Give and Take: A Study of Consumer Photo-Sharing Culture and Practice

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ABSTRACT
In this paper, we present initial findings from the study of a digital photo-sharing website: Flickr.com. In particular, we argue that Flickr.com appears to support—for some people—a different set of photography practices, socialization styles, and perspectives on privacy that are unlike those described in previous research on consumer and amateur photographers. Further, through our examination of digital photographers' photowork activities—organizing, finding, sharing and receiving—we suggest that privacy concerns and lack of integration with existing communication channels have the potential to prevent the 'Kodak Culture' from fully adopting current photo-sharing solutions.

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Consumer photography, digital photography, media sharing, domestic and leisure computing, photowork

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

INTRODUCTION
Much previous research has explored how people collaborate around physical photos [1,2,4,5]; however, much less is understood about the possibilities provided by the recent emergence of photo-sharing websites such as Flickr.com. Indeed, as some have argued [7], computers and the Internet have the potential to increase both the opportunities and the audience for images, and consequently offer the possibility of creating new practices not possible with print photographs.

This potential raises important research questions that we sought to answer through an empirical study of the sharing practices of digital photography users. For example, when one's photographs are confined to a physical shoebox, privacy concerns are perhaps marginal; how has the move toward Internet-based photo-sharing technology affected users' concerns about privacy? Photo-sharing is no longer limited to physical albums in the home and prints sent through the mail; does this mean that the importance of collocation has dramatically diminished? Prior work has noted the role of physical photo sharing in reinforcing existing social networks; how does the shift toward Internet-based photo-sharing affect these practices? Does it, for example, play a role in the creation of new socialization styles, when photos are shared with strangers?

This study represents an initial exploration of several practices that have evolved around recent and highly-popular online sharing websites, and how those practices contrast with more traditional digital photo sharing. Rather than attempting a broad study to characterize users of these sites as a whole, we have focused on a smaller, initial investigation structured around uncovering detailed insights of a number of aspects of the photographic workflow. This choice limited us to an initial exploration of whether online digital access changed people's sharing practices, but our results show that some people—who we called "Snaprs"—had apparently developed some novel practices

RELATED WORK
Richard Chalfen was among the first to study consumer photography [1]; we draw heavily on his concepts of home mode and Kodak Culture. Chalfen's 'home mode' of communication showed that consumers typically share images—photographs, video footage—of traditional subjects such as birthdays and family holidays. He termed the participants in this home mode the 'Kodak Culture' who typically comprised family and friends and knew the people in the images.

More significantly, those in the Kodak Culture know how to engage with the images, which for Chalfen meant the ability to tell stories *about* the photos, not just *with* the photos. As he explains "The narrative remains in the heads of the picturemakers and on-camera participants for verbal telling…the story does not appear in the album or on the screen; it is not 'told' by the images." In other words,

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Kodak Culture photographers share oral stories around the images with others who can share and build on their narratives—friends and family.

By the late 1990's, however, consumers had adopted two digital technologies: cameras and cameraphones. Studies of cameraphone technology—often focused on photographs in the context of mobile messaging (MMS, for example) and mobile blogging (also called 'moblogging')—have found that digital systems afford both old and new practices. For examples, cameraphones have been appropriated to support home mode-esque storytelling [10]. However, Okabe and Ito [16] found that cameraphone users elevate otherwise ordinary objects and events to "photo-worthy" occurances; echoing Makela et al.'s [12] and Kurvinen's [11] findings that cameraphone photos were used to tell stories *with* images, rather than *about* images as with the home mode.

Other researchers also find an emphasis on telling stories *with* images. For example, Van House et al. [23] identified a variety of communicative uses of cameraphone photos, including self-expression and self-presentation. Kindberg et al.'s taxonomy of image capture practices lay out similar communicative forms, many of which are strikingly different than those practiced in the home mode of communication examined by Chalfen [8]. In other words, these devices seem to lend themselves to a *different sort of photographic communication*—one that involves telling stories *with* images.

Researchers have also studied the adoption and use "traditional," standalone digital cameras. Again, these studies find both traditional, 'home mode', and new practices. For example, the work of Frohlich et al. [4] and Crabtree et al. [2] echo the earlier findings of Chalfen, emphasizing the continued importance of gathering around a presenter who narrates the photo story (an activity that Chalfen labeled "exhibition events"). Both of these studies, along with findings from Kirk et al. [9], found continued reliance on the printed photograph as a photo-sharing object. Even images that began as digital files were often printed purposely to support sharing and story-telling showing one potential challenge to incorporating digital systems in home mode.

Much study of consumer digital photography has also described new *processes* for working with digital images — some of which present challenges for consumers. Much of the process discussion has centered on *photowork* ("the activities people perform with their digital photos after capture but prior to end use such as sharing" [9]) and the *photoware* intended to support that work (specialized software offerings that "bite into further stages of the conventional photo life cycle, especially to support the storage, sending, and sharing of photos on-line" [4]).

