

Remaking the Things We've Already Made: A Look At Unused Computing Equipment in The Home

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INTRODUCTION AND RELATED WORK

In contrast to the focus on creating new products that embody sustainable design principles such as ensuring reuse and repurposing at the end of their lifetime (a cradle to cradle approach [1]), I wanted to explore how people are dealing with their unused and/or obsolete equipment in their homes. My goal was to determine how HCI can help households reuse, re-appropriate or even remake the things we've already made. My work complements that on technology heirlooms [2], and breaking the disposable technology paradigm [3] by examining what households collectively decide to do with old and unused home networking equipment.

To this end, I conducted a field study which explored what people do with their obsolete computers, modems, routers, cables, audio/visual equipment such as TVs and VCRs and associated technology odds and ends. My exploratory findings suggest two directions of inquiry to pursue to help people reuse, remake or recycle unused equipment:

- Re-purposing and transfer of ownership
 - How can we better facilitate transfer of working equipment to those in need of it?
 - How do we ensure people trust that devices can be properly erased before being given away?
 - How can we show people which parts of devices can be reused through placing symbols and markings on the devices we create?
- Remaking meaning of re-use and recycling
 - How do we overcome the stigma associated with buying second hand and refurbished electronics?
 - How can we create more creative communities around reuse, repurposing and recycling devices—whether for functional or creative purposes such as art installations?

In this short position paper, I explain my study methods, briefly touch on some findings and explain these points in detail.

METHODS

My results are drawn from a qualitative study of 15 households' habits around reuse, recycling, repurposing of unused and old home networking equipment, which I conducted in 2007 and a previous data set for 11 households all from Atlanta metropolitan area [4, 5]. For each household, I conducted a home visit, a sketching exercise and an interview which was audio-taped. I was also given a home tour and took photos of people's equipment. To probe about the end of the device lifecycle, I asked specifically about whether old/broken/unused equipment was recycled or thrown away and whether participants considered buying second-hand or refurbished goods.

FINDINGS

My participants had a range of different aged networked devices (computers, modems, hard drives etc) in their homes, some of which were in active use and some of which were unused for various reasons. Disuse was usually because the device no longer functioned properly and was unable to be repaired, was experiencing a problem and waiting to be fixed, was replaced by a newer device or was redundant with another device which offered the same functionality or was no longer supported by the company. Some devices were in the 'waiting to be repaired' state, 'waiting to be given away/thrown away or repurposed' state or 'transitional' phase where there were plans of dealing with it but the household didn't have time to do so at the time of the interviews. Often if there was space in the home to hold the equipment, time in this transitional period was indefinite. In other cases, disuse was temporary e.g. one household only hauled out their old desktop pc for doing their taxes but other than that it remained unused for most of the year.

Working Together to Remake Things

Deciding what to do with an old device appeared to be a collective decision making process in each household but reuse of equipment parts could only occur if there was an individual in the house with sufficient skills and know-how about how to reuse parts of old and unused devices. Some participants collected devices with the purposes of re-using them for special projects like electronic art but often did not have the time to carry on with these kinds of projects. Where possible, participants wanted to reuse working parts of unused devices in other devices. For desktops this was a

fairly straightforward process but not so for laptops which are not as modular.

Transfer of Ownership In and Outside of the Home

Many of my participants were worried about getting rid of their devices because they were concerned about the privacy and accessibility of the data stored on the devices. If they did give away devices, participants often mentioned places at their workplace where they could get rid of old devices. These places were convenient since they were part of the person's daily routine anyways. Otherwise, participants had to plan special trips to recycle goods e.g. at the Salvation Army. Surprisingly, my participants seemed more inclined to give old unused and working equipment to people in their household or close relatives, or to others that may use the equipment as opposed to selling the equipment.

DISCUSSION

Towards Remaking Things

What my results speak to is an untapped potential for future research in sustainability that focuses on how to reuse and help people remake existing unused devices or at least better facilitate the transfer of these devices to new owners who could make use of the working hardware for other endeavors. Even thinking about prolonging the lifetime of these devices would be an improvement over the current situation. Others (e.g. [2, 6]) have commented on how sentimentality (general and religious) can prolong device lifetimes and perhaps this can be applied to home networking equipment as well e.g. how do we make routers sentimental (futerouters.com may be a step in this direction)?

Repurposing and Transfer of Ownership

Given participants' general reluctance to want to throw working equipment away, I suggest that creating communities that better facilitate recycling and giving away equipment to people may streamline this process. Currently, communities like freecycle.com exist but it's not clear how widespread use of this community is. Possibly integrating exchange mechanisms into existing social networking sites might help ease the transfer of ownership of devices.

To improve transfer of ownership and address security concerns, making it easier to wipe data off old devices and reload new software on acquired devices would smooth this process. (If you've ever had to reinstall a machine with a virus, you may be aware of the time needed to reload a machine.) Most importantly, how can we ensure that people trust that old laptops and hard drives can be thoroughly erased so that they can be sold or given away? Also, to improve know-how about how to salvage parts from old machines, placing symbols which denote the reusability, or modular parts of the device may help improve visibility on which parts of the device are reusable.

Remaking Meaning of Reuse and Recycling

Can we examine other practices of reuse to learn how to make remaking devices easier? For example, what can we learn from DIY communities that have prolonged the

lifetime of devices that are no longer supported by their manufacturers? Perhaps for creating new devices out of unused equipment we might also turn to other forms of reuse like the personal art of quilting to derive inspiration for how best to facilitate reuse and meaning making in creating new products from old. For example, in South Africa, I recently saw a street vendor selling wine glasses made from used beer bottles. What other artistic uses of old devices can we think of? Already communities around hacking and creating new products for pleasure e.g. IKEA hackers [7] exist, how can we encourage the same for electronic devices?

In general, there was stigma amongst my target group about second hand electronics. Without some history of use, people felt these devices could be unreliable. Moreover, when the price of a new cheaper alternative is so appealing coupled with Moore's law making electronics outdated so quickly, people were more likely to purchase a new device than to buy second hand goods. How then can we overcome the stigma associated with second hand and refurbished electronics and make them more attractive?

CONCLUSION

As consumerism dominates how we constantly upgrade to the latest and greatest gadgets (although somewhat slowed by harsh economic times of late), I suggest that our community also investigate how we can collaboratively help each other to remake devices that we already have. This may mean helping create more communities that provide advice on remaking devices in the spirit of digital DIY but tailored towards the average consumer, and other online services that better facilitate the transfer of ownership of devices from person to person. We may also need better techniques for wiping and reinstalling old devices so that people have a clear conscience about transferring ownership of devices outside of their own homes and control.

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