Rethinking Power and Politics in Accessible Making

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ABSTRACT

The rise of maker communities and fabrication tools creates new opportunities for participation in design work. With this has come an interest in increasing the accessibility of making for people with disabilities, which has mainly emphasized independence and empowerment through the creation of more accessible tools for making. To understand and rethink the notion of accessible making, we analyze the context and practices of a particular site of making: the communal weaving studio within an assisted living facility for people with vision impairments. Through our analysis of the ways makers negotiate co-creative embodied work, and value the labor of making, we prompt further discussions on power dynamics and politics associated with accessible making. We hope to discuss tensions around assistance and interdependence in ability-diverse collaboration and how disabled labor is valued.

Author Keywords
Disability, design, making, vision impairments.

INTRODUCTION AND BACKGROUND
Maker and fabrication technologies have garnered much interest given their potential to accelerate innovation [2] and democratize design [32]. Yet, a growing body of work questions whether contemporary maker culture is truly inclusive and democratic [1, 24] and which forms of making are valued [13, 24]. Among these critiques is the exclusive nature of making to those who are not younger, able-bodied, well-educated, and affluent [1, 26, 32]. As part of this discourse, scholars of accessibility and assistive technology have been concerned with accessible making, or what it means to make making accessible to people with disabilities [17]. Through co-design sessions [14, 26] and design retrospectives of making and hacking [4, 5, 16] prior work argues that participating in making can foster autonomy, creative expression, and empowerment among people with disabilities [14, 18, 23, 26].

Despite significant scholarly and public attention [31], certain assumptions around accessible making remain relatively unquestioned. For example, increasing the accessibility of maker technologies is typically conceptualized as supporting the individual themselves through improved digital tools [17, 18], neglecting the ways other people can shape interaction in making. Similarly, questions remain regarding how accessible maker communities are created and sustained through social structures and institutions (i.e., through "care work" [33]). Finally, certain narratives of making, such as empowerment [18, 22, 26], may neglect the political and structural disadvantage that led to the circumstances of one being a maker in the first place [5].

To ground our discussion regarding these issues of accessible making, we turn to a traditional and manual form of making among an understudied demographic: a community of blind and visually impaired weavers. Our work is grounded in eight months of ethnographic observations in a community weaving studio for people with vision impairments coupled with contextual interviews with these weavers and their sighted instructors. Analyzing interaction among this community reveals how visually impaired weavers and their sighted instructors collaboratively produce creative work while negotiating assistance and ownership and create value and representation for people with disabilities through the labor of weaving.

In this position paper, we propose two threads of questions regarding power dynamics and politics associated with accessible making. First, by detailing the co-creative and interdependent nature of accessible making in the weaving studio, we question how we might shift power differentials in ability-diverse collaborative work and what it means to be an able-bodied ally in creating access – whether as a sighted collaborator in a making activity or as a sighted researcher working with disabled participants in a research project. Second, we prompt further discussions of how making and design among disabled communities is valued by drawing on how weavers with vision impairments value and position their own work. Studying weaving highlights the societal, political and structural factors associated with disability [21, 25, 35] and reveals tensions in why and how disabled labor is valued.

CONTEXT OF STUDY: COMMUNITY WEAVING STUDIO
Our research takes place within the weaving studio of an assisted living facility for people with vision impairments located in a large U.S. city. With approval from the community, two researchers conducted participant observation at this community weaving studio for eight months by serving as volunteers. We discussed our dual roles as volunteers and researchers and the purpose of the study while introducing ourselves to the weavers and sighted instructors. During our time as volunteers, we followed volunteering guidelines maintained by the community (e.g., sighted guiding techniques, asking if the resident would like assistance instead of jumping to help). We prioritized our duties as volunteers and took jottings sparingly during our time at the studio. However, we prepared detailed fieldnotes

after leaving the site. To supplement our field observations, we conducted semi-structured interviews with 12 visually impaired weavers and three sighted instructors. Before the start of each interview, we collected consent from the participant. The interviews lasted for 30-60 minutes, and participants were compensated with $30USD.