Our work builds on, and uses similar methods to, that of Kirk et al. [9], who studied consumers' photowork practices. Indeed, some of our findings—particularly "pre-sharing" activities such as downloading, organizing, annotating, and so forth—mirror their photowork practices. However, unlike Kirk et al., we also explored the "end-uses"—what happened after the photowork completed—including sharing and receiving of photos, particularly around the use of photo-sharing web sites. Further, we also explored users' views on privacy, and how those concerns may have affected their sharing strategies.

Other studies of photowork point to a challenge for photoware: software to support the workflow. A well-known challenge is the difficulty of organizing digital photographs, and the reluctance of most consumers to invest significant time in this activity [2,4,18]. Some researchers have proposed tools to support better browsing and tagging to help with photowork; see [3, 19, 21, and 24].

In the last year, another digital trend has grown: the sharing of images via websites such as Flickr.com and Snapfish.com. While these sites may have superficial similarities to photo blogging (distinct from moblogging) sites—both are web-based tools for sharing photos—they seem to involve distinct practices. In a study of photo blogs, McDonald [13] argues that photo blogging practices are distinct from *photo sharing* sites such as Flickr: "Photo sharing is distinct from photoblogging as the latter often carries the aesthetics and goals of traditional photography."

It is precisely this question—whether sharing is oriented around the 'snapshot' home-mode of communication—that we wanted to understand with respect to Flickr and other sites. Do these sites make it possible—and desirable—for the Kodak Culture to share images with remote friends and family? Do they also give rise to new modes of photo-sharing? We were particularly intrigued by features in these sites that allow sharing with everyone, including strangers.

METHODOLOGY

We conducted a set of semi-structured interviews with 10 people in 2006 in Atlanta, GA. We interviewed people who had fully converted to digital photography, to see how their practices have changed, and how they are dealing with current organization and sharing solutions. We examined their Internet-based sharing practices to see whether they could be seen as an extension of historical consumer photographers' priorities and goals, and how available online sharing solutions affect the kinds of communities created and strengthened by photo-sharing.

Our participants were in their 20's and 30's. Five of our participants were female, five male; four lived with a significant other while six did not. Five used a digital SLR while five used a point-and-shoot digital camera. Participants' computing background varied but all were computer literate, having experience with file organization and backup, email, the web, and so forth. We recruited participants through word of mouth, e-mail and through postings on several online forums, including Craigslist and Flickr. Recruitment method turned out to be a key determiner of our sample; five of our participants responded to posts on a large (1000-member), local Flickr group,

while the other five were recruited through a variety of methods.

In order to share photos—the act with which we are primarily concerned—people must take them, organize them and decide who sees which pictures and through which medium. Thus, our study also explored how digital photo-sharing fits into consumers' ecology of digital photo management. This 'photowork' approach allowed us to ask questions about the broader context in which photographs were consumed, processed, and shared, by examining practices at each point in the digital photography workflow that illuminate aspects of photo sharing.

Participants gave us a 'grand tour' of their photo taking practices, and we asked them questions about organizing, finding, sharing, receiving and privacy.

We conducted the interviews in the participants' homes or on a university campus, at their discretion. All participants were interviewed at their primary computers; participants interviewed on campus used laptops as their primary computers. We also video-recorded the interviews for later transcription. We began with an icebreaker question, asking participants about the first camera (film or digital) they ever owned, and then asked them to show us "what happens when you want to get photos off the camera." This allowed participants to guide the interview, explaining their workflow and practices in their own words.

However, we did ask certain questions of all participants. For example, to ground their comments about finding photos, we asked them, "When was the last time you had a problem finding a photo?" and "How would you find a picture from last New Year's/Christmas?" When talking about receiving photos, we asked all participants "When was the last time someone e-mailed you a photo?" To start a discussion about privacy, we showed all participants a sample set of photos selected by us that represented a range of subjects, and asked participants to evaluate their willingness to share each one. This instrument allowed us to gauge subjects' notions of privacy and sharing without asking them to reveal to us their own personal photos (which, of course, they might be reluctant to share with us). We asked them to give examples of people they would not want to see each photo, and examples of people with whom they would explicitly share the photos. These questions not only brought out interesting anecdotes our participants might not otherwise have volunteered, they allowed us to compare directly across participants.

We used Grounded Theory as a model for our analytical technique, transcribing and coding our participants' responses and creating categories from the data. We used the question categories from our protocol as a starting point, separating quotes into the categories of photo-taking, organizing, sharing, receiving and privacy. We then grouped the responses within each category, and noticed they often fell into two distinct classes. One set of participants told us about practices that bore distinct similarities to those described by Chalfen's [1] Kodak Culture. However other participants described practices that we had not heard of before, and did not hear of from our "Kodak Culture" people. We decided to term those practices–and the participants who reported them–"Snaprs" (a reference to the missing "e" in Flickr) because of their common membership in a Flickr group and because these unique activities seemed to us to be grounded in Flickr-specific possibilities. Our data are insufficient to suggest that their practices apply to all—or even many—Flickr users; however, our data do suggest that, for this community, an unusual set of practices has arisen that diverge from those of the Kodak Culture.

