



In this forum we will celebrate research that helps to successfully bring the benefits of computing technologies to children, older adults, people with disabilities, and other populations that are often ignored in the design of mass-marketed products.

Juan Pablo Hourcade, Editor

Homeless Young People and Technology: Ordinary Interactions, Extraordinary Circumstances

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Homelessness among young people aged 13 to 30 is a pressing problem with lasting social and economic consequences for the U.S. By one estimate, 3 million young people experience homelessness annually; that is, about 1 percent of the U.S. population is both young and homeless at some point each year [1]. The psycho-social factors of homeless young people have been studied extensively in the social sciences. In sum, this research shows homeless young people to be a heterogeneous mix of ages, genders, races, and ethnicities, and that the interrelated causes and effects of homelessness are multifarious. Among the common causes are intergenerational poverty, severe family conflict often connected with substance abuse, mental health disorders, and abuse and neglect by caregivers. Many homeless young people suffer mentally and physically from the long-term effects of childhood trauma.

Homeless young people also adopt digital technologies. Indeed, our own work shows that homeless young people desire digital

technology in all its forms [2]. Moreover, particular uses of digital technology might have far-reaching impacts. Maintaining ties with family through Facebook, for example, appears to be correlated with reductions in sexual risk-taking behaviors among homeless young people [3]. Accordingly, we invite readers of this forum to consider how ordinary, everyday interactions with technology may be conditioned by the extraordinary circumstances of homelessness [4].

Design, Service, and Research

Since 2007 we have engaged a community of homeless young people in Seattle, Washington, allowing us to explore ordinary uses of digital media in extraordinary circumstances. Within this community, near the University of Washington, is an alliance of nine service agencies that provide meals, temporary overnight shelter, and other basics.

We collaborated with one service agency to investigate how digital media and personal digital technologies are used by homeless young people and how new sys-

tems might be designed to improve their welfare and help them escape homelessness. Value Sensitive Design provided the methodological approach [5]. In an early project, we investigated existing information systems for the dissemination of paper-based resources at the service agencies. Finding a mismatch between espoused values and existing information displays, we sought to bring coherence to the material. This problem led to the development of four interrelated prototypes, which could be integrated as a community-outreach vehicle called the InfoBike [6,7]. The InfoBike has since been made real and put into service at community events, where it has been used as a site for investigating mobile phones and place-based safety [8] (see Figure 1).

In another project, in collaboration with homeless young people and service agency staff, we created a community technology center and designed a curriculum for computer-related life-skills classes. Then, as volunteer instructors, we worked with nearly 100 home-

EVERYONE SHOULD HAVE A HOME.



less young people over 18 months, beginning in January 2009 [9]. As an incentive, young people who successfully completed the class received an iPod. Through this teaching experience, we began to gain insight into how homeless young people experience information systems and personal digital technologies; some overarching themes began to emerge [4]. Next, we turn to these themes, giving concrete examples and highlighting the ordinary and the extraordinary accounts that may be of interest to designers of universal interactions.

Overarching Themes: The Ordinary and the Extraordinary

The examples and quotes in this section are from a study that took place in 2010. In this study, we followed up with 12 graduates (eight men and four women) of the life-skills classes and asked questions regarding the ownership of personal digital technologies, including the iPods they had earned [2]. The 12 young people in our study lived in a range of tenuous housing situations—some lived on the

street, some in friends' houses, others in transitional or subsidized housing, while still others lived in abandoned buildings they had appropriated as communal living places (squats). A young woman living in transitional housing, for example, may describe herself as homeless, since she can be evicted for missing her curfew or breaking other rules. Or a homeless young man may call a carport home, if it provides access to an electrical outlet and is a place where he and his friends regularly spend the night.

Creating goodwill. Owning personal digital technologies was a common experience for homeless young people, with all 12 participants in the study reporting that they had at some point owned mobile phones and MP3 players. However, only two of the young people still owned the iPods they had earned in class, with the longest time of ownership reported as 12 months. The rest of the iPods had either been lost, traded, sold, or gifted, with three young people reporting that they had held on to their iPods for only one week.

Interestingly, six youths had disposed of their iPods in ways that created or reciprocated goodwill. Don (pseudonyms are used to identify participants) gave his iPod to his girlfriend, and Irene gave hers to her mother. Jazz sold her iPod to buy a dog for Al, while Al pawned his iPod to buy food for his friends. Greg lent his iPod to a depressed friend who left it behind in the dumpster where he had spent the night. And Kay sold her iPod at a very low price to Ed, who had previously sold his iPod and had recently been released from jail.

I was staying with friends and nobody had no money. There was literally no food in the house. So I just [said], "Alright, [iPod], bye-bye." —Al

My friend had a 16-gig iPod, and then she got this one [by participating in a life-skills class], and since I'd just got out [of jail] she sold me this one so I could have my own iPod. —Ed

Immediate needs. Certainly in the U.S., possessing personal digital technologies is an ordinary experience. However, we found that homeless young people's ability to hold on to personal



► Figure 1 (top). Jill Palzkill Woelfer with the InfoBike installed at the 2010 University District Street Fair and being used as a site for investigating mobile phones and place-based safety [9].

► Figure 2. The outside electrical outlet used by Jazz and others to their charge cell phones was padlocked by the building owner.

digital technologies is contingent on meeting immediate needs. For example, Kay asked us if any of the people who had taken the life-skills classes still had the iPods that they had earned in class. When we questioned why she was asking, she responded that although she had kept her iPod, other homeless young people would be unlikely to have kept them, as they were valuable and could easily be sold.

