Getting Sidetracked: Display Design and Occasioning Photo-Talk with the Photohelix

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ABSTRACT
In this paper we discuss some of our recent research work designing tabletop interfaces for co-located photo sharing. We draw particular attention to a specific feature of an interface design, which we have observed over an extensive number of uses, as facilitating an under-reported but none-the-less intriguing aspect of the photo-sharing experience – namely the process of 'getting sidetracked'. Through a series of vignettes of interaction during photo-sharing sessions we demonstrate how users of our tabletop photoware system used peripheral presentation of topically incoherent photos to artfully initiate new photo-talk sequences in on-going discourse. From this we draw implications for the design of tabletop photo applications, and for the experiential analysis of such devices.

Author Keywords
Photoware, photo-talk, tabletop, sidetracking, randomness.

ACM Classification Keywords
H.5.2 [User Interfaces]: Graphical User Interfaces (GUI), Input devices and strategies. H.5.3 [Group and Organization Interfaces]: Collaborative computing.

INTRODUCTION
Amongst social scientists and HCI researchers there has been a persistent interest in how people interact with photos and related technologies, stemming in part from the seminal work of Chalfen [5] and his exploration of home-mode photography and 'Kodak culture'. As digital photography has proliferated and become more pervasive there has been a push to explore how people interact with digital information from a data management perspective [3, 10].

Over recent years however there has been a gradual shift to consider more seriously human value-centric aspects of people's experience with photos so as to explore technology design [7, 6]. In related recent work the importance of browsing-like activities with pictures was discussed [12] and it has been conjectured/observed that such activities are often socially engaged practices [12, 8]. Complementary to this there has been great interest in the development of tabletop interfaces, for which the classic demonstrator application is photo handling / browsing, this, drawing on the capacity of tabletops to facilitate easy photo sharing and manipulation, and drawing on the social dynamics of round-table interactions [9].

Generally speaking however, most photoware design activity, which has engaged the social aspects of photo-use, has tended to focus more heavily on issues of remote collaboration, this being problematized in the research literature [7, 6]. We would argue that there is still much of interest to explore in aspects of co-located sharing of digital photos. Where such issues have been touched upon, in the aforementioned tabletop literature, the research questions that have largely been addressed have focused on basic interaction mechanisms, such as gestural techniques for rotating, resizing [1] and collaborative manipulation [15]. It has often been assumed that the basic affordances of the table are enough to promote dialogue and interaction as they closely approximate real-world interactions with physical photos.

We feel that in some respects this artificially limits the potential benefits of presenting a digital image. Digital after-all has some capabilities which cannot be replicated in the physical and so at times we should strive to understand what the digital can offer that the physical cannot and design accordingly. In particular some recent work [14] has proffered a view of technology design which focuses heavily on exploring the experiential aspects of technology use and Leong et al [13] have extolled the virtues of understanding people's experiences of randomness and used this as a vehicle for exploring evocative interactions with digital information.

Randomness as a trope has figured little in previous photoware work [6, 7]. Balabanovic et al [2] however, do highlight a process in which story-telling is structured around impromptu shifts from photo-driven to story-driven modes of narration. Contrary to work such as the *Personal Digital Historian* [16] in which distraction is actually suppressed and thematically coherent photo content is pushed to the user to continue narrative flow, the Balabanovic work suggests a role for other forms of story-

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telling practice although the implications of this are not much considered.