RESULTS

In the following sections we describe the findings from our study. As mentioned earlier, we interviewed participants about the key aspects of their photography workflow, including photo taking, organizing, finding, and sharing. Here, we first present a description of two distinct categories of practices that our findings suggest. Then we break our results down into sections representing the aspects of workflow upon which sharing broadly touches. Finally, we examine users' motivations and practices with regard to privacy which, rather than being a specific aspect of photowork, is a crosscutting concern that touches on our participants' orientation toward digital photography in a number of ways. Following these results, we reflect upon these findings and suggest implications for the broader communities of which our participants are members.

Distinct Practices

As we started our analysis we were surprised to find a division in the practices of our participants, suggestive of at least two distinct classes of users. These two groups are internally homogeneous in many of their practices, but our data suggest that they are also remarkably distinct from one another. The first of these is the digitally-adapted Kodak Culture, similar to that described by Chalfen; the second is a group we have termed Snaprs. While the Kodak Culture extends beyond the results of our study, we recognize that the Snaprs represent just one of many communities that have likely sprung up around Flickr and similar websites.

Still, the Snaprs as a group present an example of patterns of behavior that may form in these new, online communities, and their practices appear to differ from both the Kodak Culture and from other traditional hobbyist groups in several key ways. While traditional amateur hobbyist groups have structured meetings and contests and are centered around "workshopping" each other's photos [5], the Snaprs' activities largely consisted of unstructured "photo-strolls:" individual or group outings focused on the taking of pictures for sharing. Indeed, three of our Snaprs had met each other through photo-stroll encounters. This level of intense offline interaction may not be normative for Flickr. Given that our Snapr participants were all members of the same (albeit large) group, we cannot draw

conclusions about whether the photo-stroll practices we observed carry over to other Flickr groups. However, we do know that activities that are at least superficially similar do exist in other Flickr groups; the Flickr groups for many major cities feature coordinated photography events.

Unlike traditional hobbyist groups, much of Snaprs' interaction with others occurred through the website—rather than face-to-face—where they commented on and "tagged" each others' photos. Critique and hints happened, but they treated photo-sharing in some ways like photo-blogging [13]; they shared with their Flickr contacts but also assumed that people across the world would see their photos. This sharply contrasted with the audience and goals of the digital Kodak Culture people we interviewed.

Our Kodak Culture participants all described sharing primarily within an existing social group and taking photos to archive, while the Snaprs took to share, and share primarily with strangers. Privacy was an important dimension for Kodak Culture participants, while Snaprs assumed that anyone could see their photos and were comfortable sharing them. Additionally, Kodak Culture participants generally used point-and-shoot digital cameras while the Snaprs all had digital SLRs. (In this regard, Snaprs were in line with the broader Flickr user base; at the time of writing, sampling of uploaded photos indicates that the top ten cameras in use on Flickr are all DSLRs (bighugelabs.com/flickr/topcameras.php)).

An important factor to note is the difference in definition of 'social group' between the two communities. Chalfen's Kodak Culture focuses on 'traditional' social connections, centering around families and family events (birthdays, weddings, holidays). Snaprs belonged to these groups as well, but those in our study shared photos primarily with a hobbyist interest group formed through the website (in addition to sharing photos with strangers on the website). They maintained these social bonds through a combination of online messaging, tagging and commenting, and offline events, such as group photo-strolls. When sending photos to Kodak Culture friends, Snaprs reported varying levels of accommodation, but seemed to treat this kind of sharing as the exception rather than the rule. We discuss this issue in more depth in the "Sharing" section of our results.

Our results, as well as the results of others mentioned in the Related Work section, suggest that all of the salient aspects of home mode communication in the digital age are in line with Chalfen's description of Kodak Culture written almost 20 years ago: home mode communication as a social act within existing networks, the concept of the 'snapshot' as opposed to the 'arty' posed professional-looking shot, and the importance of privacy. Kodak Culture is alive and well, even if the Eastman Kodak Corporation is no longer primarily involved in the process. However, for at least one group—our Snaprs—a different set of behaviors may be emerging around the online mechanisms afforded by Flickr, and offline practices intended to support those. These differences between Kodak Culture photographers and Snaprs may go deeper than just sharing practices. In the sections that follow, we examine each aspect of photowork in turn, especially highlighting the differences we found between our two participant groups.

Photo-Taking

We asked participants to tell us about their photo-taking practices. We specifically asked about how frequently they took photos and how long it took them to move photos to the computer. In this section, we describe why participants reported taking photos, what value they perceived in photo-taking, and what role (if any) the eventual sharing played in participants' photo-taking practices.