I know these kids ... like when I was homeless, I'd get iPods. Sometimes, they wouldn't be my iPods, but I would get iPods. And, you know, I could have kept them, but I'd sell them and carry around my little Discman, 'cause music is music, no matter where it's coming from. And when you're homeless, and have things of value, you'd rather have the money than the valuable thing. —Kay

Don provided further evidence that homeless young people might sell or pawn their possessions in order to meet immediate needs such as paying rent, or buying bus tickets and personal hygiene items. Don already had a music player when he

took the life-skills class, so he gave the iPod he earned in class to his girlfriend. He talked about how he would regularly pawn and redeem his own music player to meet expenses but differentiated between his music player and the iPod he had given to his girlfriend.

Sometimes when I'm at the house and I'm bored, I might pull [my girlfriend's] iPod out and play Klondike real fast. But for the most part, it's not mine, and if I had it in my possession and was using it like it was mine, I'd be more tempted when I needed money really quick to go and throw it in the pawn shop. —Don

Ownership. Emotional attachment to and personalization of digital devices and other personal possessions are also ordinary experiences. Indeed, Fran simply stated, "I love my iPod," and Don had a nuanced perception of ownership, as seen in his quote. However, in an example that confounded our understanding of ownership, Jazz said that in her lifetime she had owned only one mobile phone. She then took two identical phones out of her jacket pocket. One phone was hers and had a broken on-off button and an active service plan. The other phone, which was in working order, belonged to a friend who had no service. By removing the SIM card from her phone and inserting it into her friend's phone, Jazz had a working phone. Did Jazz own one phone or two?

Access and institutions. To participate in social networking sites such as Facebook, most homeless young people access public computers. However, contingency arises when young people can use computers only in public places where they may feel uncomfortable or unwanted. Larry talked about being banned from the city and county public libraries for breaking rules regarding Internet use. Don rode the bus

for over an hour each way to get to the only public library where he had not been banned. Bob said he would sometimes simply go without using a computer, since he felt like he was under surveillance at the libraries and community centers where he could get online.

I don't really like going places to use computers ... It's just uncomfortable to have nine cameras staring at you, like, "What are you doing with this computer?" I can't check my MySpace without just checking my MySpace. I gotta be recorded eight different directions like some kind of, I don't know, like you're already in jail or something. —Bob

Infrastructure. The need to recharge digital devices is also an ordinary, everyday experience for many people. However, powering digital devices often drives homeless young people to trespass on private property to connect to electrical outlets on the exteriors of buildings. This behavior makes their homeless status apparent to others, often leading to consequences that are stigmatizing and exposing them to legal injunctions that in Seattle can result in incarceration. Clay had so much difficulty accessing electrical power that he traded his iPod for a battery-powered music player. Jazz spoke forcefully about the challenges that she encountered and the treatment that she had routinely received while trying to charge her phone. In fact, the external electrical outlet where Jazz often charged her phone had recently been padlocked shut by the building owner (see Figure 2).

I'm homeless! People are very stingy with their electric ... Somebody catches you charging your phone on an outlet on the outside of a building, they will yell at you until you leave. —Jazz

Contingency. Finally, for the homeless young people we spoke with, being able to use digital media is largely, or perhaps always, contin-

gent. As the examples show, the experiences that homeless young people have with information systems and personal digital technologies are contingent on the desire to create and reciprocate goodwill, the fulfillment of immediate needs, and getting access to computers and electrical power. We see that rather than having the ordinary experiences with technology that their homed peers may have, the extraordinary circumstances of homelessness condition the relationship that homeless young people have with technology. That is, for homeless young people, technology comes and goes. In this way, the technologies that homeless young people hold may be vulnerable, just as homeless young people may be seen as being vulnerable.

Looking Forward

Norbert Wiener, responding in part to the technological developments leading to the invention of the atomic bomb, wrote that human beings had a great deal of *know-how*, that is, intellectual curiosity and knowledge for technological experimentation and advances. At the same time, he noted that what was lacking was *know-what*, the knowledge of purpose in pursuing technological advances and applying know-how [10]. Writing a little more than 30 years later, Hans Jonas appealed for a new ethics of responsibility to counteract the global effects of the incessant development of decentralized technology. Jonas's argument for precaution connects the ordinary experience of parental responsibility to children to the profound responsibility that designers of technology ought to take on vis-à-vis the sustainability of the planet [11]. Drawing on Wiener's and Jonas's philosophic work, we have aimed in the past four years to engage, but with precaution, increasing our

understanding of purpose (*know-what*) before planning any interventions (*know-how*) in this community of homeless young people [12].

Building on four years of work, we will continue to proceed with precaution while moving from *know-what* to *know-how*. In one direction, we are currently designing information systems that help homeless young people and other community stakeholders find and successfully complete "mini jobs" in the neighborhood. At the same time, in a second direction, we also intend to investigate communities of homeless young people in downtown Seattle, Vancouver, B.C., and other cities, continuing to examine the experiences that homeless young people have with information systems and personal digital technologies. Long-term commitment and precaution are critical designer values in this work; rather than paralyzing forces of inaction, they are ways of moving forward in communities that lie at the nexus of the ordinary and the extraordinary.

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