Translating the Big Picture: From Ethnographic Insight to Sociotechnical Design Action

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Figure 1: Photos from our ethnographic fieldwork.

Abstract

In this experience report, drawing on multi-year ethnographic research on Japanese social robots, we examine the challenge of translating theoretically grounded insights into actionable design implications for industry practice.

Keywords

ethnography, design implications, sociotechnical infrastructure, social robots, industry collaboration

1 Introduction

In his 2006 article "Implications for Design," published at the CHI conference, Paul Dourish critically examined how HCI research evaluates ethnographic work, arguing that while ethnography holds significant value for design, the formulaic "implications for design" sections often fail to capture this value [2]. He highlighted key tensions including the marginalization of theory and disciplinary power relations, suggesting that the narrow focus on design implications as an evaluative metric ironically misses where ethnography

can provide its most profound insights for design practice, treating it as merely instrumental rather than recognizing its broader contributions to understanding human-computer interaction.

Through our own ethnographic work studying consumer robots in the wild, we have also faced this dilemma and question. While ethnographic work shows big-picture design implications, it cannot be reduced to a bullet list of design features to implement. Here at this workshop, we seek to explore this question of how we can be helpful in designing user experiences and supporting industry collaboration to bring interactive technologies into people's lives and support their meaning-making.

2 Research Overview

A primary question guiding our ethnographic research is: what does it take to bring technology into deeply complex social worlds? To address this question, we study technologies in the wild, specifically Japanese social robots, to learn from cases in which technologies have been successfully integrated into everyday practice.

This approach yields rich insights into how users make meaning with technology and how design continues to evolve beyond the point of initial purchase, as users customize and appropriate technologies over time. We also observe robust feedback loops between companies and user communities through which manufacturers iteratively add features in response to practices and innovations emerging from users.

We draw on influential sociological scholarship to theorize these empirical findings, moving beyond descriptive reporting to explain how technologies persist and come to be desired in people's lives. In doing so, we also challenge reductive cultural explanations, such as the claim that Japanese users are uniquely predisposed to social robots [6]. At the same time, we complicate arguments that design features eliciting social behavior in technologies such as social
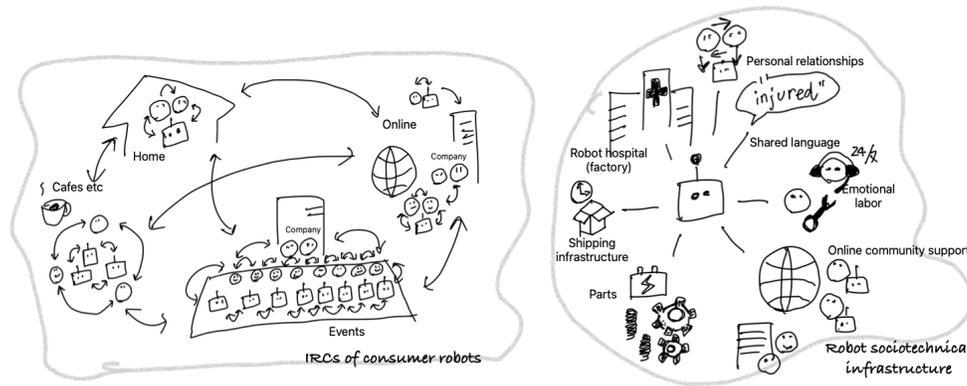
Figure 2: Interaction ritual chains and sociotechnical infrastructure of Japanese consumer robots

robots are inherently exploitative or merely "push people's Darwinian buttons." Instead, our analysis foregrounds the broader social relationships and processes of meaning-making through which users engage with and sustain these technologies.

As a result, the design implications we advance are intentionally broad and foundational, rather than limited to specific interface features or interaction techniques. This raises an important question for our work: how can such theoretically grounded, big-picture insights be made usable and actionable for industry designers? Below, we reflect on two research projects we conducted in the past and the insights we gained from them.