Snapr Photo-Taking

We begin with Snaprs. All but one Snapr reported taking photos more than twice a week, and all reported taking photos at least once a week. All described techniques for dealing with file storage issues, and all used external hard drives for archival storage. P1, for example, reported taking photos three times a week, and had 110 gigabytes of photos on an external drive. P7 noted "basically what I have on my computer is every digital photograph I've ever taken."

The Snaprs we interviewed also tended to move photos from the camera soon after an event; all did this within a few days at the very latest, with half of the Snaprs doing this as soon as they get back to their computer. Not surprisingly, Snaprs also left fewer photos from their 'shoots' on their camera (all of them moved photos after at most two shoots but usually one).

Surprisingly to us, our study suggests that Snapr practices involved a significant collocated, physical aspect; those collocated practices, however, centered around the *taking* of pictures, not the *sharing* of them. Snaprs all belonged to the same group on Flickr, posting photos to its common pool and participating in group discussions. Snaprs in our study often met with others from the Flickr group to take photos together, through 'photo-strolls' announced on the website. P6: "I'll average maybe three times a month [meeting up with other Snaprs]… The last [public photo-stroll] we had dinner around [a local suburb] and shot some. Tomorrow we're going to [a town an hour away]." It is unclear whether all our Snaprs went to all photo-strolls, as the group's membership was nearly one thousand, making it much larger than simply a bunch of friends with a common interest. One Snapr (P7) observed the group's growth: "That was back when the Flickr group was real small. So it was probably like 10 of us that would get together and now it's like 40 people show up!" However, not every Snapr activity was announced on the site. In addition to meeting for publicly announced photostrolls, Snaprs would sometimes privately arrange impromptu photo sessions. P6 again: "Last Friday one of the guys said let's go shoot in [a local upscale shopping center]! Okay! And we got together and did that. It was kind of spur of the moment."

Although the community was a large part of the attraction for Snaprs and they reported taking pictures of each other to document their shared experience on the photo-strolls, their photographic goals were also artistic. As P6 put it, "For me it's also a creative outlet. I've learned things along the way: composition, cropping, visual styles…things like that. I do it definitely as a hobby; I spend enough money on it!" P5: "[Flickr is] much more of a group thing. They don't want to see my party photos; they want to see my arty photos, my sunsets and stuff I figure."

Kodak Culture Photo-Taking

Our Kodak Culture participants, on the other hand, took far fewer pictures (between once a month and several times a year). Their photo-taking tended to center around several holidays or trips per year. P2: "We probably take the camera to stuff that we do six or seven times a year tops, I mean it's not very frequent." They were also more likely to wait a while before loading their photos onto a computer. All of the Kodak People in our study generally transferred their photos whenever they got around to it, except for impromptu or online auction photos, or periods of high photo-taking, like extended stays in a new location. P3: "I don't know that I would have a specific time that I would [load vacation photos]. It's probably whenever I unpack my camera from my bag." P4: "I don't take pictures and run and download them or anything unless it's something that's really spectacular that I really want to send out. I probably download [to the computer] every couple months."

Although the goals of Kodak Culture people may seem superficially similar to those of the Snaprs, our data indicate that they may diverge in several key ways. While both groups reported taking photos of themselves and their friends as well as 'arty' shots, Snaprs focused more on 'arty' photos or trying to improve their technique, while Kodak People took photos primarily to archive important events and share within their existing community. This is consistent with Chalfen's description of Kodak Culture people as primarily taking pictures of themselves or people they know doing shared activities about which they can tell stories. Although our results are preliminary, Snaprs appear to be doing some 'home mode' communication, but their sharing practices also include more broadly construed public communication with people neither in their pictures nor familiar with those who are in their pictures. Their sharing goals appear to be oriented towards the broader Flickr user base as well as their own acquaintances and family members.

Organizing

We wanted to know how our participants organized local copies of their photos on their own computers, and what strategies they employed, if any. We were interested to see whether our participants used a digital analogue of the shoebox—as reported in previous studies [17] and predicted by Chalfen—or whether they took advantage of affordances for hierarchical storage a file-and-folder structure provides. We were also interested in whether they used any special 'photoware' for this stage, or whether they simply used the built-in storage and viewing mechanisms provided by their computers' operating systems. We expected that if people were tagging photos for their own use that this would somehow show up in their organizational practices. Instead, we found a remarkably homogenous set of organizational strategies across both sets of participants.

Chronology is Key

Participants in both groups used a chronological organizational strategy as their primary method, with all but two organizing chronologically by event. We define 'chronologically by event' as a file structure that presents several folders in order from oldest to newest, and groups photos from distinct events in separate folders.

All but two of our participants used the default photo directory for their operating system ('My Pictures' for Windows or 'Pictures' on the Mac). Of these users, only P5 organized using a purely chronological organizational strategy, with folders for each day, month, and year. The others organized chronologically by event. P2 and P4 reported using a wizard that pops up when they connect their data card to the computer to name the set and load the pictures into a folder in their 'My Pictures' directory, and the others moved their files directly.

