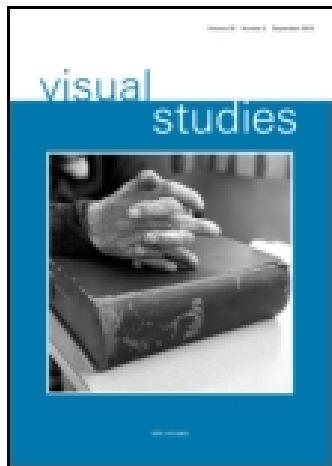


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Personal photography, digital technologies and the uses of the visual

NANCY A. VAN HOUSE

Photography has been a wildly successful consumer technology. The shift from film to digital has, if anything, increased both photographic activity and enthusiasm on the part of photographers, viewers and subjects. In this article, I address empirically and theoretically the practical doing of ordinary, daily photography as it has moved from film to digital. I describe findings from my own empirical work over several years with a wide range of people engaged in both film and digital photographic technologies, including camera-phones and online image-sharing. Current developments in digital image-related technologies are changing the publicness, temporality and volume of personal photographic images. I describe personal photography as, in effect, multiple, overlapping technologies: of memory; relationships; self-representation; and self expression, all of which are changing in the digital environment. I draw on science and technology studies (STS) for help in understanding photography as an on-going practice of assemblage and performance, and the changes in photographic technologies as an opportunity to see technology-in-the-making – the activities by which people are reproducing sociomaterial relations. In this view, photographs have agency as they ‘take the relay’ across space and time. With digital technology we see shifts in the assemblages of objects, practices and meanings that we call personal photography, some of which may be more welcome than others. In particular, personal photographs may be becoming more public and transitory, less private and durable and more effective as objects of communication than of memory.

INTRODUCTION

Photography has been extraordinarily successful as a consumer technology since its introduction by Kodak in the late nineteenth century. The shift to digital technologies has, if anything, increased the use of and enthusiasm for photography.¹ This widespread popularity has been a motivating factor in this research. What are people doing with digital images? Does this differ from what they used to do? And, most important of all: why is personal photography so very important to so many people? Why has the transition to digital been so easy?

I define personal photography as that which is done by non-professionals for themselves and their friends and intimates. It subsumes but is not limited to family and tourist photography. A critical question for researchers and designers of new technologies is why some technologies are more readily used than others, and how people appropriate technologies to their own ends. Digital personal photography is of interest in its own right, but also as a case study of a technology that has been smoothly incorporated into on-going practice.

This paper addresses both empirically and theoretically the *doing* of ordinary, daily photography as it has moved from film to digital. I draw on my own empirical work over several years with a wide range of people engaged in both film and digital photography. I also draw on science and technology studies (STS) to help understand the practices and multiple meanings of photographs and associated technologies, the transformations associated with the transition to digital technologies and how these contribute to the continued popularity of both old and new photographic technologies.

RESEARCH ON PERSONAL PHOTOGRAPHY

Understanding the actual ‘doing’ of photography is critical to this kind of investigation. Yet there remains a relative lack of ethnographically informed research on people’s actual, daily practices of photography (Rose 2004; Ruby 2005; Shove et al. 2007). Researchers have also noted a lack of theorising about personal photography (Cobley and Haefner 2009).

Current empirical research on personal photography comes primarily from two areas: social science research in visual communication, cultural studies and related areas; and human–computer interaction (HCI). The social science and cultural studies research is largely concerned with the place of personal photography in culture and society. The HCI literature largely addresses issues related to technology design.

In a landmark study, Chalfen (1987) approached personal photography from a communication theory

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perspective. He asked: 'What are people doing when they make, appear in, or look at their own collections of personal pictures?' (1). He went into people's homes to examine their photographic collections with them. He described amateur photography as personal expression and interpersonal communication, 'the home mode of pictorial communication' (2).

Bourdieu (1996) and Bourdieu and Bourdieu (2004) studied photographic practices among French families to demonstrate his concept of *habitus* and his methods of connecting lived experience to social regularities. He concluded that decisions about image content, aesthetics, display and exchange reflect and reproduce class. He argued that family photography 'reinforc[es] the integration of the family group by reasserting the sense it has both of itself and its unity . . . a ritual of the domestic cult' (Bourdieu 1996, 19). Other occasions for photography, including tourism, were, to him, variants on its 'archetypal function' (35) of family photography.