In this paper we wish to highlight some exemplar moments observed during use of a tabletop photo-sharing application. Through close observation of system use, we have come to realise that an element of interface design seemingly promotes sidetracking [4]. This feature of the photo browser enables the unobtrusive highlighting of almost random content which often allows users to get side-tracked by the presentation of *unrelated* material. This can divert the content of their dialogue, or form part of a brief side-sequence. In referring to such a process as side-tracking rather than serendipity we are avoiding an analytical frame, which might erroneously skew the perspective of the agency of action at the interface, (suggesting that the interface provides timely and pertinent streams of information). Rather, with our use of 'side-tracking' we wish to highlight the agency of the user in effectively structuring a dialogue (*not necessarily a narrative*) using available (local) resources to serve a variety of linguistic social functions, thereby creating an interaction between people. A sensitivity to the process, role and impact of sidetracking potentially suggests ways to design photoware which suggest a rejection of pre-canned 'story' content as requested by Shen et al [16] and which argues for the support of photo-talk beyond the confines of story-narration as focused on by Balabanovic et al [2]. Herein we explore some examples of side-tracking behavior and discuss the implications of this for designing photoware which supports user *skillfulness* and *art* in dialogue.

METHODOLOGY

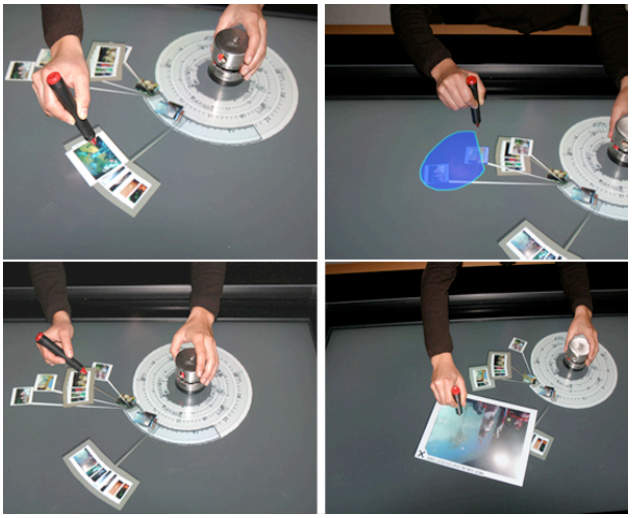

Figure 1: Photohelix overview: A physical handle is used to position and control a spiral shaped calendar. Pictures are loosely grouped into events. Users can (re-)arrange event structure as well as individual photos using a set of lightweight interaction techniques to facilitate dialogue about the photos.

We developed Photohelix (see Figure 1), an application tailored for co-located browsing and sharing of pictures on a digital tabletop [9]. The system uses the notion of time and events to organize collections. Events are represented as image piles on a helix-shaped calendar. Events and pictures are accessed, manipulated and inspected using a hybrid, bi-manual interaction technique. One hand operates a physical handle to position and control the calendar view (rotation adjusts the current time setting). The other hand is used to inspect and modify events as well as individual pictures for browsing and sharing purposes.

The PhotoHelix was formally evaluated in a usability study, involving 20 participants (13 male, 7 female), which incorporated a series of formalised photo interaction tasks (utilising various aspects of the interface, filing, retrieving and selecting images and talking about recent events captured). Detailed results from this first study are reported elsewhere [9]. In the analysis of this initial study we noticed a series of instances of the sidetracking behavior that we discuss herein. To better understand this particular behavior we later designed a second phase of experimentation that involved an additional 24 participants (15 male and 9 female), was more free form in nature and involved discussing activities engaged in, and photographed, over the last 2 years (these conversational episodes lasted for 10-15mins). In both sets of studies participants used a sub-set of their own extensive digital photo collections to populate the PhotoHelix so that they were freely talking around elements of their own sub- collections.

We have selected 3 examples to talk around which highlight aspects of sidetracking as it occurs during the occasioning of photo-talk. All vignettes stem from the second experiment. Whilst these interactions occurred in an experimental setting the dialogue exchange in the study was not scripted and was driven by the participant, not the experimenter. Participants were not asked to speak about specific topics or to fill time; it was up to them what they said and for how long (up to the session's end). We argue that in simply selecting a subset of photos from their personal photo collection to bring in and share, participants were actively engaging in the photo-sharing process and were motivated to speak about the specific photos that they had selected. Obviously, they might have selected different photos for a different audience, but this would not affect the true nature of the interaction or how a participant might choose to use photos to make a point, whether occurring in a simulated study setting or in real life. Therefore, we believe the social behavior we observed was a fair simulation of social behavior outside of the lab.

