DESIGN AS SCHOLARSHIP

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4

THE CHALLENGE AND PROMISE OF COMMUNITY CO-DESIGN

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Introduction

Some of the most critical commentary on design-based research is directed at its unidirectional, hierarchical approach to knowledge production and dissemination (Engeström, 2011). There is great interest in developing alternative strategies for creating more collaborative and participatory design methodologies that could open up empowering ways of knowing and acting, especially for communities that have been historically marginalized (Cammarota & Fine, 2008; Gutiérrez & Vossoughi, 2010). We need to design new ways for people to participate and become in the world. This is a challenge that we have embraced in our ongoing work with under-resourced communities organizing for better social futures. To develop more transparent approaches to design research, we present the typically "untold" strategies and challenges of our research alongside some of the successes. We focus on telling the story of how we have grappled with the task of developing methods for doing *equity-oriented* research with culturally and linguistically diverse communities. By equity-oriented, we mean research and design efforts that facilitate members of marginalized communities in gaining greater access to and control over resources to shape their own lives. In this chapter, we focus on our partnership with *promotoras*, community leaders who are striving to increase food access and social justice in their western U.S. neighborhood. We share how we learned to organize design-based research, developing interventions such as professional workshops and technology tools, so that it can be equitable both in its process and its outcomes.

Promotoras de salud is a community health worker model initially developed to connect underserved communities with healthcare and educational resources. Research on promotoras de salud indicates that although promotoras do not have

advanced degrees, they can promote healthcare as successfully as professional health workers (Ayala, Vaz, Earp, Elder, & Cherrington, 2010). Without professional degrees, promotoras, who are mostly women, are a less expensive labor force.

Through our related research on the food movement, we became familiar with a variation on the promotoras de salud model. Impact (all proper names are pseudonyms), a nonprofit focused on increasing food access in a local community, South Elm, with limited access to healthy and affordable food, uses promotoras to connect with the neighborhood's largely Mexican immigrant residents. The promotoras work with community members to grow their own backyard vegetable gardens. Impact's extension of the traditional promotoras de salud model is part of a larger community-based effort to increase food access, empower residents, and develop a more robust neighborhood economy. Impact's backyard gardens produced more than 30,000 pounds of fruits and vegetables in 2014. The neighborhood now has over 300 gardens and a waitlist of over 100 residents who want an Impact garden, which includes an irrigation system, seeds, seedlings, and the support of a promotora throughout the growing and harvesting season. Impact has secured funding for the first community-run food cooperative in the city.

Impact's promotora model is compelling to us because it is a deeply cultural-historical model of community learning that has been extended, making connections to healthcare and education, to improve people's lives in the neighborhood. This type of community-led change has not typically been the focus of learning sciences research. Yet, it is this type of social change, built on the valued practices of community members, that has led to meaningful and lasting reform (Jason, 2013). Our interest is in understanding how the community organizes this change such that it can have a positive effect beyond the borders of the neighborhood and in generating participation structures and designed tools that support this process. Our design collaborations have been grounded in our interest in understanding community-based social change. The specific interventions we developed were driven by the needs and the desires of our community partners.

Focal Design Process Elements

The methods that undergird our research draw on insights from social design (Gutiérrez, 2008) and community-based design research (Bang, Medin, Washinawatok, & Chapman, 2010). These approaches seek to study learning *with* community members to focus on problems that are significant for the conduct of their everyday lives. These partnerships hold great potential for creating designs that are valued by communities; however, they are also rife with tensions that lie at the intersection of power and values in the organization of new learning trajectories. Community-based research brings together people from

different social positions—typically those from the university and members of the community—generating working relationships that are asymmetrical in terms of access to financial, intellectual, and social resources. As members of the university enter into marginalized communities, there is a risk that asymmetrical power dynamics could generate relationships that invoke neocolonial models where outsiders engage in interactions with the 'other' with the intent of 'fixing' or 'saving' the community (Baker-Boosamra, Guevara, & Balfour, 2006). When participants speak a language other than that of the dominant culture, as is the case in our research, the potential for marginalization is even greater. An aim of our work is to avoid the reproduction of oppressive power relations while simultaneously trying to create opportunities with community partners to gain skills that could be valued across multiple contexts.

In developing a collaborative design project with our community partners, we organized our work around key focal design elements, including (1) negotiating roles to facilitate a participatory approach to design; (2) working across differences of language to develop equitable interactions; (3) using ethnographic methods to identify significant problems of practice; and (4) designing an equity-oriented intervention. In this chapter, we share the story of this design process, highlighting challenges we faced and how we managed, and are still managing, them.

Design Story: Organizing Equity-Oriented Design Research

As collaborative design researchers, we did not stand outside of the community and identify problems of practice for Impact, the promotoras, or the South Elm community. When we began our partnership with Impact, our initial focus was on learning about the promotoras and their role and work in the community. We developed a foundational understanding through a variety of means. We reviewed historical and contemporary artifacts (e.g., research articles on the public health significance of the promotora model and city newspaper reports on Impact's promotora model), conducted interviews with the promotoras and the Impact directors about their life experiences and motivations for their work, and conducted participant observation of the promotoras' work in the community. Our observations involved shadowing promotoras as they visited residents' homes to check on garden progress; performed their seasonal garden duties; and talked with residents about their concerns with the gardens, their family lives, and their experiences in the neighborhood. Through these observations, we came to know some of the Impact garden participants, and they were pleased to welcome us into their homes and share their stories with us.