Recent research has continued this emphasis on practice, social reproduction and families. Photographs have been studied as everyday objects, in terms of their role in the ideology of families and codes of gender, class and power, and as an aspect of consumer culture, leisure and identity (Hirsch 1997; Holland 1991; Pauwels 2005, 2008; Rose 2003, 2004; Spence and Holland 1991; Slater 1995). Tourist photography overlaps with family photography. The growth of personal photography and of tourism are closely related both in time and in meaning (Sontag 1977; Urry 2002). Here, too, a practice-based perspective has been employed (Larsen 2005; Haldrup and Larsen 2003; Garlick 2007).

The emphasis on family photography and, to a lesser extent, tourist photography comes in part from the motivation to understand photography in relation to consumerism, households and everyday life. Another source of this emphasis, I suspect, is the evidence available for empirical research in the age of film. A common method has been to go into homes (usually of families), view albums and displayed images and interview household members (Chalfen 1987; Rose 2003, 2004; Taylor, Swan, and Durrant 2007). These archived images, usually a highly selected subset of the images made, were likely to be family and/or tourist photographs.

Photographs have both content and form; they are both images and material objects. Photographic prints and their presentational forms (e.g. albums and frames) have been studied as social and cultural objects from the perspectives of material culture, cultural anthropology and cultural geography. As tactile objects, they have an

emotional and sensory impact beyond that of their content (Edwards 2002; Pink 2006). They carry physical traces of their social lives. Their meaning is constructed by their content but also by their archiving and display as well as the stories told around and with them (Durrant et al. 2008; Edwards 2002; Rose 2003, 2004; Shove et al. 2007; Taylor, Swan, and Durrant 2007).

The practices around digital photographic technologies and their relationship to film photography are also of interest in HCI research. Most HCI research is intended, explicitly or implicitly, to support the design of technological systems for image storage, organisation, retrieval, display and sharing. This research includes qualitative, ethnographically informed investigations of people's real-life activities with both film and digital technologies, and the ways that they use new technologies, including online sharing systems and cameraphones (Ames et al. 2010; Frohlich et al. 2002; Kindberg et al. 2005; Kirk et al. 2006; Lindley et al. 2009; Rodden and Wood 2003; Taylor, Swan, and Durrant 2007; Whittaker, Bergman, and Clough 2010; Van House et al. 2005; Van House 2009). However, Frohlich and Fennell (2007, 108) note in this literature an emphasis on people's activities but a lack of attention to 'what digital photography systems are about'.

SCIENCE AND TECHNOLOGY STUDIES

In this paper I ask whether Science and Technology Studies (STS) can help explain the popularity of both old and new photographic technologies and practices. A variety of theoretical perspectives on technology have been concerned with explaining why some technologies are adopted and others are not. STS approaches technologies as sociotechnical systems, on-going assemblages of diverse social and material elements. From the perspective of STS, what appear to be durable technologies are dynamic and unstable assemblages of diverse social and material elements. The wide acceptance of personal photography suggests a popular and effective sociotechnical system, an assemblage of technologies, objects, understandings whose multiple meanings are important in a variety of human activity.

STS is also deeply interesting in artefacts of all kinds: more than other social constructionist perspectives, it attributes agency to non-humans, including representations of all sorts. Photographs are instances of Latour's 'immutable, combinable mobiles' (Latour 1987) which carry action and meaning across time and place. Both paper and digital photographs are artefacts that carry activity across space and time, but with distinct

differences, as I'll discuss below. With the surprisingly easy transition to digital technologies, we have a case study of technologies-in-the-making and the practical activities by which they are incorporated into people's lives and, I will argue, take on both old and new meanings.

THE CURRENT RESEARCH: EMPIRICAL INVESTIGATION

In this paper I draw on an interlocking group of studies and several years of participant observation by my colleagues and me (Ames et al. 2010; Davis et al. 2005; Van House et al. 2005; Van House 2006, 2007, 2009) from 2005 to the present. The participants and methods of data collection are described in more detail in Van House (2009).

