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# Models for Ownership: Implications for Long-term Relationships to Objects

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**Abstract**

Recent HCI research has shown that there are important differences in the ways that people interact with physical and digital objects, and that these differences have negative implications for how people value digital objects. This work in progress explores one finding from a study comparing uses of paper and e-books that suggests that not only are there important differences in the ways people perceive their ownership of physical and digital objects, but that the context of digital ownership (e.g. through an account vs. files stored on a personal computer) also introduces variations in how people value their digital possessions.

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H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

**Introduction**

Understanding differences in how people interact with physical and digital objects is a matter of foundational importance for human-computer interaction, and research on this topic has expanded in recent years [2,7,10,12]. These studies show that many people tend to see digital objects as unstable, ephemeral, and in some sense “not real” in comparison with physical objects [2,12]. These perceptions affect what people do, as well as what they think it is possible to do, with digital objects, and researchers found that people tended not to think of digital objects as things that could be kept over the long term [7]. These exploratory studies cast a wide net, investigating all kinds of physical and digital objects that were important to participants. While this broadness was valuable for understanding multiple facets of an underexplored phenomenon, it forestalled capture of the specifics of the varied ecologies of acquisition, storage, and access within which different digital objects exist for people



Figure 1: A packed bookshelf in P22's home.

who interact with them. To facilitate a detailed understanding of the various factors at play in this area, this study comparatively examined uses of one type of physical object (paper books) and its digital analog (e-books).

Paper and e-books, in contrast to other such physical and digital counterparts (such as music, photos, and emails and letters) tend to be used in tandem rather than the new technology replacing the old. Of the 34% of book readers who read e-books, 28% also continue to read paper books [13], suggesting that these two kinds of objects may serve different purposes for readers. Building on the HCI research on differences in interactions with physical and digital objects and on paper and e-books as one such comparison, this study investigated the purposes to which readers put paper and e-books, adding a focus on acquisition and ownership of objects to include long-term purposes in that investigation. This late-breaking work focuses on one finding from the study: We found that in addition to the stark differences in participants' expectations regarding their digital and physical possessions, there were also sharp divides in their expectations for different digital objects depending on the context within which they interacted with that object. These findings have implications for the design of systems within which people interact with their digital possessions.

## Related Work

### *Ownership of Physical and Digital Objects*

McMillan et al. point out that "many of our concepts of digital media still draw directly on models of interaction developed when media had a physical instantiation" [8, 3], however, these concepts may not always translate to digital objects. Western concepts of ownership imply

access to and control over an owned object for an extended period of time. But as previous research on differences in physical and digital interactions has found, people are uncertain of the stability of digital objects [12] and do not necessarily expect them to last. As mentioned above, the breadth of investigations in this area of research has typically precluded an in-depth understanding of the various contexts within which participants' digital possessions were stored and accessed. However in one study [9], Odom et al. focused specifically on the Cloud context and therefore their work provides some insight into different digital ownership contexts. This study found that participants perceived a lack of control over digital content that relied on online services for its' existence, and that the ability to take certain actions with an object was central to feeling ownership of that object [9]. The actions that Odom et al. identified as central were sharing, giving, and relinquishing possessions; Perzanowski and Schultz note that these actions are related to the concept of alienability, which is central to Western concepts of personal property [11]. Odom et al.'s work suggests that digital objects that exist in the context of Cloud storage may be seen as less stable than those that reside on, for instance, a desktop computer.

### *E-Books and Ownership*

The HCI literature on paper and e-books also highlighted how particular actions that are associated with the ownership of physical objects were central to participants' perceptions of their digital counterparts. Hupfeld et al. found that paper books were preferred for gift-giving, and that constraints on sharing books within Amazon's Kindle model motivated participants to use workarounds such as sharing account access and devices, and mentioned that one participant thought of



Figure 2: P1's minimalist arrangement of books.

e-books as disposable [5]. Like these participants, readers in other studies circumvented constraints on sharing e-books by sharing accounts, sharing devices, and acquiring non-proprietary and DRM-free e-book files [3,4]. The differences in the mechanics of sharing paper and e-books was one of the central frustrations for participants in these studies, and it emerged from a conflict between practices (such as sharing) that are central to physical object ownership, and constraints on those practices that have been built into the dominant model of ownership for e-books.