3 Project I: Interaction Ritual Chains of Consumer Robots

Randall Collins's theory of interaction ritual chains (IRCs) [1] describes how emotionally resonant interactions encourage repeated participation across contexts, gradually creating chains of interaction that foster collective identity and community. Drawing on several years of research on the Japanese companion robot owner community, we used this theory to explain how robot owners engage in emotionally resonant interactions, such as dancing, feeding, and playing with their robots, across multiple contexts and scales, including homes, cafés, owner meet-ups, and larger developer-hosted events [*see the paper*: [4]]. In particular, we illustrated how human–human interaction, mediated by robots as focal points, emerges and persists across these contexts. Our analysis shows that the meanings and values associated with robots are not derived solely from their inherent design features, but are co-produced through the social contexts in which people use them. We also highlighted an ongoing feedback loop between robot owners and the company, in which continuous design iteration is mutually shaped as developers respond to owners' evolving needs and practices across different contexts, giving rise to changing interactional requirements. We conclude that robot design and understandings of sociability must take a broader ecological perspective that accounts for interaction ecosystems and social contexts.

4 Project II: Infrastructure of Consumer Robots

Building on our understanding of how social contexts shape robot value, our second project examined the infrastructural work required to sustain these technologies over time. Susan Leigh Star's theory of sociotechnical infrastructure [7] emphasizes that infrastructure consists of both technical components (such as roads, servers, and cables) and social elements (including norms, standards, classifications, and invisible labor) that work together to enable technologies to function. Infrastructure is typically invisible during normal operation and becomes noticeable primarily at moments of breakdown—for example, a road is technically unusable without the social convention of which side to drive on. Star further highlighted that infrastructures are relational and embedded in practice. Repair studies therefore focus on moments of breakdown as analytically productive sites, using them as revelatory windows into otherwise invisible maintenance work and infrastructural dependencies that sustain both the technical functioning and social meaning of technologies [3].

Guided by this infrastructural lens, we investigated moments of consumer robot breakdown and the sociotechnical repair practices that followed [*see the paper*: [5]]. Our analysis revealed a network of underlying infrastructures that sustain not only the functional operation of consumer robots but also their emotional relevance in people's lives. These infrastructures include shared anthropomorphized language (e.g., referring to "robot hospitals" or describing robots as "injured" rather than "broken"), the emotional labor performed by repair staff, and the social roles adopted by company representatives, such as Sony's AIBO repair personnel being framed as "robot doctors" rather than customer service engineers.

We argue that the value of robots in people's lives is sustained through these sociotechnical components, rather than being something that can be fully designed and implemented at the point of initial adoption or during the technical design of the robot alone. Similar to our findings from the interaction ritual chains study, this work demonstrates that robot design and value-making are ongoing, negotiated, and contingent processes, rather than static design problems with fixed solutions.

5   Reflections and Open Questions

Across both projects, our ethnographic research reveals that the value and meaning of technologies emerge through ongoing social processes rather than being fully determined at the point of design or initial adoption. This raises fundamental questions about how to translate such insights into actionable design practice. We bring the following questions to this workshop for collective exploration:

What intermediate forms might bridge theory and practice? While our findings resist reduction to feature lists, we wonder what alternative formats might make big-picture insights usable for designers. Could sensitizing concepts, design principles, or framework tools help teams engage with theoretical insights without losing their richness? What examples exist of successful translations between ethnographic understanding and design action?

How can industry collaborators participate in the translation process? Rather than positioning ethnographers as those who extract insights and hand them to designers, how might we create more collaborative processes? What would it look like for designers and researchers to jointly work through the implications of ethnographic findings? How do we build shared language and understanding across these professional boundaries?

What organizational structures support ongoing, responsive design? Our cases show that design continues well beyond initial product release through feedback loops with user communities. What organizational practices, team structures, or business models enable companies to sustain this iterative, context-responsive approach to design? How do we advocate for and implement infrastructures that support continuous engagement with users' evolving practices?

6   Conclusion

Having outlined these challenges and questions, we reflect on what our experience suggests for the broader HCI community. Through our empirical work on consumer robots, we have learned that technologies gain meaning and value through ongoing social processes that extend far beyond initial design decisions. While this presents challenges for translating ethnographic insights into conventional design implications, it also opens productive questions about how researchers and practitioners might collaborate differently. We look forward to exploring these questions with workshop participants.

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