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# Trouble-spotting Photoshows: Capturing Everyday HCI Experiences

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**Abstract**

Trouble-spotting is a newly-invented video method for capturing everyday HCI experiences. The method borrows qualities from scenarios and photo elicitation, allowing images and narration to be captured, appropriated, and post-processed into a narrated sequence of photographs, called a photoshow. In a pilot project which focused on four participants' problematic experiences with business processes, participants created four trouble-spotting photoshows, varying in length from 33 seconds to 13:16 minutes, containing useful and actionable firsthand accounts. In this paper, Trouble-spotting is introduced along with insights gained from the pilot project and directions for future work.

**Keywords**

Scenarios, photo elicitation, business process improvement, trouble-spotting photoshows

**ACM Classification Keywords**

H5.m. Information interfaces and presentation: Miscellaneous.

**General Terms**

Design

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### Introduction

Trouble-spotting is a method, invented to prompt end-users to capture firsthand accounts of socio-technical systems for communication and reflection. The accounts, which can focus on either problematic or meritorious aspects of work, take the form of a narrated sequence of photographs, called a photoshow. The method borrows qualities from scenarios and photo elicitation, allowing images and narration to be captured, appropriated, and post-processed in order to create a representation of knowledge.

In contrast to the commonly-used methods of user-centered design, Trouble-spotting shifts the power for documenting experience from the designer to the user. This paper introduces the method and, based on a pilot project, reports on its merits and future work.

Scenarios and scenario-based design have a rich multi-disciplinary history of application [7] and wide application in the HCI literature. Specifically, John M. Carroll and collaborators, drawing, in part, on the work of Donald A. Schön [16], have had significant impact on the field's practice [4,11]. Particularly relevant is the recent work on photo essays and scenarios for requirements elicitation [8,9].

Photo elicitation, where, in traditional practice, photos are selected by a researcher and then used to elicit responses in subsequent interviews with study participants, also has a multi-disciplinary history and applicability as a method for representing knowledge [2,3,10]. The field has extended the method by exploring digital means for jointly-creating stories in order to improve team awareness [15]. More recently, photo elicitation has been used to gather firsthand

accounts of experience for early design processes, incorporating visual materials, such as advertisements, or photos taken by participants into subsequent interviews [12,13]. Importantly, photo elicitation has also been used to represent knowledge and to document processes in business process re-engineering efforts [2].

In contrast to cultural probes [1,6] which foreground the capture of experiences to be interpreted by the designer, Trouble-spotting puts reflective analysis into the hands of the user. The relationship between Trouble-spotting and cultural probes is not explored here but will be taken up in future work.

### Methods and Representations

Trouble-spotting builds on the strengths and uses of scenarios and photo elicitation in order to produce representations of knowledge. So far, these representations are framed within everyday experiences within a manufacturing setting and by the purpose of business process improvement. However, Trouble-spotting is not limited to a particular setting and purpose; in fact, it should be generally applicable in the context of information systems use.

Within the manufacturing setting, business process improvements are commonly led by specially-trained facilitators (e.g., Six Sigma Black Belts) with varying success and failure [14]. Trouble-spotting extends scenarios and photo elicitation by minimizing the role of the facilitator, placing control over the creation, form and content of the resulting knowledge representation in the hands of the participant, known as a Trouble-spotter. We will put this extension into context, first by



**figure 1.** *Olympus W-10*, a hand-held digital camera/voice recorder that can be used as a recorder, used to take low-fidelity photographs, or used to attach voice (.wav) files to images.

considering scenarios as method, then by considering photo elicitation as method.

#### *Scenarios as Method*

Scenarios are concrete yet flexible, they leave the design space open in order to encourage reflection, envisioning, and the subsequent iteration of design [4,5]. As conceptualized by Carroll and collaborators, scenarios are stories in text format written in the third person narrative [5]. Scenarios, then, are *stories that designers write about users*, in order to reflect upon and envision new possibilities for design. More recently, Carroll and collaborators have pursued work where users have actively participated in the initial stages in design projects, first taking photos and writing essays in the first person about the photos, then coming together with other users to collaboratively write scenarios [8,9]. In this way, scenarios become *stories that users write about themselves*. Yet, although the authorship of the story has shifted to the user, the user's control is still mediated by a project leader who frames the topic under consideration.

#### *Photo Elicitation as Method*

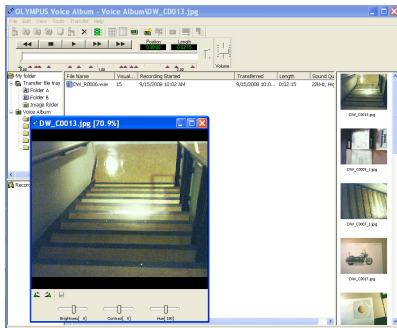
Photo elicitation uses photographic evidence to enhance firsthand accounts of experience, thereby capturing knowledge [3,10]. However, despite the focus on firsthand orientation, traditional photo elicitation and newer applications [12,13] place control over the process in the hands of the researcher, who manages the terms of the elicitation and synthesizes its output. In this way, photo elicitation is what it claims to be, a method for eliciting information from users, resulting in *stories that researchers ask users to tell about themselves*.

