New Approaches to Investigate Disability in HCI

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Abstract

Recent research on accessibility and assistive technology within Human Computer Interaction (HCI) has been applying concepts and perspectives brought from Critical Disability Studies, helping in turn, to transform how research and design involving people with disabilities is conducted. Such research has inspired and informed our recent work on reframing disability as competency [14], from an ethnographic study investigating technology use by people with visual impairments, that we revisit in this paper. However, herein we focus our attention on demonstrations conducted and propose them as a potential methodological approach that could contribute to reimagining current understandings of (dis)ability and help to uncover the routine and mundane *accommodation work* that is involved in getting by in everyday life.

Author Keywords

Disability; Visual Impairments; Ethnomethodology; Demonstrations

CSS Concepts

●**Human-centered computing ~Accessibility ~Accessibility theory, concepts and paradigms**

Introduction

Almost ten years ago, Mankoff et. al. [11] examined and reflected how the field of disability studies had

influenced their work on assistive technology. By revisiting two of their research projects, they argued that critical inquiry through the lens of disability studies led them to redefine research problems they had not foreseen and to consider new approaches to conduct research and design involving individuals with disabilities.

Different approaches from the social sciences, such as critical disability studies [12] and feminist disability studies [7] have been recently applied into the HCI field, bringing new discussions within and beyond accessibility and assistive technology research. Such efforts have critiqued the role that has been traditionally assigned to people with disabilities in research and design, i.e. passive recipients of technological interventions. It has also challenged common practices that leave such people out of relevant decision-making. There have been critical discussions that seek to reimagine empathy [2], independence [1] and power dynamics [19] notions regarding disability. Participatory research involving individuals with disabilities has also been a topic widely discussed [20] and similarly there has been a growing interest in applying co-design approaches [4,13]. Lastly, there has also been research aiming to uncover the invisible and ongoing work produced by people with and without disabilities to build access [3].

Our own recent work [14] has also aimed to expand current understandings of disability within HCI. Here we want to make some remarks on our ethnomethodological approach [5], which we employed to investigate technology use by people with visual impairments and in turn, reframe disability in terms of *competencies*. We draw on ethnomethodology's

emphasis on situated competencies as the "capability of managing one's everyday affairs without interference" [6].

We suggest that approaches seeking to investigate interactional mundanity in disability and people's seen-but-unnoticed or taken-for-granted competencies, could lead to new directions in HCI research. In our observational research, this has turned on members *demonstrating* their competencies as a core feature. But what is the *interactional work* of demonstrating technology by people with visual impairments and what is its methodological significance? We address this next.

Demonstrations as a Method to Investigate Competencies

There is difficulty in obtaining naturalistic accounts of participants' experiences and is a common issue arising when conducting ethnographic fieldwork. Research has also sought to address the cost, intrusiveness and impracticality of observing real-world activities, such as self-report diaries [15] or probes [8].

Our prior ethnographic study [14] with visually impaired people emerged from immersion in charity group meetings, individual interviews and observational sessions. We asked participants to demonstrate the activities they regularly perform and their common tools and devices. This resulted in the first author recording audio-visual data exhibiting technology use by participants, including a range of devices such as portable magnifiers and mobile phones, taking place at participants' homes or the charity offices.

Demonstrations are typically part of case studies when a controlled user study is inappropriate or impractical,

or when the research scope is broad, precluding the use of controlled research [10]. As our first foray into the fields of accessibility and visual impairments, the ethnographic study was purposely exploratory. Demonstrations had an open structure, without pre-defined tasks, which consequently allowed participants to provide naturalistic accounts of how they would ordinarily use the technology.

Ongoing analysis of the data drawing on ethnomethodology and conversation analysis [6,16] unpacks the interactional work of demonstrating. To illustrate this, we revisit an example from our paper where a blind participant shows the investigator how she uses her mobile phone and the screen reader (VoiceOver) built in it. This is an accessibility feature that reads aloud the elements tapped or selected on the screen. The data fragment we want to examine sits at the beginning of the mobile phone demonstration after the participant gave a quick summary of the activities regularly performed with the device and the apps commonly used. In the fragment (see sidebars 2-3) we use specific conventions for transcribing the sequential organisation of talking [9] (see sidebar 1).