Contrasting Organization Goals

For the Kodak Culture participants, photo organization was not seen as a mission-critical activity, but something to do 'when they had time.' P4: "I have limited time I can come in here [the room in which the computer is located]." P2: "Photos tend to be one of those things that unless you organize it the first time then the chances you're going to go back and re-file it are very small It's frustrating but I don't have the time to fool around with it so I just haven't done something with it." Chalfen argues that the photographs themselves are not the goal in the Kodak Culture, and this seems to be true for our Kodak Culture participants. Extra time spent with the photos did not seem to enhance our Kodak Culture participants' pleasure.

Where the Kodak Culture participants saw organization as a 'time-permitting' activity, Snaprs were actively involved in their organization and it formed a key part of their workflow. All the Snaprs use their OS's file browsing features (Windows Explorer or the Macintosh Finder) as their primary organizational tool, and they all reported a desire for explicit control as the principal reason. P1: "Picasa tried to do things for you. It tried to organize by tags and everything. I felt I had more control over [the OS file system] and I knew where to find things better." This finding does not seem to be merely the product of a technological literacy gap; although Snaprs were highly proficient, all of our participants were computer literate. For Snaprs, photography was seen as a hobby, and organization was part of the pleasurable practice.

Other Organization Observations

Participants from both groups organized with a view to "web-worthiness," delineating a set of photos to be shared by either creating separate folders for sharing or creating and re-naming duplicates within the event folder. P2: "I'll download the pictures to the computer and [my wife] will make a web-worthy folder. She'll call me in and we'll narrow it down to between eight and a dozen, generally." P6: "For me, I know that part of my time that it takes me is just knowing what I want to do with the photo. I don't know if this is a photo I really want to process. Frequently I can't decide." When he decided he wanted to process a photo, P6 moved it to his Flickr folder and worked on it there. We expected Snaprs to employ this kind of strategy, because web sharing is a primary goal for them, but it is interesting that our Kodak Culture participants did it as well. This illustrates how they have adapted their practices to new web sharing paradigms while keeping the same goals and audience as their film photography predecessors.

Finding & Tagging

The Snaprs all used a web service to add tags to their photos (a defining characteristic) and all of them reported tagging as being primarily for the benefit of others, often citing an imagined unknown photo seeker as their justification for using the tags. P6: "The tags on Flickr are for Flickr. The tag that says 'night' or says 'tree' is for somebody who might be looking for tree shots." Tagging was reported to be a social act by Snaprs, some of whom also said they tag for the benefit of the local Flickr community, and included inside references and jokes as tags. P7: "A lot of the times just within our group [tags are] kind of a joke too, in addition to the title and description. The tags are something I always look at."

While Snaprs tagged on a regular basis, the Kodak Culture participants in our study either tagged occasionally or not at all. For example, only one Kodak Culture participant reported tagging frequently during a period of heavy photo-taking, and had since lapsed into organizing by event. P3, who used Picasa to organize photos, didn't even know how to tag within Picasa and saw little value in the activity. "Usually I can find [photos] within a minute or so. I think the overhead of tagging the photo is probably worse than scrolling through, if I know the approximate date. [If I knew how to add tags, would I?] Probably not. I mean it would be house stuff, dogs, stuff for Craigslist and then pictures of going to the zoo on vacation."

Memory of when the event occurred was sufficient for every single person we interviewed to find a photo, even the participant who also used tags to find. For example, P1 said "I usually know about what time I took it so then I can pretty much find it." P3 reported "Usually I'll try to guess the date range. I know I went to New York in August so I would search in August and just kind of find the photos."

Sharing

Our data, although preliminary, suggest that one clear delineator between Kodak and Snapr participants is their sharing practices. Snaprs in our sample all shared frequently with people they don't know in real life, while the Kodak Culture participants shared primarily with friends and family. Our Kodak Culture people shared primarily through e-mail, while the Snaprs in our study shared mostly through Flickr, sending occasional e-mail reminders to friends and family. Snaprs tried to avoid sending photos as attachments, while most Kodak Culture people used e-mail attachments as their primary method of photo sharing.

Kodak Culture Sharing

Our results also suggest that the Kodak Culture people we interviewed have not fully embraced the possibilities of online sharing, preferring offline sharing practices similar to those noted by Chalfen. P4: "It freaks [my parents] out to have anything to do with the computer so it's much easier just to print out pictures and send hard copies. I'll just pop a little note in the mail and say 'hey mom and dad here's the latest pictures of the kids.'" P4 owned and frequently used a dedicated photo printer, bringing it with her on trips to instantly share pictures with other family members. "Over Christmas I had [the printer] with me cause I wanted to be able to print out photos and give them. My sister has a digital camera and she was able to use it too and we took lots of pictures and it was great."

