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# ShareBox: Designing Sharing Technology for Low-Resource Communities

**Matt Law**

Cornell Tech  
Ithaca, NY 14850, USA  
mvl24@cornell.edu

**Emily Sun**

Cornell Tech  
New York, NY 10011, USA  
es765@cornell.edu

**Mor Naaman**

Cornell Tech  
New York, NY 10011, USA  
mor.naaman@cornell.edu

**Abstract**

The sharing economy promises a future of reduced waste and increased access, but some indications point to low-resource communities being excluded from its benefits. We discuss some of the relevant design issues raised in the literature and describe our platform, ShareBox, a physically embedded facilitator for indirect resource exchange, which we hope to deploy as a technology probe to explore some of these issues in a participatory fashion.

**Author Keywords**

sharing economy; collaborative consumption; technology probes; design for underserved populations

**ACM Classification Keywords**

H.5.2 [Information interfaces and presentation (e.g., HCI)]:  
User Interfaces

**Introduction**

The terms sharing economy and collaborative consumption are broadly used to refer to the sharing of goods, services, and information outside of traditional markets. Buoyed by new and pervasive social technologies, sharing platforms have been heralded as transformative agents with regards to consumption. Some associated benefits include less waste [7], reduced consumerism [2], increased access to valuable resources [1], and both personal and collective

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economic gains [4][6]. However, there are indications that underserved populations are excluded from some benefits of the sharing economy. Indeed, recent field studies of sharing economies have observed that their participants are uniformly of high socioeconomic status (SES) [9][10]. In order to realize its egalitarian vision, the design of sharing platforms must consider exclusionary biases that are built into the environments and cultures that surround sharing transactions.

### **Sharing Economy Access and Inequalities**

Based on prior art, design for sharing platforms should address the following issues:

1. **Cost of entry:** Thebault et al. attributed some of Task Rabbit's low volume of low-SES users to high costs of entry: background checks, smartphones, bank accounts, etc. [10]. Sharing of personal information is another entry cost that may be inflated by low trust in platforms and their creators [3]. When other factors (detailed below) constrain access to sharing gains, the costs of entering sharing economies may outweigh the benefits for low-SES users.
2. **Geographic biases and perceptions of safety:** Low volume of low-SES users in concert with existing geographic segregation between low and high-SES populations may reduce the likelihood of finding matches for sharing in low-SES areas [10]. These distance concerns are further compounded by negative perceptions of safety in low-SES areas. Security while performing transactions can also be a prominent concern for low-SES participants [3].
3. **Cultural norms:** Discrepancies in cultural capital that reflect SES may diminish the functional benefit of sharing (e.g. a cultural aversion to practicality),

socially exclude low-SES users, or devalue their contributions [9]. Schor et al. also find instances where cultural homophily inhibits outreach to underrepresented populations and recurrences of "charity users" whose habits of sharing without consuming undercut transaction volume and reinforce concerns about reciprocity identified by Dillahunt and Malone [3].

### **Sharebox**

In order to explore these issues in an open-ended, participatory fashion, we have created ShareBox, a physical platform for neighbors to share tangible goods, as a technology probe. Technology probes are a participatory design research method intended to understand user needs and desires in a real-world setting [5]. Probes are similar to prototypes, but emphasize simplicity and flexibility to allow users the freedom to define how they interact with it.

ShareBox is a physical lockbox that is controlled by an SMS chatbot, which acts as a third-party to facilitate exchanges between strangers. Users list items they are willing to share anonymously with the bot, which then handles borrow requests through the box in such a way that neither user ever reveals their identity or has to interact with the other user face to face.

ShareBox has low entry costs; it only requires a phone number with SMS to participate, and its third-party exchange alleviates scheduling issues and safety concerns when dealing with strangers. Unlike virtual platforms, the physical nature of ShareBox allows us to embed the platform in locations within or accessible to low-SES communities, addressing geographic biases.

Maintaining anonymity between users offers three potential benefits. It could reduce the risk inherent in sharing

personal information with the platform and other users. It may constrain the ability of users to make value judgments about shared items based on cultural capital. Finally, it could provide a way to transform peer-to-peer feelings of reciprocity to generalized reciprocity [8]. Rather than feeling indebted to a single person in borrowing, the system would encourage indebtedness to the community at large, dramatically increasing the avenues of repayment. Reducing the burden of direct reciprocity would act to neuter the negative effects of "charitable" users while also encouraging reluctant borrowers.

### Challenges

ShareBox is currently being piloted in Cornell-affiliated communities, however we foresee several challenges in our forthcoming deployments. Already in the pilots, we have been experiencing problems with user engagement due to the open-ended nature of our technology probe. To address this we are building a set of optional virtual tools to facilitate interaction that we believe will not increase cost of entry, including a Chrome extension to suggest items to borrow and an app that allows for easy listing of items. We are also exploring the potential of co-purchasing items as an additional form of participation in sharing.

We anticipate some difficulty in identifying communities that stand to benefit the most from a physical sharing platform. Communities should be low-resource enough that shared items would not be completely redundant with privately owned goods, but need to either contain resources to share or be accessible to individuals or communities with resources to share in order for sharing to be beneficial. While we hope that, over time, interactions through the box will foster local social ties, ShareBox may also require a baseline level of social efficacy to achieve critical mass. Along these lines, we may consider networking multiple

boxes and sharing inventories between communities.

A final but major challenge will be handling liability concerns for shared items. Liability has not been elegantly solved in existing sharing platforms, which tend to ignore it or offer users the option to purchase insurance. Liability cannot be ignored when partnering with low-resource communities, where risks are magnified by the relative cost of scarce resources. Insurance or deposit schemes, however, could dramatically increase cost of entry and participation.

### Conclusion

We believe that the shortcomings of sharing economy platforms to achieve their espoused egalitarian ends is a matter of design and not intent. We intend to learn more about the discussed challenges and how to address them in cooperation with the communities where we deploy ShareBox. We hope to leverage existing relationships with communities in New York City to deploy our technology probes in the upcoming year. We are also working to identify neutral sites of access for low and high-SES communities, e.g. public libraries, for ShareBox.

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