RESULTS

Below we present 3 vignettes of interaction. Through this analysis we demonstrate how side-tracking can occur and show how sequences of story-telling can be *locally occasioned* [11] by unobtrusive presentation of peripheral information. (In the transcriptions square brackets denote an action that occurred, numbers in round brackets denote timings of noticeable pauses). In vignette 1 below we see a classic example of what could be referred to as side-sequencing behaviour.

Vignette 1:

Exp: No. What about the Profs?

Participant: Well this year they came along, well at least Borg did [looking at interface – selects a picture and opens it]. Last year wasn't planned it was more spontaneous. Gregory was there [closes picture he was looking at] only a few TAs went. Just a few colleagues came [reaches for picture further away] because many others were on vacation [moves picture slightly - then withdraws pen to main helix area] (1.0) [opens picture of a roast chicken – laughs] That's silly. [Closes picture]. Ah now I'm hungry! (0.5)Well this year… [starts scrolling]

In this interaction the participant is describing events that took place over the last year. Just as he wishes to move the dialogue from one time chunk to the next he notices a photo of a roast chicken, which he opens and almost immediately closes. He offers no justification for suddenly presenting the image, just the claim 'that's silly' and then he comments on how he is now hungry, responding to the image he has just introduced into the dialogue. Here we witness how the production and exchange of a digital picture in this way can perform a kind of work not normally considered in regular discussions of photo-talk. The sequence occasioned is not placed so as to construct or further a story sharing narrative but is offered as a means to further craft the recipient design of the dialogue and could be intended to perform a variety of facilitatory functions, the laughter possibly suggesting an attempt to further the work in this social situation of fostering social engagement.

In vignette two we have an instance of sidetracking used as a device to work-around a usability issue (something which only occurred once amongst our observed occurrences of side-tracking). The participant is attempting to discuss, with the aid of pictures some features of a building she visited in Seattle. She has difficulty with selecting a specific image (her scarf inadvertently interacting with the screen), but she gracefully recovers by using a picture of Vancouver Island, which then leads her to stop talking of Seattle and to become engaged in conversation about somewhere else.

Vignette 2

Participant: [adjusts dial – looking at interface] anyways we've been to Seattle for example and I can't see a photo from that right now [drags thumbnail]. Here when you look at this, it's stupid but [enlarges photo – glances at experimenter] we went for a coffee at the very first Starbucks in Seattle [rotates image].

Exp: That was in Seattle?

Part: Yes in Seattle exactly. Anyways we had a coffee and it was in a public market. This was an old public market. (2.0) [tries to enlarge another photo of the market]

Exp: You need to take care because your scarf confuses the tracking.

Part: Uups [holds back scarf] now it's gone [turns dial]. Ah there it is [tries to enlarge the photo again but fails] Which one did I want? I think this. Well I think I'll try these [glances at different part of the helix] I don't know what these are. Oh this is great [enlarges photo]. (3.0) This was a bit later, let me rotate it, this is Vancouver Island – don't know if you know that?

In-the-wild, just as here, technology breaks down. Activities such as narration and social discourse are, of course, routinely interrupted. Herein our participant skilfully showed how to appropriate the interface, showing her performative skill over her narrative skill in keeping the interaction flowing. This brings into question the argument that people might require 'serendipitous' presentation of information – being able to link people to semantically related streams of photos might not always be necessary. Our vignette reveals the resourcefulness of story-tellers, to find points of interest in their own data without needing to be prompted or offered extended sets of related images.

In vignette 3 below, this issue of random presentation is perhaps most evident.

Vignette 3

Participant: The thumbnails are too small other than that this is really nice [scrolls through images on helix] (2.0) [Glances towards top of display] Oh look there are my kids at their show [excitedly reaches forward to open image]. They have a band. That is my step daughter [points at enlarged picture].