Data Analysis and Positionality

Our approach to data collection and analysis follows ethnographic field research methods [12] as well as the iterative coding, constant comparative techniques, and theorizing described by Charmaz [9]. Our own analytic views align with the philosophy of our field site, which aims to foster individual potentials, autonomy, and engagement. Community members also read and commented on our analysis. Informed by Kafer's political/relational model of disability [21], as well as work from other feminist disability scholars [3, 11, 25, 35], our analysis views disability as enacted through particular sociomaterial relations and configurations rather than located solely in the individual (i.e., medical model) or society (i.e., social model).

Although we aim to understand disability, making, and design, we are mindful of whether our participants want to be called designers at all and how analyzing people with disabilities as inspiration for design can reify power differentials [6]. Our ethnographic approach is an attempt to come alongside these individuals and *be with* this community [5, 6], although we bring with us inherent power differentials as researchers, engineers, designers, and sighted people. These sensitivities shape our analysis and results.

Following our research protocol (approved by Institutional Review Board and the community organization), we use pseudonyms while reporting the findings and do not reveal the name of the organization to respect privacy of the residents who did not participate in our study. However, we acknowledge the contributions of our participants at the end of the paper with their consent.

FINDINGS

By studying weavers within this community, we draw out two key practices in this paper to initiate discussion around negotiating co-creation and valuing the labor of making.

Negotiating Co-Creation

Rather than conceiving of accessible making as a state or feature of a system (i.e., whether a particular physical or digital tool is accessible), our analysis reveals that visually impaired weavers and their sighted instructors collaboratively create and negotiate accessibility [8, 10, 34]. Instead of doing *for* a resident, instructors look for ways to augment the workspace so that residents can actively participate in the weaving process. For example, new weavers often have difficulty detecting appropriate treadles (i.e., pedals) on a floor loom according to the weaving sequence. To make the treadles easily distinguishable and help residents memorize the sequence, often instructors provide additional tactile and embodied adaptations.

Designing these adaptations happens collaboratively, with instructors and residents working together to figure out which kinds of adaptations will be most useful to them. Sara (instructor) explained, *"Sometimes, well, many times, I will ask the resident themselves, 'what would be helpful? This or this?' and they will then make their decision... A lot of it is collaboration in doing, most of it is, in fact."* That is, instructors aim to ensure that residents have agency in securing assistance and customizing their workspace rather than being passive recipients of support [3].

Over time as residents become familiar with the weaving process, instructors move from embodied guidance (e.g., hand-over-hand support) and workspace adaptations to offering mainly verbal instructions. As part of this, they develop a common vocabulary [7] to refer to different states of the loom and the weaving process (e.g., "set" denotes a complete weaving sequence), which allows them to better communicate and coordinate about their work. Interestingly, building up the shared vocabulary occurs through a two-way interaction where the resident and the instructor both learn from each other, particularly when an instructor is new at the studio. Sara (instructor) reflected on how she learned the shared vocabulary: *"It's sort of organic in the way that we learn what each other are talking about, in which if they're confused and I'm confused, then I just start asking questions to figure out what's going on."*

Much like the way a shared workspace and vocabulary are co-created, the planning, design and iteration of a project are also shaped by a mutual exchange between weavers and sighted instructors. In the early stage, residents ideate with the instructors regarding the product they want to create and its physical properties (e.g., color, texture). Relatedly, to visualize a new pattern, Amy (an experienced blind weaver) and her sighted teacher will draw on each other's hands or, *"she'll (teacher) take my (Amy's) fingertip like a pen, and walk me through what's on the [pattern]."* Further, to support other blind and low vision weavers' participation in designing phase, Amy generates accessible versions of her design patterns using large print, Braille or raised line drawings and builds a shared repository by collecting patterns from other weavers in her group. Thus, weavers develop shared strategies with other blind and sighted collaborators to co-create access [8, 10, 34] in the process of visual design and color selection.