We studied film and digital photographers; camera-phone users; and users of Flickr.com (Richter and Schadler 2009). We interviewed middle-class American photographers between 2005 and the present. Participants were mostly in their 20s and 30s, but included adults of all ages, with the oldest in her 80s. With all participants, we used essentially the same protocol for semi-structured interviews. We asked about people's past and present photographic practices and technologies, including the kinds of images they made, what they did with them and differences (if any) across technologies. Most interviews included photo elicitation (Harper 2002; Van House 2006). We viewed interviewees' images (paper, digital and especially online) with them and asked about specific images: what they were about, why they were taken and what was done with them, and why. We also asked people with images online about privacy.

Each participant was interviewed at least once and up to three times, in their homes if possible, or in our facilities, over a period of weeks or months, depending on the study. In homes, we asked them to give us a tour of their images: prints on walls, in albums and tossed into boxes and drawers, as well as digital images on their cameras, computers and online. With Flickr users, we viewed their public online photographs both before and after interviews.

In addition, I and my various co-researchers were participant observers, using the technologies studied. (One Flickr user agreed to be interviewed only after he viewed my and my research assistant's Flickr streams.) We also informally observed people's photographic practices 'in the wild', i.e. in public places, in online sites (notably Flickr.com) and among our own social networks.

Early in this research, some interviewees were still using film, particularly the more skilled and critical photographers, who had considerable investment in film technologies and skills and were not satisfied with the quality of digital images. Tourist photographers observed in action were divided between digital and film. We gave some participants their first camera-phones. Many of our participants were among the earliest adopters of Flickr.

By the time of this writing, everyone with whom we are still in contact has shifted to digital, and public photographic activity observed casually is almost entirely digital. Flickr has become mainstream. Use of Facebook (including photographs) has risen dramatically. Camera-phones have improved and are nearly universal. Smartphones (which can upload images to the internet and view images and other online content) are in wide use.

FINDINGS OVERVIEW: WHAT DO PEOPLE DO DIFFERENTLY WITH DIGITAL TECHNOLOGIES?

In this section I summarise briefly what we learned that people do with personal photographs, with an emphasis on the changes associated with digital image-making and networking. In the following section I expand on this by addressing the on-going and emergent interpretations and meanings of photographs and photographic technologies in light of developments in technology.

Better Images, More Images, More Varied, More Often

Although we have no baseline data for comparison, it is clear that, with the ease and convenience of digital technologies, the number and also the variety of images made has increased substantially. Images can be made any time, any place, without prior planning. Digital cameras and especially camera-phones support spontaneous, opportunistic image-making and experimentation. While people still make traditional kinds of images, what is considered photo-worthy has expanded to include the everyday (Murray 2008; Van House et al. 2005; Van House 2009).

Among our participants, patterns of image-making shifted remarkably with the transition to digital. People often carried small digital cameras; some carried them all the time. We created visualisations of people's Flickr streams over time, which showed the usual peaks of activity for special events, but often also low levels of on-going activity. Participants made more images of daily life and not just special events. Camera-phone users in particular had a camera at hand when something

noteworthy happened, as well as when they wanted to make, say, playful images of friends.

Image quality has also improved considerably, thanks to the increased functionality and instant feedback and of digital cameras and the image processing available in even basic image-management software. A group of undergraduates reviewed a collection of several hundred print photographs from the early 1990s that we found in a box on a street corner. Their immediate reaction was great surprise at the poor quality of the images.

Convenient and Rapid Viewing and Sharing

Ready access to network technologies such as laptops and smartphones and ubiquitous wifi means that images may be viewed, uploaded, emailed, posted online and so forth immediately after making. The lag time between making and use has been effectively eliminated. Images are easily viewed almost anywhere, anytime.

Among our participants, images have become a greater part of their lives. Sites like Facebook and Flickr and even Twitter explicitly support image sharing and image-based communication. Many Flickr users reported logging several times a day to see friends' photographs. Personal photographs have become a means of rapid, although often short-term, communication with friends.