## Methods

We investigated readers' everyday and long-term book-related practices through a multi-method approach consisting of a month-long diary study, home tours, and interviews with twenty-seven participants. Participants lived in or near three large cities in United States, and were recruited through flyers distributed at bookstores and coffee shops and through word of mouth. They worked in various professions such as playwright, lawyer, firefighter, hotel clerk, social worker, librarian, and software developer, and their ages ranged from twenty-two to sixty-seven. Participants were compensated with \$60 USD in gift cards from a book retailer of their choice.

The diary study used a photo-elicitation event-contingent protocol [1] in which participants reported on book reading and acquisition events over a period of one month, answering questions about the location and time of events, book titles, book format, reasons for format choice, origins of books, devices used to read books. Participants took photos at the time of each relevant event, and then used these photos to answer the diary questions when we contacted them weekly.

Following the diary study, we interviewed participants about events reported in the diary study, as well as asking broader questions about reading and book-collecting practices. The interviews also incorporated tours of participants' physical and digital libraries, following the home tour method frequently used to gain an understanding of the context of use for objects [e.g. 6,7,12]. While the diary studies provided access to immediate contexts of use and acquisition, the home tours allowed insight into longer-term ownership practices of organization, display, and divestment.

## Findings

Participants' views about digital objects in this study aligned with those found in earlier studies; they had concerns about the ephemerality of e-books and preferred paper books for objects they anticipated keeping over the long-term (in this case, years or even decades). However, we noted a distinct divide among participants in how they perceived their ownership of digital objects, depending on how they acquired, accessed, and stored those objects. Participants who relied entirely on an Amazon account and the Kindle device or app to access and store their e-books generally felt that their ownership of e-books was less certain than their ownership of paper books. Participants who instead used alternative systems for e-book access and storage were much more certain of their ownership, although they still did not consider that ownership to be quite the same as ownership of a physical book. These different models of ownership changed the possibilities for actions that could be taken with e-books, and participants often cited these changes as key to feelings about ownership of e-books.

*"Ownership" Without Control: The Kindle Model*

What we refer to as the Kindle model of ownership is in fact licensing rather than ownership. In this model, readers license e-books from Amazon that can only be accessed through Amazon's Kindle device or app (unless readers alter the files, which some participants did). Their access to these e-book files depends on maintaining an Amazon account, and they cannot give away or resell e-books they purchase for themselves.

Some participants were unaware that there were alternatives to the Amazon e-book model and had not considered the effects this model had on their ownership of objects they acquired within it. They often were generally happy with how the model worked; but did not necessarily think of their e-books as things they really owned: P1: *"Cause the interesting thing too is, 'Yes I own a Kindle, but I don't own the contents of the Kindle'."* But some participants who relied on the Kindle and Amazon for their e-books resented aspects of that model and some used it grudgingly, such as a woman who described her "love-hate" relationship to Amazon as such: P4: *"...because I do really enjoy having a Kindle. It's super convenient... But I don't like giving my money to Amazon."* This participant was particularly concerned that long-term access to her e-books required maintaining her Amazon account: P4: *"That's another thing that's hard about e-books is once you have them as an e-book and then say you decide you don't wanna have a relationship with [Amazon] anymore, I think about that all the time. Then, you spent money on those things that don't exist anymore."* As she and others noted, access to their e-books also relied on Amazon's continued existence.

Others used the Kindle infrastructure but did not purchase books through it (or only rarely did so), instead using it to borrow e-books from the library. This approach avoided owning e-books, and these participants bought paper versions when they wanted to own a book. P8: *"I prefer to own a print copy of a book if I'm gonna buy, if I'm gonna spend the money 'cause it's more tangible and I feel like you could potentially lose your digital copy somehow..."*□ Even participants who happily purchased Kindle books preferred paper copies for special or important books that they wanted to keep for a long time.

When asked why owning Kindle e-books was different from owning paper books, participants frequently brought up the lack of support for lending or giving a book to someone else. The Kindle model does in fact allow lending, however many participants were unaware of this capability or did not know how to use it. For instance, one participant said she did not feel like she owned her e-books because she did not know how to lend them: P4: *"How do you lend a... Something from your Kindle library? I don't know how to do that. I don't know if it's possible."* Others were dissatisfied with the structure of this action within the Kindle model. Kindle books can only be loaned to another reader for 14 days at a time, and the owner of the book cannot access it during that time. While this structure for the lending action mimics lending in the physical ownership model, participants disliked it because it went against their expectations for digital objects more broadly. Additionally, Kindle books can only be loaned out one time, a limitation that perplexed the only participant who mentioned it: *"I think you can even only lend it once, which I don't really understand"* (P5). This limitation did not correspond to any other

model of ownership, and was therefore particularly perplexing.