Yet, if we give nearly complete control over scenario-building and/or photo elicitation to users, what would likely happen? Beginning with this question, Go, Takamoto, and Carroll posit that there would be non-compliance and outputs that lacked practical, actionable ideas [8]. However, Buchanan, who began with a similar question, states: "There is no reason, for example, why an anesthetist, a group of ward nurses, or a theater porter should not be furnished with a camera and invited to produce a photographic record of an organizational process with which they may or may not be directly familiar" [2, p. 162]. Herein lies the inspiration for the Trouble-spotting pilot project where four participants were given digital camera/voice recorders and *created stories about themselves*.

### **Trouble-spotting: Method and Examples**

#### *The Recording Technology and the Project*

The Trouble-spotting photoshows were created using an *Olympus W-10* (Fig. 1 and Fig. 2). The Trouble-spotting project was led by the author, who has worked for the organization since 1999. The author recruited Trouble-spotters via company-wide email. One initial 1-hour meeting was held, where two example photoshows of less than 1 minute were shown, and the Trouble-spotting method was discussed (i.e., taking pictures and making a voice recording of a problematic business process). Trouble-spotters were asked to take photos and record their thoughts on a problem in a business process, and were told that the finished photoshows would be shared with the author's supervisor, who leads business process improvements. Each Trouble-spotter was given a *W-10* camera/voice recorder and was allowed four weeks to complete his or her photoshow. All four Trouble-spotters (TS1, TS2, TS3, TS4) completed photoshows without further



**figure 2.** Screenshot of TS3's Trouble-spotting photoshow in playback mode. The *W-10* has software that allows photos taken with the camera, external images and .wav files to be post-processed into a photoshow.

assistance from the author. At the end of the project, the author had individual meetings of less than 30 minutes with each Trouble-spotter, receiving copies of the photoshows, and discussing how they were created. None of the participants reported problems with the cameras, and all had enjoyed participating.

#### *Examples*

TS1, working since 1998 as an engineer, spent 1 hour and created a 2:58 minutes long photoshow with 3 images based on a problem he encountered with vendor information on an engineering drawing, a paper document with line drawing specifications. TS2, who has worked since 1999 as a buyer, spent about 10 minutes time and created a 33 seconds long photoshow with 1 image relating his reaction to the common problem of incomplete information on a purchase requisition, a paper form that is used to gain approval for a business expense. TS3, who has worked since 2007 as a business process lead, spent about 4 hours creating a 2:15 minutes long photoshow with 15 images recounting the daily task of retrieving copies of engineering drawings (see Fig. 3). TS3 stated: "This [creating a photoshow] is the first fun thing I've done since I started working here." TS4, who has worked since 1997 in new product introduction, spent about 8 hours and created a 13:16 minutes long photoshow with 11 images that depicts the process for localizing languages used in the spoken voice feature of the organization's products (i.e., getting translations made, updating applicable literature, and so on.)

