Exploring Care and Assistance in HCI with Disability and Feminist Studies

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Abstract
As intelligent agents like Amazon's Echo are becoming household staples, and since such devices can be particularly helpful for people with vision impairments, it is timely to think how disability studies and feminist theory can contribute to reimagining assistance and the design of so-called assistive technologies. I present some empirical work I have collaborated on to show how people who do not share a sense of vision work together. Preliminary findings have surfaced a variety of care relations and ways our participants guided each other which nudge some guiding conventions that suggest vision as a precursor to guiding. These findings are then used to start a conversation of how we can bring together caring and an openness to who can guide and assist to explore what types of capacities might be extended in and through actors while working together. Finally, I briefly question how these and future insights might help us to reimagine HCI concepts like assistance, often coupled with technologies and not considered a collaborative activity.

Author Keywords
Accessibility; Assistance; Assistive Technology; Care; Disability Studies; Feminist Theory.

Introduction

As devices like Amazon's Echo and Google Home become more popular, the ability to interact with a virtual personal assistant is expanding from our pockets to common features of our homes and offices. Though these devices can help everyone, people with vision impairments can especially benefit from the eyes and hands-free interaction they offer 1. However, interactions with such systems tend to still be mechanistic and query-based; you can ask a question, but the question must be posed in a way that the agent can understand, and it is difficult to carry on a conversation for long. A rich body of work including 2 explores how gender and technology make each other, and the media 5 has critiqued the pervasive assignment of female-sounding voices or names to personal assistants. I also believe feminist theory and disability studies can offer to the design of such technologies, and can also help us to break down how concepts such as assistance are being represented through intelligent agent technologies. It is my hope that this proposal can lead to work that productively diversifies how assistance is imagined and designed in HCI.

In this proposal, I will first overview some background work from HCI, disability studies, and feminist theory. I will then briefly introduce some findings from empirical work I continue to analyze in collaboration with researchers at Microsoft Research Cambridge. We observed pairs of people who do not have the same levels of vision as they worked together. After overviewing preliminary findings, I will offer some possible future directions in thinking about assistance in the context of accessibility and HCI.

Background

Here, I will briefly overview some HCI work on how people with and without vision impairments work together to navigate. I will follow with some work at the intersection of sts and disability studies that complicates concepts such as dialogue, an important component of interaction with intelligent agents. Finally, I will introduce some care work emerging from feminist science and sts that has been productive in analyzing our preliminary findings from empirical work that I will introduce in the next section.

In the fields of HCI and Accessible Computing, recent work including 10 has documented how vision impaired people navigate. They have subsequently proposed various architectural and technology design considerations in response. Though this work offers details about strategies and challenges, the struggle remains one of how to approach the nuanced and emergent qualities of social interaction in ways that resist mechanistic and procedural solutions.

Continuing with conversation analysis work by Charles Goodwin 4, we see how a man with aphasia, Chil, interacts together with his family to make sense of his dialogue consisting of three words, 'yes,' 'no,' and 'and.' Though this work was not done in a design context, it can foundation future directions by complicating what we consider dialogue to be. For Chil employs gestures, variations in his speech patterns such as volume, and his family's help to participate in dialogue and contribute in conversation. Goodwin shows us how conversation is socially and ongoingly produced and that concepts such as dialogue are not static but must be open to include a variety of sounds, gestures, bodily configurations, and actors available in

the moment for its production. It was this openness to dialogue that we took to our empirical investigations that I will introduce below; in our analysis, we did not label any way of interacting as dialogue, but considered a myriad of interactions to be integral in dialogue production and interaction progression. Finally, Ingunn Moser writes at the intersection of disability studies in sts. She complicates assumed binaries around ability and devices now commonly known as assistive technologies 6. One informant, Liv, can operate a computer with her head and a joystick. Movements are tedious and linear as she must navigate lists and lists to produce commands and words. However, this narrow view ignores the fact that before this device, she had to write by dictating to someone, a service she could only access two hours per week via a government scheme. While enabling Liv to write on her own, the technology certainly still orders disability; it does not match the speed of other writing methods and makes visible a dependence on a technology which is still quite limiting. And at the same time, we come to see that a becoming-with, in this case with a technology, makes more possible, makes Liv, in a way, independent. Again, we brought this sensitivity to ability and assistance as fluid concepts to our analysis. We reflexively worked to consider how our participants worked together, endeavoring to not conform to ablest assumptions that more vision inherently means more ability.

Finally, I briefly turn to care, articulated by Ingunn Moser 7 and feminist science researchers 3 and 8 to begin to question what capacities are possible through care relations. It is in Moser's study of dementia 7, with a woman called Mrs. Olsen, that draws attention to the everyday work of care and the "possibilities for experience that emerge in embodied interactions (7 174)." Interesting to us here is that Moser shows how this care work can offer an alternative *relational view*, one that runs alongside the dominant biomedical view. The latter easily produces an individual, isolated body living with and defined by the constraints of the body and its own capacities. In her parallel view, Moser shows how care relations can be enabling, that through the care practices of singing together, a greater capacity for living and dying is made possible.

This background begins to show how current paradigms of assistive technology design are not considering the myriad of actors that make up and produce interactions, and how prior work from disability studies and feminist science, through an openness to what things like dialogue, ability, and assistance are, can help us to begin to orient toward how care and working together to sense the world can create new kinds of capabilities.