Shifting Notions of Privacy and Ownership

One of the most significant recent developments in personal photography is the increased publicness of personal images. Photographs are commonly displayed on webpages, blogs and photoblogs (Pauwels 2005, 2008; Richter and Schadler 2009). On social networking sites such as Facebook it is now common, almost mandatory, to post at least a profile image of oneself, and often photographs of friends and activities, and otherwise representative of one's life and interests (Van House 2011). Facebook describes itself as the largest photo-sharing site, adding 3 billion photographs *each month* (Garvey 2010). Not just images but the activity pictured becomes much more visible, more public.

Related to these changes in access are changed perceptions of ownership. Whereas printed images and negatives are under the control of the owner, digital photographs have slipped the bounds of materiality and may have a life of their own outside the control of their makers. Sites such as Flickr are explicitly designed to make accessible images by one's intimates and acquaintances and even strangers. In place of (or in addition to) disconnected silos of personal collections,

people have access to images and other media from a wide range of sources and points of view, private and public. Many of our respondents saw Flickr images – their own and others' – as a public resource.² Some explicitly linked Flickr with the Open Source movement, the free sharing and re-use of intellectual property. Those who tagged (assigned keywords to) their images often did it as a sort of civic duty, to enable others to find and use their images.

The other side of this is that many serious art photographers (professional and non-professional), including those with whom I have had on-going contact as a participant observer, are deeply concerned with preventing unauthorised re-use of their images. Holding onto ownership of images has become a challenge.

Multimedia

This malleability of digital photographs also means that they are easily altered, combined and recombined with other images and with other media, such as text and sound. They may take on new life as elements in multimedia projects. Software as ubiquitous as iPhoto makes it easy for even casual photographers to combine images with sound and other media into presentations. In my experience it is now common to see such shows at important personal and family events like bar mitzvahs and funerals.

Large but Fragile Archives

Film photographs have costs and delays around processing and printing that generally postpone their use until some time in the future. Once printed, however, their default, so to speak, is durability. Prints and negatives can be thrown in a box and retrieved years, even decades, later. The meanings of archived printed photographs are often constrained by annotations, juxtapositioning and sequencing, such as in albums (Walker and Moulton 1989) which reduces the ambiguity and discontinuity (Berger 2001) of photographs. People often write annotations on the back or even the front of the photograph, which are then inseparable from the image (see Figure 1).

However, organisation and annotation are labour-intensive and, among our interviewees, something they regularly said they intended to do but rarely actually did, with either paper or digital images. In households with printed photographs, we saw the usual boxes of prints and empty albums, and heard promises that people would (someday) organise them. Among our digital



FIGURE 1. Old photographs found at a flea market: annotations on front of photographs.

users, only the most skilled and dedicated photographers used software like Photoshop® Lightroom® to organise their images.

Digital technologies and archives have a complex relationship (Van House and Churchill 2008). Digital technologies have made indexing and annotation easier, faster and more flexible. Images can be associated and re-associated, even those from different photographers, places and times, creating new collections, sequences and juxtapositions and hence new meanings. Images may also be combined with text, sound and other media; and digitally altered,³ creating a wide variety of new products and meanings.

However, digital files lack the perception of solidity and the casual durability of paper that goes with paper. While few of our younger participants printed images, participants often described prints as more solid, more 'real'. Digital archives require more intentional maintenance. Files have to be migrated from camera memory card to computer, from old computer to new, from computer to external storage. Storage media, file

formats and photo-management software become obsolete. Online image hosting sites may fail. Images are deleted.

Digital images are also often difficult to browse or search. They are easily effectively lost if they are unretrievable. Most of our participants did not bother re-naming and indexing their images, which then disappeared into a black hole of ambiguously named files or old CDs tucked away somewhere. Metadata are lost. Sequencing and associations are lost. The casual encounters with forgotten images that we saw as people showed us their old prints are much less likely.

The overall result is that digital photographs may have a short life span. Among our participants, digital files were generally perceived to be highly vulnerable. Several participants expected their digital images to die with them: no one would search their computers for images to preserve.