#### **Discussion**

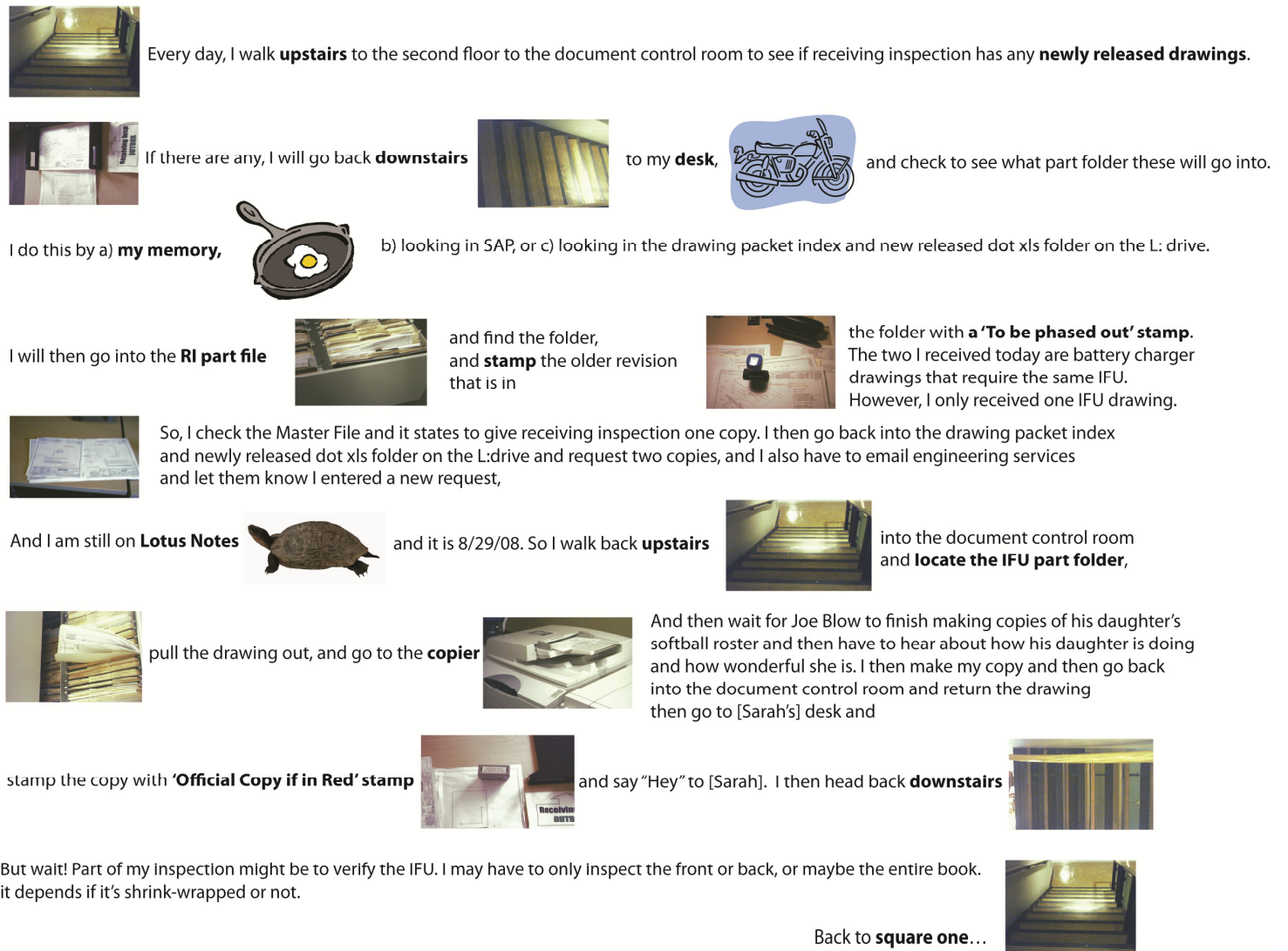
By taking up the question of whether participants, with little direction, would create representations of knowledge that might be useful or practical for

improvements to business processes, we have shown that, in this very limited instance, we may answer affirmatively. Remarkably, given the brief introduction that Trouble-spotters were given regarding the cameras and the process, the Trouble-spotters showed great variation and creativity in their photoshows. TS3 used post-processing to create her photoshow, editing a mixture of photos taken with the camera and images downloaded from the Internet, and recording a narration which she had scripted in advance. TS1 and TS2 captured in-the-moment accounts by directly attaching .wav files to photos as the photos were taken. TS4 used the same in-the-moment recording style, but TS4 had prepared a written script and elaborate props in advance.

For all Trouble-spotters, the photoshows acted as inspiration for reflection, communication and process improvement. TS3's photoshow (Fig. 3), incorporating humor and metaphor, reveals the potential for Trouble-spotting photoshows to create empathy in the viewer, leading to dialogue and envisioning. In fact, this photoshow enabled TS3 to revamp the business processes used throughout her department, resulting in a reduction of work with projected annual savings of 348 hours of work and \$13,000. Additionally, TS1 is engaging in discussions with the purchasing manager regarding vendor data, and TS2 has actively discussed his experience with co-workers. Finally, like TS3, TS4 is sharing his photoshow with senior managers in order to envision potential process improvements.

#### **Future Work**

This preliminary work demonstrates the potential for Trouble-spotting photoshows as a means for capturing firsthand accounts of everyday HCI experiences.



**figure 3:** Photostory by TS3. Notes: 1) Motorcycle represents a favorite hobby of TS3, who has a picture of a motorcycle at her desk. 2) The fried egg refers to a US public service announcement, "This is your brain. This is your brain on drugs." TS3 is commenting on her poor memory. 3) SAP is a commonly used enterprise resource planning system. 4) The L: drive is a location on the network. 5) RI is Receiving Inspection. 6) IFU stands for "instructions for use." 7) Lotus Notes is an email system, and the turtle refers to slow system performance. 8) TS3 used proprietary images for motorcycle, fried egg, and turtle. These images have been replaced.

Although, so far, the method appears to be useful, there is more work to be done. First, the method will be tested in another division, with consideration for how the method fits into existing process improvement efforts. Second, in order to bring a greater range of users, the method will be tested with staff at non-profit agencies and with young people who are transitioning out of homelessness. Given the enthusiasm of the Trouble-spotters in the current work, and their willingness to take action based on their experiences, the author is optimistic about inviting others to create stories about themselves for the purposes of design.

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