Empirical Work

As part of work I did interning at Microsoft Research Cambridge, we wanted to learn more about how people with different levels of vision work together. Prior investigations had emerged guiding and assistance as concepts and activities people with vision impairments talk about and engage in frequently. So we wanted to know how such concepts played out during every day, mundane activities. We are continuing to analyze the work, so I will briefly go over what we did and some of the emerging findings before exploring future directions.

In three observations, we filmed a pair doing something together. In two of the pairs, one member had a vision

impairment, and the other was employed to assist them through a government scheme. In both cases, the members with vision impairments had chosen to employ a friend and this was evident as we watched the activities in progress. Here, we call the vision impaired member of the first pair Walter and his guide, Jacob. The second pair consisted of John who has a vision impairment and his guide, Greta. Our final pair revisited Walter from our first pair, but this time, he was with his partner, Eve, who also has a vision impairment, but she sees differently than Walter. They also used different mobility aids; Walter used a cane and Eve a guide dog when navigating.

The first thing we noticed was a contrast in how our pairs guided one another with an established convention called human guide 9. Instructions for human guide specify that The person with a vision impairment should hold the elbow of the sighted person and walk a half step behind. The sighted person is responsible for verbally alerting the vision impaired person with changes in the path such as stairs or a narrowing passageway. These guidelines do not specify contributions that vision impaired person should provide in guiding, and they are specific to guiding while moving from one point to another. Instead, we noticed collaborative guiding, and pairs used several senses and strategies while guiding. For example, John and Greta were tasked with moving tables from a nearby church to an office building to set up for an exhibit hall. Greta mistakenly began moving a trolley on which tables had been transported back towards the door of the church to leave again when they were actually at the church to return the trolley. Through hesitant gestures we believe John was aware of this mistake about a minute before delicately informing Greta, leading to a humorous reorienting of the trolley back to its resting place. Meanwhile, John had worked together with Greta to transport the tables, a task which would have been unwieldy for one to do alone, and he had engaged in several other tasks such as lifting, carrying, and configuring tables.

A second vignette comes from our third pair, Walter and Eve who both have vision impairments. They worked together to leave a store after shopping. Neither was quite sure of the path. At times, Walter informed Eve where they were, and Eve worked with her guide dog who is trained to find doors to maneuver to the exit. The vignette ended when Eve stopped at the door, assuming it would open, and Walter stepped in again by finding the handle and opening the door.

Through these vignettes, two themes of particular interest have emerged. First, we find a variety of care relations unfolding in action, and second, we come to wonder what guiding is anyway. Combined, we begin to think about how caring and sensing can work together to produce new kinds of capacities emerging in and through people and other actors. Some examples of unfolding care include when John carefully informs Greta that they do not need to leave the church again. They work together to continue the task as planned, but we also see that they are attuned to one another and at times we wonder whether John is careful to preserve the guiding relationship according to convention with Greta leading. Looking back at care work 3 8, we are reminded that care can be ‘noninnocent.’ sometimes emulating potentially ablest ideas that more vision affords one the ability to care for another. However, we also find care working seamlessly through an assemblage of Walter, Eve, and

her guide dog to exit the shop. In cases like these, we continue to explore how we can use these vignettes to re-affectualize assemblages and show some of the extended capacities that might be present when we consider care intertwined with sensing and acting in the world.

We also see conventions of guiding do not cover the types of guiding we see unfolding in these vignettes. By exploring the ways our pairs guide together, we can begin to think about how guiding and possibly assistance can be opened to nudge ablest ideas that increased ability leads to an increased ability to provide guidance or assistance. It is here especially that we might begin to think about the design of intelligent agents that might be viewed as providers of assistance. How are intelligent agents and other technologies perpetuating this hierarchy? Future work could expand the empirical findings we are analyzing now by observing people using intelligent agents and learning how they resolve interaction breakdowns and how they incorporate successful interactions into the greater situation. Finally, empirical work could be used to begin to reimagine designs of future technologies that better integrate technologies into ongoing social situations and spread assistance across actors rather than within technologies as the common assistive label might connote.

Conclusion

in this proposal, I have introduced intelligent agent technologies as interesting sites where disability studies and feminist theory can help us to reimagine designs for people with vision impairments. I have introduced empirical work that is being analyzed on how pairs of people who did not share the same vision worked together. We observed a myriad of care relations unfold and multiple forms of guiding which is often thought to be performed by fully able people. It is my hope that these findings can inspire more work to reimagine the concept of assistance and how it is designed into technologies.

Author Bio

I am a third year Ph.D. student at the University of Washington in the Human Centered Design and Engineering department. My research is at the intersection of accessibility, design, and disability studies. During a previous project, I interviewed people with limb loss to learn how they incorporate prostheses, including 3d-printed hands, into their identities and we comment on some miss-matches as the maker movement and assistive technology further entwine. For example, making still has a high barrier to entry that may be exacerbated by inaccessible assembly methods required to use 3d-printed prostheses. Before grad school, I worked as a research assistant on projects using features and sensors built into smartphones to create apps for people with vision impairments. One project consisted of smartphone games meant to help children learning braille to memorize dot patterns. My goal is to engage in projects that are impactful by elevating the voices and contributions of people with disabilities in academic and design spaces and to subtly and productively challenge ways HCI may unknowingly perpetuate ableism in our contributions and community.

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