Still there are instances in which certain tasks become "tedious" or a "distraction" for a resident, such as fixing mistakes by unweaving. Helen said that she does not *"have the patience to [unweave]... I let them (instructors) do that. I'll put it (thread) in, and you take it out."* In such cases, instructors and residents often engage in a "co-weaving" approach, where they synchronously perform different portions of the task to *"get through that process as quickly as possible so that he (weaver) can get back to the thing that he actually wants to do."* Thus, instructors and weavers continually negotiate the boundaries of assistance [7],

collaboration, and ownership among each other to create an accessible space for weaving. In doing so, instructors aim to achieve a balance between teaching the residents to develop their skills and providing dynamic support as a "tool" in the background. Sara (instructor) described,

"I like to be viewed as more of a tool than maybe an instructor or even a helper... What my goal I think is...for the people that aren't already there, bring them to the point of more individuality and more sort of taking the reins and then for me to be there to just assist in the things that either they're more interested in or need help with."

These excerpts further highlight the ways sighted instructors act as a "Third Hand" [22] through the way they listen and attune to the desires of the residents and thus, confirm the residents' abilities and contributions in the weaving process. Together with the residents, they create and uphold this relationship that leads to mutual understanding and interdependence [3].

Valuing the Labor of Weaving
Our analysis reveals that accessible making is also about how the labor of making is valued, in which one's personal satisfaction and enjoyment derived through making cannot be separated from the politics of what it means to produce goods and be recognized for one's labor.

Aligned with common rhetoric of making [29], weavers in our community explained that they derived pleasure from their work, describing how weaving motivated them to step out of their homes in spite of their circumstances and "heal". Although the therapeutic value was positioned as a benefit of weaving, we cannot forget the broader context of their lives that seems to contribute to this view. Many are unable to hold traditional jobs due to their disability and health status, which is reconciled by turning to weaving as a way to find focus for one's time. One instructor (Laura) equated work in the weaving studio to a job:

"...weaving of these products and coming regularly, it really replicates having a job and discipline. It replicates making something that's useful to society that gives them pride in what they do. It gives them self-confidence and that's why I believe...this is the by and far, most popular program at [this community]."

Participants also describe value in being able to gift their products to meaningful individuals or someone in need. Bill said, *"I just gave them [baby hats] to the hospital to free as a donation, and it just gives me a good feeling inside knowing that hopefully I helped someone,, like I've brightened someone's day., and that's all it takes for me."* Here, we see that the value of their goods helps confront social disadvantage and being positioned in a continual state of needing care. Gifting the products they create allows participation in a reciprocal relationship with others, which can be denied to some people with disabilities [3], and helps shift power dynamics from receiving to giving support.

In addition to gifting, the commodification of their products is particularly meaningful to these individuals. Many of the weavers who work in the studio live on limited income and have multiple chronic conditions that prevent them from participating in other forms of employment. Receiving profits from a sold product can be a significant source of income for these residents. Adam explained that the best part of weaving is *"making the money. We get like half of what we sell. And the other half, they get, to pay for the loom and the fabric."* Despite the appeal of financial gain through their products, some weavers described wanting their products to be priced lower so that they would be more affordable to all. *"I wish they would be a little bit less... I couldn't even afford it myself,"* said Helen, highlighting the tension between selling products to outsiders as a way of sustaining community efforts (i.e., paying for weaving materials) and the fact that even she, as the maker, could not afford to purchase some of the products she creates.

Importantly, weavers described how their work can lead to broader societal recognition of their abilities and existence as a community. Helen explained that their work shows that people with vision impairments *"are still able to do things... Old, young, or middle-aged, that we're still able to learn new things to do, and to sell."* Their desire for recognition is about exposing narratives of ability and contribution [5], both as individual validation and collective advocacy. To this end, the staff at the assisted living facility organize communal projects in which many weavers contribute to the final product, and display these projects in areas of wide exposure (e.g., the downtown area of a large U.S. city) – all while publicly recognizing their disabled identity. Many weavers expressed enthusiasm towards these community efforts and were excited about having their work displayed to the general public. Emma said, *"I think it definitely would bring a lot of publicity for this type of facility... our names will be up there, and I've asked them if I could take a picture of the one section I've done... I would like to create a website and show that off, like a visual portfolio."*

In having their work recognized by a broader audience, these weavers aim to show their worth as people with disabilities and inspire other individuals with disabilities. Lisa said:

"My weaving is my life, and legacy, and art. I want it to get out there so other people can know that they're free as well, despite their disabilities. They might not be able to talk, but they can talk through this... Some people have blind children, kids with down syndrome. They can come here and learn (weaving) from us. I want to pass it on."