In sum, the sociotechnical networks within which personal photography now exists includes information and communication technologies and their associated

practices. The volume of images available has exploded: people are making many more images, and they have access to images made by many, many more people, including family, friends, acquaintances and even strangers.

Second, the temporality of personal images has shifted considerably. Images can be made any time, any place, without prior planning. The lag time between making and use has been effectively eliminated. But digital images are often seen as both fragile and of short-term interest. As a result, much image-based activity is both immediate and transitory

Personal digital archives rapidly grow out of control, both in size and in organisation. Digital images are not easily browsed or searched. Conscious effort is required for their organisation and preservation. And digital files are vulnerable to obsolescent technology, institutional transitions and simple neglect.

MEANINGS OF PERSONAL PHOTOGRAPHY

The developments in technology and the associated changes in activity are important, but they do not necessarily explain why personal photography was and remains such a heavily used consumer technology and popular activity. For this we need to look to the meanings and uses of photographs and the associated technologies. STS argues that the meanings of a technology are multiple, variable and situated. Here I look at some of the past and present meanings of personal photography and their interaction with emerging technologies.

Elsewhere, based on some of the interviews reported here and an extensive literature review, we (Van House et al. 2005) categorised personal photography into four social uses: personal and group memory, relationship creating and maintenance, self-representation and self-expression. These categories are overlapping. The point is not to classify images, but to summarise what people have told us about why they make images and what they do with them and why these images are so important; and their understandings of emergent technologies. Here I describe how these meanings both persist and change with new photographic technologies.

Memory

Contemporary thought stresses the constructedness and contingency of memory, photographs and archives, the contents of which may be carefully chosen to construct a specific version of the past. Nevertheless, the popular view remains that photographs ‘capture the moment’. Our participants talked explicitly about ‘off-loading’

memories to photos. Images are seen as memories made durable, correctives to fallible human memory.

Images are also seen as having the power to reach back into the past to see what we didn’t at the time. One woman showed us a picture of herself taken shortly before a serious health crisis, saying that she could now see that she was already sick then, although she hadn’t known it.

Reviewing their images with us, participants often expressed surprise and pleasure at an image of a forgotten event or person. Frequently, the importance of an image was as an evocative token rather than an accurate representation. We often heard, ‘This is not a very good picture, but . . .’, followed by a discussion of the importance of the image.

With the increased number, variety and sources of digital images, people have more to support their memory work. These may now include images of a person made by others. One woman said that, when she needed a photograph of herself for some purpose, she would go through friends’ Flickr images of her to find one she liked. She also relied on others for other kinds of images.

I don’t take photos anymore of big events. When I was at Burning Man I didn’t take a camera, because I knew there’d be enough photos on Flickr of really anything I might have wanted.

More than one person talked about the value of mundane images for autobiography:

It’s like a chronicle of life . . . I just like to save pictures and archive points in my life. . . . I have a very strong sentimental streak. [The camera-phone] was just a very easy way of saving different points and I could come back and look at them and get a feel for where I was and where I’ve come.

Relationships

Who is in a photograph, when a photograph is taken, who it is shared with and how, the stories that are told around it, all these have traditionally been important to relationships. Edwards (2005, 27) calls photographs ‘relational objects . . . occupying the spaces between people and people, and people and things’.

A recurring theme in the literature on photography is the power of images of people, especially those absent or dead (Barthes 1981; Sontag 1977). Several participants reported using pictures of distant or deceased family members, past events and places of significance to give

children a sense of history and membership in family. Photographs are often treated as extensions of the people represented. Displays are sometimes arranged to reflect the relationships among the people represented (Rose 2003; Taylor et al. 2007).

Chalfen (1987) describes personal photography as 'pictorial communication'. A common reason participants gave for the posting and viewing images online was keeping in touch with friends and family, keeping others informed and staying informed about friends' lives, especially about significant life events, but also just making connections (Lampe, Ellison, and Steinfield 2008; Joinson 2008) without having to actually interact directly: 'distant closeness' (Van House 2007).

A lot of what I do [on Flickr] is letting people know what's going on in my life. I feel very responsible to old friends, to people who I know would be interested in how I'm doing . . . I feel like I need to keep uploading pictures so that they know what's going on in my life, because I'm a terrible e-mailer, I never call, so I better give them something.