In the fragment the participant initiates the demonstration by holding the phone with both hands. In order to proceed, she quickly stages this with a brief preparation involving increasing the volume. She then goes to the apps on the home screen while producing an account of this action ("on the first page I have", line 3), quickly then tapping the top left of the screen to trigger the VoiceOver. VoiceOver—which has been set to a fast utterance pace—then (rapidly) reads aloud the element selected; the participant then repeats it. Next she engages with a series of gestures while

VoiceOver reads aloud the elements she is interacting with ("Words", "Speaking rate") and status ("90%..."). As VoiceOver reads the percentages, its pace slows down. VoiceOver stops 'talking' after the participant taps the screen with two fingers. It is then that she accounts for what she has just done ("I just put the speed down", line 15).

What we can immediately note about this fragment is the critical role of what we might call *accommodation work*. In this case, the participant is working to accommodate for the investigator, slowing the VoiceOver speed down so as to render it intelligible for a non-expert (i.e., the investigator, who does not use VoiceOver). Of course, the broader phenomenon of 'accommodation work' is a routine part of everyday life for people with disabilities, and frequently negatively so, as accommodation work must often be performed so to 'get on' in everyday life—experiences that are sometimes described as structural disadvantages.

However, we observe that demonstrations can serve to perhaps more helpfully unpack accommodation work by 1) making visible the competencies people have developed to accomplish routine or mundane interactions, 2) reflect on the inter-relation between participants, their environment and other people.

In doing (1) and (2) above, demonstrations can open up various possibilities for understanding. They can surface various initiation and preparation work that leads to the intended content of the demonstration (i.e. showing apps on a phone). They can help pick out mundane 'troubles' encountered by the participant(s) and how they are resolved. And they can also throw into relief various interactional features of

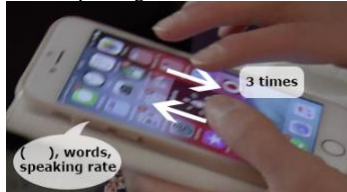accommodation work and its interpersonal organisation. For example, the participant explains what she has just done but does not explain *how* the action was accomplished or *how* she assessed and decided that it was needed. This suggests that such accommodation work is not being done *only* for the researcher at this moment, implying that she is used to constantly adjusting herself or others to reach a shared level of understanding. This fragment is an illustration of one of those moments. We also note this lack of interest in accounting for her own proficiency adjusting VoiceOver settings, as a display of her taken-for-granted competency that combines complex gestural 'muscle memory' with auditory skills. Moreover, there is a quick exchange between participant and researcher at the end of the example in which they laugh, suggesting acknowledgement of the accommodation work just performed by the participant.

Conclusions

We propose this approach as a means to make visible what is 'already there' (i.e. people's competencies) and thus add to the efforts aiming to sensitise the research and design community towards nuanced understandings of (dis)ability. We are, however, aware of the ways in which disabled individuals are often objectified as a source of inspiration for non-disabled people. 'Inspiration porn' [18] portrays people with disabilities as special or superhuman for 'overcoming their impairment' in order to live a 'normal' life or engage in specialised activities (e.g. Paralympic sports), a conceit often recognised as harmful and dehumanising and thus one we wish to avoid perpetuating.

We also acknowledge certain limitations and challenges that need to be taken into consideration when conducting demonstrations, as they are 'performances'. Nevertheless, we suggest demonstrations as a more systematic approach that move us towards *being with* and *designing with* disability [2]. The reflexivity property of demonstrations as a methodological tool could allow us to weigh our role as researchers while we learn how to engage with, accommodate to, and be accommodated by, when conducting research with disabled individuals. We suggest it could help us rethink our expectations and assumptions of disability when we create technological solutions from our standpoint, as it has been widely critiqued for example in autism research where autistic people are expected to communicate in neurotypical customs instead of the other way around [17].

Lastly, we hope that, by critically reflecting using the lens of disability studies, this line of research could "add to and inform the ways in which we collaborate with and give the subjects of our work a voice in what we do" ([11] p. 1).

Workshop expectations

Much of the previous research here cited has been influential to, and inspiring for, the first author's PhD research; thus, in a first instance, we hope this workshop could be an opportunity to discuss and assess our stance of reframing disability as competency from the lens of critical disability studies.

Furthermore, the first author is enthusiastic to engage in the creation of the manifesto planned for this workshop, hoping to contribute to conversations about

methodological approaches to accessibility and by sharing our experience as newcomers in the field.

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