Virtual possessions have powerful hold on teenagers, researchers say

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Digital imagery, Facebook updates, online music collections, email threads and other immaterial artifacts of today's online world may be as precious to teenagers as a favorite book that a parent once read to them or a t-shirt worn at a music festival, Carnegie Mellon University (CMU) researchers say.

The very fact that virtual possessions don't have a physical form may actually enhance their value, researchers at Carnegie Mellon's Human-Computer Interaction Institute (HCII) and School of Design discovered in a study of 21 teenagers. A fuller appreciation of the sentiments people can develop for these bits of data could be factored into technology design and could provide opportunities for new products and services, they said.

"A digital photo is valuable because it is a photo but also because it can be shared and people can comment on it," said John Zimmerman, associate professor of human-computer interaction and design. For the young people in the CMU study, a digital photo that friends have tagged, linked and annotated is more meaningful than a photo in a frame or a drawer.

One of the subjects said she always takes lots of photos at events and uploads them immediately so she and her friends can tag and dish about them. "It feels like a more authentic representation of the event," the 16-year-old told the researchers. "We comment and agree on everything together … then there's a shared sense of what happened."

The researchers — Jodi Forlizzi, associate professor of design and human-computer interaction, and William Odom, a Ph.D. student in HCII, along with Zimmerman — will present their study May 10 at CHI 2011, the Association for Computing Machinery's Conference on Human Factors in Computing Systems in Vancouver. CHI conference leaders awarded the study Best Paper recognition.

The penchant of people to collect and assign meaning to what are often ordinary objects is well known. "A house is just a place to keep your stuff while you go out and get more stuff," the comedian George Carlin famously observed. But a lot of stuff that often is cherished — printed books, photographs, music CDs — is being replaced by electronic equivalents, such as e-books and iPod downloads. And computers are generating artifacts that have never been stuff — social networking profiles, online game avatars, Foursquare badges— but can hold meaning.

For their study, Odom, Zimmerman and Forlizzi recruited nine girls and 12 boys, ages 12-17, from middle- and upper-middle-class families who had frequent access to the Internet, mobile phones and other technology. The researchers interviewed them about their everyday lives, their use of technology and about the physical and virtual possessions that they valued.

If a house is a place to store your stuff, then a mobile phone might be considered a treasure box that gives you access to your stuff, the interviews revealed. The "placelessness" of virtual possessions stored online rather than on a computer often enhanced their value because they were always available. One 17-year-old participant said she uploaded all of her photos online so that she could access them whether she was in her bed or at the mall. "Obviously, I can't look at them all and that's not the point," she said. "I like knowing that they'll be there if I want them."

The degree to which users can alter and personalize online objects affects their value. A 17-year-old study participant spent a lot of time developing an avatar for the video game Halo and received a lot of comments and input from friends. The original drawings, he said, "are definitely something I'll keep." Accruing "metadata" — online time stamps, activity logs and annotations — also enhanced the value of virtual possessions.

Participants noted that they could display things online, such as a photograph of a boyfriend disliked by parents, which were important to their identity but could never be displayed in a bedroom. The online world, in fact, allowed the teenagers to present different facets of themselves to appropriate groups of friends or to family. Developing privacy controls and other tools for determining who gets to see what virtual possessions in which circumstances is both a need and an opportunity for technology developers, the researchers said.

The persistent archiving of virtual possessions sometimes creates real dilemmas, they observed. If users are collectively creating these artifacts — a tagged and annotated photo, for instance — then is a consensus of the users necessary for deleting them?

"In the future, our research will explore what happens when the boundaries of virtual and physical possessions are more blurred," Forlizzi said. "We will look at things like tags and social metadata and the role they play in sharing experiences with family members and peers."

One opportunity for technology developers, the team said, would be creating technologies that enable users to encode more metadata into their virtual possessions. An example might be aggregating an individual's status updates, songs most listened to and perhaps even news and weather information associated with a particular event.

In some cases, virtual possessions might be given physical form. For instance, Zimmerman said the team has explored transforming digital images of a past event, along with associated tags and annotations, into oversized postcards that could be mailed to the user.

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