Two other Kodak Culture participants relied on relatives with printers to share their digital photos. P2: "I'll send a link to my mom, and sometimes she will forward that to an uncle who will print it out and show it to my grandparents." P3: "My mom will just print them out [for my grandma]." In contrast, Snaprs hardly ever printed photos. P7: "I haven't ever printed a digital photograph."

All of our participants used multiple methods to share their digital photos, such as e-mail, personal galleries, blogs, web photo services, and other web communities, such as Facebook and MySpace. P5: "Party pictures I usually put up on Facebook; it's a good way to meet college girls. Flickr is where I usually put all my artsy things. I only use Shutterfly because they give away free prints." Kodak Culture participants were more likely to use e-mail, and four of the five used it as their primary sharing method. P4: "I don't have a website. I haven't gone through all that. I'll just pop a note in the mail." P8: "I like the way GMail handles photo attachments, so I share mostly through that." Kodak Culture participants also chose their sharing method based on perceived social closeness. P4: "People I didn't send the hard copy Christmas card to I attached one picture and sent it [through e-mail]." P2: "We send e-mail to a targeted list of recipients. We know for each set of photos who we will send that to."

In line with Chalfen's definition, the Kodak Culture participants we interviewed shared primarily with an

existing social network of family and friends. P2: "The small group we tend to share [photos] with are our parents and a small group of friends so the pictures tend to be of ourselves. If [my wife's mom] comes to visit everyone looking at these photos knows who she is." P8: "I tend to be pretty protective of who I share photos with, mostly my family." P4: "I don't send out to a lot of friends. Mostly to close family. They get a lot of my pictures but I might send one or two pictures to a friend maybe once or twice a year, just pictures of the kids."

Snapr Sharing

The Snaprs we interviewed began with the assumption that their photos would be shared. P5: "I think pretty much if you're around me you should know that it's going to get published." P7: "Most of the stuff I put up on Flickr is for public viewing." Occasionally photos were taken explicitly for broadcast, emulating mass media archetypes. P7 again: "For Halloween me and two of the guys wrote a whole screenplay and we got everyone to dress up in costumes." This photo set featured rhyming couplets in the notes section of each photo in the set and charted a storyline, with each photo representing a frame of the action. The photos were even processed to look like dusty old prints.

Friends and Flickr contacts were the primary intended recipients of photos taken by the Snapr participants in our study, rather than family. When asked if his family looked at his pictures, P5 remarked "I sure hope my mom doesn't. She'll see it every now and then but there's certain events I don't want her to." P1: "I just put [a photo] up there for whoever's browsing. Now it tends to be the Flickr group, or family and friends of course when I take pictures of them."

This focus on the online community as the primary audience was a distinguishing feature of Snaprs. P1 valued "The sense of community in Flickr and learning more about photography vs. just sharing, just putting snapshots online." Snaprs tended to take more 'artsy' photos and correspondingly tended to share more 'artsy' photos on Flickr. P6: "Most of the photos I post to Flickr are for the purpose of art. They're not for information sharing. I'm not motivated in that way. The only people I imagine caring about my family photos is my family."

Snaprs also reported sharing with people we might classify as Kodak Culture photographers, especially their family. P5: "I only have one real-life friend on Flickr." Registration was one hurdle, but there seemed to be a conceptual divide; Snaprs approached photo sharing as a public act, whereas their family was often more comfortable sharing within a restricted group. To share photos with family, Snaprs fell back on other channels, like e-mail or in-person sharing. P6: "Typically if I'm over at dinner with my folks I'll have my laptop and I'll show them the photos on my laptop. My mom has a Flickr account and she will occasionally look at my photos. Nobody else in the family has bought into the Flickr thing." P7 claimed to have achieved family buy-in, and this may be associated with the fact that when she started posting to Flickr she was studying abroad. Her family and friends regularly checked her photos, treating them as a journal of her life. "My parents said that they can always tell what I'm doing by checking the Flickr page if they haven't seen me in a while."

Receiving

Receiving methods broke down similarly to sharing methods. For our interviewees, Kodak Culture people received photos primarily through e-mail while Snaprs (not surprisingly) received photos primarily through Flickr.

We expected that in an age without the concept of originals and copies, receiving photos would wreak havoc with people's libraries. In fact, people didn't view this as a big issue at all. This is due partly to a misconception in our premise: originals and copies do still exist to a certain extent, in the size of photos shared compared to local original copies, which are often much larger. However, this soon may disappear also, as storage and bandwidth costs decrease to the point that it is feasible for most people to share a five megabyte photo without worrying about 'hogging someone's inbox' or going over bandwidth limits on a photo-sharing website. Still, only two of the Kodak people we interviewed never added photos to their own collections. Those who did reported only doing so if the photo was noteworthy, otherwise they would leave it in their e-mail or simply not download the full version.

