
Reclaiming Repair: Maintenance and Mending as Methods for Design

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Abstract

Technologies inevitably break, degrade, and decline. In response, people mend and maintain what they already have: parts are replaced and software is updated. In this workshop, we propose to explore the fundamental work of repair and its impact on the study of design and technology as important — yet undervalued — forms of innovation. Broadly speaking, we hold the work of repair as acts of sustaining, managing, and repurposing to cope with attrition and regressive change. In order to investigate such processes, this workshop aims to bring together a range of scholars and practitioners from across the world to expand HCI's established views on design, development, and society.

Author Keywords

Repair; Maintenance; Breakdown; Mending; Re-use.

ACM Classification Keywords

K.4.0 Computers in Society: general.

General Terms

Design, Human Factors.

Introduction

Errors, omissions, and failures underlie almost everything we do. Our cell phones inevitably break, our software becomes outdated, and our appliances

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degrade. In response, we fix and maintain what we already have; we upgrade our software and replace broken parts, often in creative and imaginative ways. For example, the work of restoration bookbinders has both repaired and transformed books for centuries [25]. Likewise, the work of repairing mobile handsets has entailed survival, sustenance and social mobility in rural India [22][23], and the repair of broken artifacts to spur design innovation among hobbyists [9][10][17][24]; consider an over-wound alarm clock turned into a guitar amp or a broken desk lamp converted into a sleek iPhone stand. Still, breakage and repair tend to be overlooked as important sources of technology design and innovation.

Consequently, we propose the organization of a CHI workshop to examine the effects of breakdown and repair and their impact on design processes. This workshop would reflect a growing interest within the CHI community in studying alternative design methods, as prior CHI workshops on re-use and DIY have demonstrated (*e.g.*, [3]). The workshop will also build on other recent events tackling issues of maintenance and repair, such as [1] and [19].

The Centrality of Repair

Despite a relative dearth of scholarly analysis, repair scholarship is credited as “some of the most consequential work” in early IT design and HCI ethnography [12]. A small but vibrant ethnographic tradition has emerged around the study of everyday maintenance. For instance, Lucy Suchman, Julian Orr and colleagues turned to the lives of photocopy machine repair workers to illuminate the limitations of codifying maintenance techniques [20][29]. Orr’s influential accounts of individual diagnoses exposed

skilled service work as “necessarily improvised, at least in diagnosis, and centered on the creation and maintenance of control and understanding” [20]. Orr showed how repair workers not only use manuals and codified organizational knowledge; workers also rely on the retelling of “war stories” — personal accounts from the field often shared over lunch or informal meetings. Repair work involves situated actions whose intent, in Suchman’s terms, “must be contingent on the circumstantial and interactional particulars of actual situations” [29].

Beyond IT development, scholars have focused on maintenance work to reconsider features of building reconstruction [1], car and motorcycle mechanics [4][5][7][16], electricity procurement [6], bookbinding [25], IKEA hacking [24], routine workplace activities [8], and everyday creativity [17]. Star and Strauss have examined the invisibility of “articulation work,” the reparatory activities that get work “back ‘on track’” by accommodating “unexpected contingencies” in shared infrastructures (quoted in [28]). Others have studied the arcana of free software through the continuously rewritten fabric of the Internet [14] and the upkeep of mobile phones amid scarce resources as part of an emerging entrepreneurial economy in Mumbai [22][23]. Most recently, Jackson [9] explores what he terms “repair worlds” in Sub-Saharan Africa to rethink how different information technology infrastructures are routinely maintained and extended.

Following from Suchman, Star and others, this workshop seeks to interrogate repair practices through the material conditions and cultural contingencies they surface. We invite submission that discuss how repair work relates to design — presenting alternative

heuristics for design innovation, strategy and quality assessment. What are the different attitudes toward successful repair that emerge within each setting? What kinds of methods do repair practices uniquely produce and sustain? How do repair practices help us think about both the early stages of design, such as prototyping and needs assessment, and design activity later in the lifecycle of an artifact, such as usability testing? Closing the loop between repair practices and design activity remains an exciting area of investigation.

Questions and Concerns

The main purpose of this workshop is to characterize breakage and repair in relation to design practice. As such, our focus will be on contextualizing repair engagements rather than on assessing design innovation per se. We wish to develop understandings of how repair engagements relate to and develop alongside other design practices (prototyping, brainstorming, contextual inquiry, etc.). Several overarching questions guide this workshop:

1. What is the range of practices, technologies and programs that support or subvert repair activities? How do these practices evolve over time?
2. How does background knowledge of design practice or technology development shape people's repair work? Conversely, what role does repair work play in people's other design practices?
3. What resources are necessary for repair? What adjustments must be made in different repair situations? What institutional frameworks, standards, or policies are relied on?

4. What motivates repair in different social worlds? What are the range of strategies for renewal, design and creativity, and how are they formulated within varied repair activities? How is the work of repair positioned in different value systems?

Workshop Goals

The workshop has four primary goals:

1. Sharpen our understandings of how breakdown and repair relate to wider design practices. Through critical analysis, we aim to articulate some of the relationships between design practice and repair.
2. Expand our approaches to studying breakdown and maintenance, both for design practice and HCI research. This entails inviting scholars from fields just outside HCI, including science and technology studies (STS), anthropology, and art practice.
3. Examine design for reparability, and how existing models of design processes might take erosion, error and decay into account.
4. Promote the development of resources that help us share our research findings with a cross-national group of colleagues around the globe.

Conclusions

This workshop promises to present important ramifications for how we maintain and adapt systems to support technologies over time, beyond the design and adoption phases. We expect the workshop to contribute to a larger body of scholarship organized under future design and research initiatives. Anticipated outcomes include collaborative design initiatives, scholarly publications, and classroom teaching materials.

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