Our participants often expressed an appreciation, even preference, for image-based communication. Many felt that images were more 'real' than text. Some commented on their efficiency: faster and easier to both post and absorb than text. One man whose friends used both Flickr and the LiveJournal blogging site preferred images because they bypassed what he called his friends' 'whining' on LiveJournal. He also thought that friends' images offered richer insights into what they were doing and into their emotional lives than they might put in a text posting:

[L]ooking at somebody's photo blog you can see what they're thinking about . . . I don't always assume that a picture of their dog, well, it's a picture of their dog but the reason they're posting pictures of their dog usually has something to do with how they're feeling, the background behind it.

Respondents noted that relationships are complex and dynamic, and so are the places of images in those relationships. Most of our participants articulated complex criteria for who should be able to see what and when. People tailor the stories told around images to the audience (Lindley et al. 2009; Van House 2009). With face-to-face viewing, this is under the control of the image owner. Our participants wanted more nuanced control over Flickr images. Many of them used multiple social networking sites (in our interviews, Flickr and Facebook) to posted different images according to the expected audience and the norms of each site.

Self-representation

Online self-representation has exploded with the heavy use of the internet and especially social networking sites⁴ (boyd and Ellison 2007; Livingstone 2008; Van House 2011). One of our participants described a friend's image stream as presenting a 'carefully curated' life. Elsewhere (Van House 2011) I argue that making, showing, viewing and talking about images are not just how we represent ourselves, but contribute to the ways that we *enact* ourselves, individually and collectively, and reproduce social formations and norms. By making visible both one's own and other people's public representations of online activity, including photographs, social networking potentially increases the citationality of people's online activity, re-iterating social norms and formations.

Most of our participants, not surprisingly, made considered, purposeful use of their online photographic representations, including images of themselves but also friends, possessions, spaces and activities. Furthermore, many treated their online images as expressions of their viewpoint and aesthetics. Several people with professional backgrounds in design told us that they were particularly careful to ensure that the images they posted were consistent with their own aesthetics.

Expressiveness

Expressive personal photography, making images that are primarily aesthetic or humorous, is not new, but almost entirely absent from the research, as far as I have seen (one exception is Bourdieu (1996)). Photography is discussed extensively as a fine art, but not in the context of *personal* photography.

Photography has long been an art practice with relatively low perceived barriers to entry. Digital technologies have reduced these barriers even further. Many interviewees said that carrying a camera-phone, in particular, encouraged them to see the world as a field of potential images. One man showed us a striking camera-phone image of the geometry of files in a doctor's office:

You think, 'This looks nice', and then you make the connection, 'Oh, I could photograph this'.

Online posting of images gives photographers an audience of friends and strangers. Some who took up photography when we gave them camera-phones and access to an experimental site for posting images said that feedback in their online images encouraged their image-making. My own experience with serious non-professional photographers suggests that, with the advanced capabilities of digital SLRs along with online image posting, more people are engaging in art

photography. Serious non-professionals are using sites like Flickr and their own photoblogs to post their images for critique by their peers. Some professional photographers and instructors are offering online mentoring for a fee. Students post their images online and then student and mentor can discuss the images via phone or other media.

STS AND PERSONAL PHOTOGRAPHY

Suchman (n.d.) has noted that STS addresses:

[T]he question of *how new objects are configured in and through technoscientific practice*. This approach sees technologies and technological artifacts as material and discursive practices, combined in ways that constitute durable objects . . . Technologies appear in these investigations as socio-material apparatuses that align themselves into more or less coherent and durable forms. Viewed in this way, *the study of how new technologies emerge shifts from a focus on invention, understood as a singular event, to an interest in ongoing practices of assembly, demonstration, and performance*. The shift from an analysis in terms of form and function to a performative account, moreover, carries with it *an orientation to the multiplicity of technoscience objects or, to put it differently, to the achieved nature of objective singularities* . . . [O]bjects take their shape and meaning not in any single location but through their incorporation across diverse milieu. Making technologies is, in consequence, *a practice of configuring new alignments between the social and the material* that are both localised and able to travel, stable and reconfigurable, intelligibly familiar, and recognisably new. *For sociology, technologies-in-the-making afford an opportunity to investigate the imaginative and practical activities through which sociomaterial relations are reproduced and transformed*. (Suchman n.d., n.p., emphases added)