Surprisingly, integration of received photos into participants' libraries was not reported to be a major issue. They either kept a separate 'received' folder or added the photos right into their file structure. Those who completely integrated received photos still reported no difficulty remembering who took which photos. This suggests that, as with participants' organizational strategy, memories of the event are strong enough to preclude confusion. Most people seemed to be fine organizing and finding photos locally through browsing; we only found one person who used tagging as a primary means to find photos and even she didn't add a tag to delineate received photos.

Snaprs received photos primarily through Flickr, either through the website or through e-mailed links to photos on the website. P7: "It's been like three or four months [since somebody e-mailed me a photo]. People that I share with most often will send links back and forth to Flickr."

Privacy

In this final section of our results, we discuss privacy, and our users' orientation toward privacy. While not a specific aspect of the photographic workflow, privacy is an important concern that cross-cuts other aspects of photographic practice. For example, for the Kodak Culture participants in our study, it was perhaps the most important factor in determining when and whether to share photos. We presented all participants with a set of photos (shown below) in what we judged to be order of least to most private. This allowed us to have a comparable set of

discussions across all participants about privacy without forcing them to show us private photos.

With only one exception, all of the Snaprs in our study would share all the photos with everyone (P6 would share 2 through 5 only with known contacts), while Kodak Culture participants' willingness to share decreased with each picture. All of our Kodak Culture participants would share 1 and none would share 5.

We also asked all participants if privacy was a primary concern; all but one Kodak person answered yes, and all Snaprs answered no. Snaprs would share everything as a general rule, expecting that pictures of them and their Flickr friends would be viewable by anyone and open to the possibility that strangers could view their photos. Generally, this privacy exercise created much more discussion with the Kodak people, who had comments about each photo and gave detailed reasons behind their sharing decisions, whereas Snaprs generally flipped quickly through the photos. P5: "Share, share, share, share, share. I have pictures of every single example on my computer."

Photo 2 caused two Kodak Culture participants concern, but more for their own privacy than that of others. P2 would make it available but not advertise it outside family and friends. "I would post a picture like this for family and friends and stuff. I might put a picture like this on my webpage, very much shrunk down, like 'this is what's going on in my life' but it would depend." P4 would only share photo 2 with family members. "That I would send to probably just family members. I don't think I would want that posted on a website or anything. I mean, people can get in there and do stuff to 'em."

Photo 4 caused P4, a mother, great concern. "I really worry about pedophiles taking or having pictures of my kids. I've seen friends that have posted pictures of their kids in the bathtub and it really makes me nervous." P2 also had concerns: "If it's a picture of me or [my wife] in it I'm less squeamish about putting it on the web but if it's somebody else—even if it's a family member—I'm a little bit more reserved about making the decision if they haven't said okay." Again, P6's concern was more for the subject of the photo than concern for his personal privacy: "I wouldn't share that with the world if they hadn't agreed."

No Kodak Culture participant would share photo 5 outside of a very small circle, and they would use e-mail if they shared it at all. P2: "That would be something I would make a print of and hang in the house but I probably wouldn't post anything like that online." P3: "I'd be more hesitant about that one." P4: "That would be limited people that would get e-mailed it." P6 (a Snapr interviewee), while concerned, seemed undecided about this photo. "If they were strangers I would post it. If they're friends then I would make a determination whether or not they're okay with that. There's a question of whether it's a private or a public moment. If they were out at [a large urban park] it's a public place and it doesn't concern me as much."

DISCUSSION

When cooperative activities become computer-supported, existing modes of practice do not disappear; instead, existing groups adapt their practices to the new paradigms. Sometimes, disruptive concepts do radically change practices in a certain domain. The 'folksonomy' concept of emergent taxonomy through tagging has the potential to do this, by creating new practices around photo sharing. But our study, although preliminary, suggests that at least some average consumer photographers (the 'Kodak Culture' photographers) may not reap the benefits of this approach. This group of people (abstracted from our observed examples combined with Chalfen's archetype) do not want to share all (or even any!) of their photos with strangers; they just want to share photos with family and friends. They express frustration with their current organization and sharing solutions, but the lure of tagging and its value for exploratory search is not what leads them to share photos.

Snaprs: Hybrid Practices

In contrast, the Snaprs in our study appear to use practices that represent a new hybrid of traditional amateur photography, Kodak Culture, and blogging: While they use Flickr to communicate in the home mode with friends and family, they primarily use it to foster and maintain online relationships based on photo critique and discussion. They use it as a way to document their lives and view photo-sharing as a fundamentally public—even global—act. They act in some ways like traditional amateur groups, in their focus on taking and sharing of artistic photos with other Snaprs, but they have not yet developed a judging hierarchy with ribbon contests like the culture described by Grinter [5]. Their community appears to be tied deeply into the affordances of Flickr itself; the practices of Snaprs would likely not exist without the group structure Flickr provides for online sharing and offline activities.

The Snaprs we interviewed use Flickr to tell stories to their family, offline friends and other Snaprs, but they also use it for non-storytelling purposes, such as tagging their photos for others to find and explore. Their status as Snaprs is part of their identity, and their Flickr interactions form an important component of their social activity.