Lisa emphasizes the expressive nature of weaving (i.e., being able to "talk" through it [23]) as well as a desire to pass on her skills, which is part of the community ethos. Thus, weaving is a valuable skill that can be passed on to foster personal satisfaction, financial gain, and recognition for people with disabilities. As an instance of accessible making, weaving also reveals how these individuals reconcile the value of their labor against a backdrop of ableist views of

what it means to be a productive, contributing member of society and desire for upward financial and social mobility.

QUESTIONS FOR THE WORKSHOP

Our research at the weaving studio reveals new tensions around disability and making. Therefore, we would like to discuss the following questions with workshop attendees.

What role can able-bodied individuals (e.g., sighted instructors, collaborators, researchers) play in shifting power differentials in ability-diverse co-creative work?

Although the role of instructor and their designation as sighted introduces power differentials, the instructors in our study continuously attune to residents' desires to do for oneself, perform the labor of weaving, and learn the requisite skills. Ensuring that the resident plays an active role in the weaving process, whichever parts of the process they choose, is essential to empowerment in this context [26]. Even for experienced weavers, collaboration with sighted others was a key aspect of their process of making. This collaboration, however, was not positioned as an assistance-based relationship; rather, assistance flowed in multiple directions and people with disabilities were agents in securing their own support [3]. Moreover, these weavers acted as knowledgeable contributors within this community, passing on their skills to others. The cooperative negotiation of accessibility calls attention to the ways able-bodied others hone the skill of empowered co-creation, in which they foreground the individual's labor and attempt to make their labor fade into the background [22]. Our approach to conduct field observations as volunteers was an attempt to engage with the community and learn from and abide by the interdependent co-creation practices maintained by our participants.

How might we better tell stories of accessible making through the lens of social, political, and structural forces that work to construct disability?

Our analysis joins that of many others who call attention to issues of power and the under-valued labor of certain communities [19], particularly those who do manual, non-technical handwork [13, 24, 30]. In addition, people with disabilities are often not recognized for their design labor given that much of design scholarship and practice tends to position able-bodied people as designers and people with disabilities as non-designers [5, 6]. Indeed, the weaving community we examine - comprised of people with disabilities and chronic health conditions and situated in a low-income assisted living facility - are largely invisible in the broader maker movement [1, 24, 26, 32]. Narrating under-valued stories of making, as we do here, may be one way of broadening who is considered a maker and dismantling the elite status of design [15, 19, 27]. Bennett, Peil, and Rosner [5] caution, however, that "Celebrating design stories, then, may obscure the oppression underpinning their necessity..." That is, framing weaving as meaningful and empowering may miss the fact that this labor emerges *because* of one's social position, limited options for employment, and financial constraints. Tellings of weaving

as therapy, a job, giving focus for one's time, enabling gift giving, and a source of financial gain all speak to the necessity of this work. Instead, weaving may be told as a practice of resistance that surfaces imposed expectations and competencies [20].

How might the valuation of disabled labor and resulting products reify stigma and ableist views?

Studying this community of visually impaired weavers also raises awareness of social and organizational practices (i.e., "care work" [33]) that enable and sustain accessible making. This ranges from providing a physical space and training to creating a culture of ability and contribution through one's labor. Selling weavers' work is a key part of community sustainability (i.e., weaving materials are expensive), but this is politically complex. With the rise of online communities like Etsy and Facebook Marketplace, selling one's products enables a form of societal participation that may otherwise be denied to some people with disabilities. Yet, these same practices that are meant to be empowering may also disempower: selling one's work is rooted in capitalist ideals of what constitutes productivity and success, reaffirming a particular social ordering. Further, we question whether the resulting products are valued on their own merits or because of their association with disability, framed by ableist views that such work is exceptional for people with vision impairments. Sensationalism of disability and making is a ready trap, foreshadowed by the exploitative history of Outsider Art in which artwork created by those considered "other" is valued because the creators are so different from the viewers [23, 28].

Through these questions, we hope to prompt conversations around shifting power differentials in ability-diverse collaboration through negotiating assistance and ownership, and discuss the inherently political nature of the ways disabled labor is valued by oneself and others.

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