Exp: Ah ok.

Part: [Returns pointing hand] It is called "Treffpunkt" and all the girls made T-Shirts and are wearing them [glances up at experimenter].

In this encounter the participant is suddenly distracted. Her intention was to find events from the past year to talk about with the experimenter. However, scrolling through she notices a picture of her children and this pulls her into what becomes an extended narrative stream discussing the musical tastes and abilities of her children. This actually stops being related to the pictures at all, and quite like a normal interaction essentially stops being photo-talk. Again this kind of reaction suggests that the ability to go off-topic, to break out of a cycle of talking through images and to step out of 'presentation mode', is something that users feel inclined towards in social situations.

DISCUSSION

The three vignettes presented above demonstrated different ways in which users of the photo helix became sidetracked (either by genuine distraction or by desire to keep talk flowing and to demonstrate their skill in interaction). These moments that we have presented, whilst not necessarily indicative of all moments of sidetracking we observed, are both informative and show the lightweight ways in which our users constructed photo-talk in interaction. These observations of use of the Photohelix raise three key issues concerning the design of photo handling software.

Balancing presentation needs against overload and constraint. Vignette 3's demonstration of how people, break from a narrative to seed conversation about topics of specific interest, spurred on by stumbling across meaningful (but not coherent) content raises questions such as, how

much peripheral information presentation is enough/too much? And how loosely/tightly should it be associated with currently inspected photos, if users are likely to cut random paths across their collection or drop the presentation suddenly and choose to (or not to) pick it up later? Equally, some might call our observed uses of peripherally presented information to structure sidetracking behaviours, serendipitous, we would argue that this is not strictly true. Serendipity suggests the timely delivery of a photo that is required to fulfil a specific function. What we observed with the photo helix is its ability to provide a necessary amount of alternative information in the display. The device does not overwhelm the user with extraneous photo data, making it difficult to find specific photos or to return to a point in a sequence, but neither does it waste effort in trying to predict requirements for delivery of associated images.

Supporting fluid interactions and repurposing. We have observed how interesting stories evolve despite, and even because of, interface breakdowns. This draws into question how important performance and efficiency really are for story-telling and photo-talk in general. We observed that narratives and discourse did not fail because of the lack of a coherent structure. As the story sequences were occasioned in a moment-by-moment fashion the participants demonstrated how awareness of peripheral stimuli, photos that were present but not present, could be adeptly woven into the discourse. What the users clearly needed, and used, as seen in vignette 2, was means to switch sequences between discourse elements with minimal costs, using an interface that highlights the availability of such possible sequence changes.

Designing for randomness. A final point of interest concerns the intentional design of randomness. It might be enough to enable retrieval when users *want* to find something specific (e.g. through time based organization) but otherwise not make assumptions about their desired presentation. Users clearly structure and break their own narratives as they see fit. Equally, many users experience photo tools in a family setting and therein multiple users repurpose the same data, having their own narrative structures, often heavily context dependent and recipient designed. This could suggest that too much of an artificial structure (such as offering associated links to standardized who, when, where categories) has little applicability and disavows the actual work which goes into maintaining social interactions during photo-use. The ability to make highly irrelevant even possibly random asides as the moment seems appropriate (as seen in vignette 1), so as to demonstrate one's skill in discourse and entertainment should be supported. It is to this sensitivity in photoware design which we have hopefully oriented the reader.

CONCLUSION

In this paper we have briefly highlighted an interesting moment (little previously discussed) that can be observed during photo-talk. Sidetracking demonstrates intriguing features of the capacity and possibly the desire of people to actively engage with randomness in their narratives. This notion highlights some ways in which users of photoware express themselves through the appropriation of the technology to hand, challenging notions of software design which argue that users need active support in the structuring of narrative and suggests instead that a perceived utility of an interface is its ability to repurpose intention on a moment-by-moment basis.

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