While the results from this study may not generalize to the broader Flickr user base, or to users of other photo-sharing sites, the distinct practices, socialization style and perspective on privacy exemplified by the Snaprs in our study suggest that new patterns of behavior around photo-sharing may be developing. The Snaprs appear to be close-knit even for Flickr, with their regular photo-walks and occasional participation in collaborative efforts (the Halloween set, for example), but they represent a class of photo-sharing that may become more widespread as the popularity of online photo sites such as Flickr increases.

Tagging

Although a potential benefit of tagging is that it can aid in finding photos, our participants did not report difficulty finding their photos. Our Kodak Culture participants consistently described finding as an infrequent and minimally problematic activity. When asked to find a specific photo from a social event, they had little to no difficulty. They reported satisfaction with browsing to the set and scrolling within that set (or even scrolling through their entire library). Even Snaprs didn't tag until very late into the process, and reported tagging for others' benefit rather than their own. Even though other techniques for easier metadata creation (such as those proposed by Sarvas et al. [19] or Yee [24]) may lessen the burden of tagging, they do not assist with the storytelling aspects of photo sharing that are so important to the Kodak Culture.

Privacy Matters

Our research suggests that sharing solutions designed for the Kodak Culture should take privacy to heart, making photos private rather than public by default. Such solutions should also offer flexibility in the ability to control privacy and sharing (ideally, of course, without adding undue complexity that would potentially prevent adoption). Our Kodak Culture participants hesitated to use sites like Flickr or Yahoo! Photos because of the perceived public nature of the systems. One participant who had posted travel photos to Yahoo! Photos allowed his gallery to be publicly accessible because it offered 'security through obscurity.' (P2). The fact that finding his photos would be difficult without being sent a direct link to the gallery made him feel comfortable sharing his photos that way. Another participant put it this way "I feel that Flickr is coming from a public place but e-mail is coming from a private place. I know you can change privacy settings on Flickr, but the fact that 'public' is the default makes me wary." (P8)

One approach to this problem is privacy gradients [6], along which a user places his or her contacts in order of most to least access. However, privacy gradients assume that all contacts lie along one continuum of intimacy, which may not be the case. Additionally, the creation of a privacy gradient is itself a private act, and the gradient becomes an explicit key to a user's social groups. For these reasons, we view privacy gradients as an inadequate solution. Photo-sharing for the Kodak Culture would seem to require a privacy solution that is easy to set up without requiring the input of sensitive data.

Where's the Killer App for the Kodak Culture?

Flickr enables global photo-sharing between strangers, and encourages the formation of online communities around different photographic styles or subjects. While it offers many ways to find photos, exploratory search (whether to find new content from contacts or content by unknown photographers) lies at the heart of Flickr. This is where tagging has proved its utility: it is easy to spend hours browsing from photograph to photograph, marking photos as favorites, commenting on photos, or adding photographers as contacts. But while this process appeared to work well for Snaprs interviewed in our study, it did not work nearly as well for our Kodak Culture photographers.

Kodak Culture photographers we interviewed shared photos because they wanted to share stories with existing family and friends. They employed a variety of channels (primarily e-mail, supplanted with web galleries) to control the level of storytelling around and privacy of different photos. They used online photo galleries as a means of staying connected with friends and family that might not otherwise hear from them. They cared about the privacy of their photos because their photos represented their activities, perspectives and life stories. Their drive was to augment their existing relationships through photo-sharing, not supplant them.

At the moment, E-mail is the closest thing to a 'killer app' for the Kodak Culture. An e-mail message is intentional, in that photos are actively shared rather than simply added to an online folder. It requires no setup because it is ubiquitous and universally adopted. E-mail messages are targeted at a specific list of recipients, and (excepting mailing lists) the sender knows exactly who will be reading the message. The targeted nature of E-mail allows for the greatest level of storytelling flexibility, because it offers the sender the ability to send each recipient a unique description of the photograph if the sender is willing to send out individual e-mails.

For these reasons, we suggest that the 'killer app' for the Kodak Culture will look and feel much like e-mail, but with a more robust underlying framework geared to photo sharing. It would not require recipients to download large files before they have agreed to receive the message. It would not require users to 'switch modes' to view photos (as e-mails from current websites do), and it would retain the targeted , intentional nature of E-mail.

Conclusions

In this study, we described two distinct categories of photo-sharing practices that appeared in our user population: Kodak Culture people and Snapr people. Snaprs represent a hybrid of behaviors that is different in audience and approach to storytelling from both the Kodak Culture and traditional amateur hobbyist groups. Unlike Snaprs, Kodak Culture people communicated primarily within their existing social groups of friends and family. Privacy was an important concern for Kodak Culture participants and was inadequately addressed by current photoware. We believe that our Kodak Culture people represent a large and underserved photo-sharing population.

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