
The Value of Pictures: Photo Elicitation Techniques for Value Sensitive Design

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Abstract

In this paper we present two case studies illustrating how qualitative research techniques from disciplines outside of HCI can be useful for engaging in value-centered design activities. These case studies also provide example domains for discussing the challenges of addressing human-values in HCI.

Keywords

Value sensitive design, qualitative methods

Introduction

Value sensitive design (VSD) is largely considered to be *the* framework for addressing concerns of human values in computer systems [3]. Although touted as a methodology that can be engaged with during the design process, the strength of the VSD framework is the vocabulary it provides for retrospectively reflecting on human values embedded in systems. Such reflection is useful, and arguably critical, for advancing a human-centered agenda within computing, but it does not provide any new investigative tools for interaction or system designers to use during the design process.

In this paper, we describe two case studies that use techniques drawn from the domains of sociology and public policy to elicit human-values from diverse user

populations. We believe that the techniques presented in these case studies can be used as tools to augment value sensitive design processes. Additionally, these case studies also provide example domains for discussing the challenges of addressing human-values in HCI.

Case Study 1: An Inquiry of Homelessness

Over the past year one of the authors studied the perceptions and use of technology by the homeless in a large U.S. city. The motivation of this research was twofold. First, legitimate participation in society is becoming more dependent on access to technology such as mobile phones, computers, and ubiquitous Internet access; studying the margins of society provides a lens through which to view the unintended consequences of this increased socialization of technology. Second, by examining a context vastly different than the workplace origins of HCI, it becomes easier to explore the HCI community's assumptions about users, goals, and the relationship people have with technology.

Working with the homeless community presents many challenges, including personal safety, working with mental health problems, and dealing with addiction issues. [2]. To help mediate these challenges, we used a photo-elicitation interview (PEI) technique from sociology [1]. PEI studies were developed as a technique for engaging with children and have been successfully used in other at-risk subject populations where a significant power imbalance is present between researcher and subject. With PEI, participants receive cameras and are asked to take photos of their daily lives. The photos are then used to structure qualitative interviews, helping shift the power dynamic toward the

participants by letting them drive the discussion about content in their photos. The use of photos also enables participants to speak in greater about their situation as the photos aid recall and reflection. With respect to working with the homeless community, this technique provided access to aspects of being homeless that would normally be impractical, unethical, or unsafe to attempt through traditional ethnographic or contextual inquiries.

Throughout the interviews, the perceptions and use of technology were deeply intertwined with the human-values that play out in the daily lives of the homeless. One way this was made manifest was through experiences participants had with mobile phones. For many homeless people, staying in contact with family members for support – either financial or emotional – is critical. The challenge for many homeless in the U.S. is that irregular sources of income preclude them from contract-based mobile phone service; moreover, pay-as-you-go services also have a requirement to purchase and use minutes within a certain time span, or the phone company may reclaim the phone number. In addition to practical concerns of staying in contact with family or finding employment, mobile phones had important social value when dealing with concerns of identity management. When all of these factors are combined, the business realities of the mobile carriers, the practical needs of the homeless, and the social totem the mobile phone has come to represent, the relationship the homeless have with this particular technology emerges as being complex and full of tension.

Another example of the complicated relationship between human-values and technology comes by way

of the public transportation used by the homeless. Over the last two years, public transportation in the city of study converted from being token-based to an electronic debit system. In the new system, readers in buses and train stations deduct fares when passengers swipe reusable debit cards. One participant recalled a situation in which a fare reader in a bus malfunctioned, rejecting his card as not having any credit. This situation created a socially complicated problem for the homeless person. His ability to negotiate with the bus driver was undermined by the social stigma of being homeless. He knew that he was arguing from a position with little power; if he were to create a scene, it is likely the bus driver would call the police. Ultimately he chose to exit the bus and wait for another to arrive.

These two examples describe more than the consequences of poverty or a technology glitch, they illustrate the complex social impact technology has for individuals fighting against marginalization.

Case Study 2: Public Perceptions of RFID

In the past year, both of the authors have undertaken a qualitative study of public understandings of Radio Frequency Identification (RFID) technology. RFID is a widely deployed technology allowing for unobtrusive sending and receiving of data; it is small enough to be embedded into everyday objects such as product packaging, clothing, documents, or even in living beings [5]. Through this study, we sought to learn what the general public believes RFID is and what it is capable of doing, as well as any concerns they had about the technology. Uncovering these beliefs is a formidable task; because the technology is invisible in use, people may not realize that they have interacted with it. To overcome this difficulty, we used a `mental

models' approach borrowed from public policy [4]. This approach, which uses a combination of semi-structured interviews and photo elicitation exercises, is used in public policy to study public perceptions of complex concepts (for instance, the risks of having radon in one's home).

During the interview and photo elicitation exercises, participants were first asked to describe what they knew about RFID. The interviewers probed for additional information until the interview subjects had exhausted their understanding of RFID. Then participants were shown a series of pictures representing a broad spectrum of objects, places, and situations people might encounter in their daily lives. Participants were told that some photos may be related to RFID and some may not. For each photo, they were asked to say whether they thought that object, place, or situation had anything to do with RFID and why. Unlike in the homeless study discussed previously, in this study the photos were pre-selected by the research team. We made this decision since participants' knowledge and beliefs about RFID were unlikely to have been given much thought prior to the interview and we wanted to ensure that the discussions covered particular topics that have received significant popular media coverage, such as the use of RFID in passports and by retailers such as Wal-Mart.

By using this technique, we engaged participants – even those who claimed they had never heard of RFID – in discussions about values related to the technology. For example, all 35 participants discussed strongly held opinions about the social appropriateness of a range of RFID applications, and were remarkably uniform in their opinions. This uniformity was especially notable

when discussing the implications of in-body RFID tagging. In general, implantable chipping in humans was described as ‘f***ing gross,’ ‘repulsive,’ ‘invasive,’ ‘big brother watching you,’ ‘something that Hitler would have done,’ and ‘dehumanizing.’ Paradoxically, though, most participants reported that it could be acceptable, and perhaps even desirable, for someone *else* to have RFID implants. The motive to implant other people was generally connected to vulnerable populations such as elderly people with dementia, children, or people with severe medical allergies, but also included the involuntary chipping of dangerous criminals. This finding illustrates a common loss of freedom for individuals that need looking after, either as a result of special need or the rightful consequence of criminal action.

Orientation toward RFID served as a means for creating a social strata—those who should be chipped, and those who should not be chipped. Interestingly, the category of people who should be chipped did not include the self. For example, the study participants we spoke with who had severe medical problems (e.g. epilepsy, food allergies, or diabetes) were averse to having chips implanted in their bodies for medical purposes. Only one study participant held the view that embedding RFID microchips into all people is desirable. This person described implanted RFID as a mechanism for law-abiding citizens to prove they were not involved with crimes, and also envisioned RFID implantation as an act of love and caring, telling the interviewer that one should ‘chip them [people and pets] if you loved them.’

As with the homeless investigation, these examples demonstrate a complex relationship between

technology, the way it is perceived, and human-values that originate and extend beyond the technology itself.

Discussion

Both of the case studies in this paper used photo-based research techniques drawn from other disciplines to uncover human-values in interactive systems. These techniques are just a few examples of the kinds of investigative tools necessary to make VSD useful during design processes. It is important that we point out neither of these techniques were created from scratch; rather, they were borrowed from other domains of inquiry where human-values have long been studied. By looking to other domains for techniques, the HCI community can develop a sophisticated set of techniques that are well-developed, provide relevant results, and effectively engage designers, researchers, and end users in questions of human-values.

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