sexuality. In Gamer, E. (ed). *Understanding Contemporary China*. Lynne Reinner Publishers, Boulder, 281-307.