*Alternative Models: Personal Control*

Several participants objected to the Amazon model to such a degree that they opted to avoid it completely. They positioned this choice as a conscious aversion to Amazon and its model for e-books, reflecting the dominance of the Kindle model in the e-books space. There are several ways to avoid that model, such as using alternative platforms such as the Kobo or the Barnes & Noble Nook, using the Kindle device but with open-access files, or pirating e-book files. We focus here on participants who acquired non-proprietary e-book files, which they could interact with as they would other digital files that did not carry restrictions on their use – we might consider this as falling under the basic model for interaction with digital objects.

These participants cited actions that did not exist in the Kindle model as reasons to avoid it. One such action was the impossibility of reselling Kindle books or buying them second-hand. P11 primarily acquired paper books second-hand, and considered the lack of a second-hand market for e-books a partial justification for his acquisitions of pirated e-books: *"...That's my acting out against the publishers for not allowing a secondary market."* Participants like P11 who avoided the Kindle model entirely were also able to easily share e-books. Another participant mentioned that he and a group of fellow sci-fi fans at his workplace regularly sent each other e-book files just as they would any other digital file, and others mentioned sending e-book files to friends as well. Participants who acquired e-books in these ways were able to treat their e-book files as they treated other digital files they owned, therefore at least

matching their range of possible actions to those they expected for digital objects instead of the decreased range of actions available in the Kindle model. The drawback, of course, is the illegality of some of these methods of acquisition.

Finally, a central difference between the Kindle model and alternatives was control of e-book storage and maintenance. Participants who avoided the Kindle model either had specific backup practices for their e-book libraries or incorporated them into their regular computer backup practices. Participants who used the Kindle had no control over backup of their e-books, and when asked they said that they relied on Amazon to do that for them. However when these models overlapped it could cause problems, as when one participant lost some pirated e-books when moving from an older Kindle to a new model: *"And so when I moved from one Kindle to the next, I think I did lose all of that. It didn't move over"* (P8). Her habit of relying on Amazon to maintain her e-books meant that she lost books that were not part of that system.

The Kindle model takes the responsibility for maintenance off of the reader, but, perhaps relatedly, it also discourages the reader from thinking of e-books as things that can be maintained and therefore have a possibility of being kept long-term. As discussed above, Kindle-using participants preferred paper books for books they "wanted to own." This may be because they recognized that long-term access to their e-books was dependent on Amazon. As one reluctant Kindle user said, *"And I guess, if say, [Amazon] went under, not that they're going to, but say they do, then what?"* (P4). This was, however, not the case for participants who managed their own e-book files. Ease of use

replaces control under the Kindle model, and the result seems to be that readers interpreted that model as being appropriate for access rather than ownership of e-books.

### Discussion and Conclusions

While the Kindle model was the standard against which other e-book ownership models were compared due to Amazon's dominance of that market, we have seen that participants cited other ownership models as a basis for comparison when making choices about how to acquire books. Not only the physical personal property model of ownership, but also what seemed to be a default model for digital ownership: simply the basic desktop computer and file storage system. In the realm of digital ownership models, there will be as many different kinds of ownership (or licensing) models as companies that sell digital objects choose to implement [11], and our initial findings suggest that these different models affect the way that people use and relate to the objects that exist within them.

One positive implication of our findings is that increasing people's control over their digital possessions may have favorable implications for their feelings of ownership over those possessions, and therefore for possibilities for seeing these possessions as valuable. However, our findings also imply a warning about the importance of carefully considering the structures of possible and impossible actions within a system during the design process, because these structures have extensive and potentially unexpected ramifications for how people who use the system see those objects and interact with them. Companies that sell digital objects can maintain a tight hold on those objects even after their sale, but this breaks from

expectations for ownership that people develop through their interactions with physical objects. The Kindle model is a case study in how decisions about the structures of systems made with one outcome in mind (Amazon's continued control over digital objects it "sells" to consumers) can have perhaps unforeseen consequences that, in the long term, are not positive for either Amazon or its customers. As our participants reflect, the Kindle model's contradictions of both the physical object model of ownership and the more open digital object ownership alternatives engendered resentment in both people who avoid this model and those who use it, and Kindle e-book owners may end up feeling that they have spent money on things that they do not really own.

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