STS grants agency to non-humans, and not just that which is delegated to them by humans. Latour (2005) argues that action is never fully under the control of the actor; it is 'distributed among agents' (50), 'a node, a knot, a conglomerate of many surprising sets of agencies' (44), not all of which are human. Non-humans, especially those representations that he calls 'immutable, combinable mobiles', 'take the relay' (78) of maintaining social connections and activity across space and time. Non-humans, Latour says, may be either intermediaries or mediators. Intermediaries transport meaning or force without transformation. Mediators, in contrast,

'transform, translate, distort, or modify the meaning of the elements they are supposed to carry' (Latour 2005, 40) in unpredictable ways.

Emerging photographic technologies and practices give us a case study of technology-in-the-making, the on-going discursive and practical alignments between technical and social elements into what appear to be objects with stable meanings. Photographs are clear examples of immutable, combinable mobiles. They are among the agents across which action is distributed. In particular, they often 'take the relay' of action and relationships across space and time, including, for example, as objects of memory and of relationship. Furthermore, they are mediators, not intermediaries. They often transform the meaning they are supposedly carrying. Photographs have always had the ability to convey a meaning other than the owner intended. Their meanings may change over time, for different viewers, in different contexts, in different associations with text and other images. Barthes' (1981) famous distinction between punctum and studium is in part of description of the situatedness of photographs' meanings.

In both their film and digital incarnations, photographs are potent agents of memory, relationship, self-presentation and self-expression across space and time, non-humans that are critical elements of important human activities; hence the wide acceptance of personal photography. One reason for the ready acceptance of digital technologies, I argue, is that they do not undermine the prior meanings of personal photography; but neither are these meanings left unaltered. The disruptions of the digital, however welcome, have both made visible the taken-for-granted role of photographs and their associated technologies, and destabilised the assemblages of technologies and practices that we call personal photography.

On the simplest level, computer technologies are now an integral part of the sociotechnical system that we call personal photography. Even casual photographers have to have some computer skills, and skilled photographers have to have extensive computer skills.

With these developments we see shifts in the meanings of personal photographs and photography. Photographs partake of all the ways that we use computer-based media, such as for immediate communication and for social networking. Ownership is fluid; private images are increasingly public, and public images are available for private uses. Images are immediate and often transitory. The private photograph is now often ephemeral and shared. Furthermore, while people now have access to more and better images, they are also often overwhelmed by the volume and the problems of search and retrieval.

Because digital images are more public, malleable and immediate, they are being used for communication and interaction more widely and in continually diversifying ways. On the other hand, photographs as objects of memory have traditionally depended heavily on their materiality and durability, both of which are being attenuated by the digital.

One possible development is that images as objects of memory will become less personal, more public. Image-based memory will become more voluminous but less private and more public, based less on local, personal images and more on shared ones. We may see a loss of specificity, of images of local value with local meanings attached, at the same time that people have more access to the collective record. We may lose what Nissenbaum (2009) calls 'contextual integrity', an alignment of information gathering and display and therefore meaning within specific contexts.

Memory is of course the most obviously threatened, but many other meanings as well are at least uncertain. Transitory expressive images (such as the geometry of files in an office) are different from the durable art of the great photographers. Personal photographs may be becoming more public and transitory, less private and durable, more effective as objects of communication than of memory.

NOTES

- [1] As of mid-2010, 80% of American households owned at least one digital camera, not including camera-phones. <http://www.nxtbook.com/nxtbooks/cea/vision0710/#/34>.
- [2] Flickr supports Creative Commons licensing whereby the owner can specify conditions for re-use.
- [3] None of our participants expressed any interest or concern about the potential falsification of images.
- [4] In the US in 2009, among adults 30 years and older, 40% were using social sites. Over 90% of teens and young adults were online, and among these, nearly three quarters used social network sites (Lenhart 2010).

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