Our initial analysis of ethnographic data highlighted the variance and ambiguity in how the promotoras defined their work. We realized that although the promotora model was successful in terms of establishing thriving backyard gardens, determining what exactly made it so was a genuine question for

the promotoras and the nonprofit. For the promotoras, articulating their work was important so the expansiveness of their advocacy practices—which ranged beyond the gardens—could be acknowledged. For the Impact directors, articulating the promotora model was important so the model could be shared with other communities and used to appeal to funders. The questions that guided our work together were focused on the promotora model, why it works, and how it could be enhanced.

The story of our design process unfolded over 3 years. It began with getting to know each other and negotiating our roles as research partners. A key part of this process involved learning to work across differences of language background and interest in and knowledge of academic theory and method. Once we established routines for interacting together productively, we were able to identify a focal problem of practice on which we could center our design efforts and co-create a—potentially powerful—intervention. We discuss the challenges and successes we faced in this emergent design process.

Negotiating Our Roles

When we first began our design work with the promotoras and Impact, our research team wanted to be seen as equals, as collaborators helping the nonprofit address problems that mattered to the community. This was an ambitious and somewhat naïve desire on our part, as our partners did not yet explicitly understand the nature of our research aims nor of our skill set. Based on our affiliation with the premier state research university as professors and researchers in education, the promotoras and the nonprofit co-founders saw us as teachers, curriculum designers, and learning experts. We saw ourselves as researchers who wanted to work alongside community members to organize for learning that could lead to social justice. Although these goals are not necessarily opposed to each other, in our interactions with our community partners, these different perspectives conflicted in terms of defining our roles in the design collaboration.

As an example of the challenge of negotiating our roles, we share a scene from one of our first meetings with our community partners to plan a workshop series aimed at articulating the promotora model. Members of the research team tried to be very intentional about naming and acknowledging the expertise of the promotoras. As we saw it, the promotoras had expertise in relation to the content of community advocacy and gardening, and the research team had expertise in designing learning environments. Although the research team saw a shared sense of expertise as an essential feature of the co-design sessions, we did not realize that the promotoras' expectations and assumptions about our role as authoritative experts would need to be addressed explicitly. The following exchange captures some of the ways in which we tried to challenge this positioning to create new forms of participation between researchers and community members.

Turn	Role-Speaker (language)	Text
1	Researcher-Jurow (in English)	Everyone said communication is the most important. We need to talk to each other and respect differences, respect cultural differences, but it seemed like there was not an explicit way of talking about what you do. Everyone knows it is important, but it is kinda fuzzy.
2	Researcher-Teeters (translating from English to Spanish)	Todos decían la comunicación es la más importante. Tenemos que hablar el uno al otro y respetar las diferencias, respetar las diferencias culturales, pero parecía que no había una manera explícita de hablar de lo que haces. Todos sabe que es importante, pero es. . . . fuzzy.
3	Researcher-Teeters (in Spanish)	Nadie sabe realmente cómo hablar sobre cómo comunicar mejor. *No one really knows how to talk about how to best communicate.*
4	Promotora-Cuevas (in English)	Well, you (indicating the research team) have to teach us how. (Laughter)
5	Researcher-Jurow (in English)	Yeah, well, what I feel like, what we would need to do is to uncover what everyone is doing and what are the tensions.

The promotora's comment (turn 4) combined with the laughter suggests that there was a sense that the researchers' role was to provide expertise, "to teach" the promotoras how to do their job. The researcher's comment at turn 5 challenges this transmission approach by reframing the work that needed to be accomplished as a joint task ("what *we* would need to do," emphasis added) focused on the actual work of the promotoras. In making this statement, the researcher positioned the promotoras as experts on their job and the researchers as collaborators focused on helping the promotoras "uncover" what they are doing.

We developed a couple of strategies to challenge our positioning as experts working with novices: we explicitly stated our desire to collaborate and not to "teach" or be "experts" in relation to the promotoras; we arranged informal conversations over coffee instead of office meetings at a conference table; and we routinely visited backyard gardens, the primary site of the promotoras' work and where they are the experts. Being seen as collaborators was essential to our design work and was important for us to establish through our interactions with the promotoras.

Working Across Differences of Language

The opportunity to base our research in a neighborhood that had both a history of marginalization and a vibrant approach to organizing for a better future was very appealing to our research team. We were eager to embrace the challenges of

working toward social justice; however, we were not fully prepared for what this would involve. In particular, we made two missteps at the start of our project: (1) not hiring a bilingual research team member who could help us communicate effectively with the primarily Spanish-speaking promotoras, and (2) not realizing how much our design discussions would rely on speaking English to talk about theory and technical elements of design.

The original research team members included two faculty members and one graduate student, none of whom was fluent in Spanish. We made the incorrect assumption that the promotoras would be able to speak English with us. This mistake was based on the fact that our negotiations to work with Impact had been conducted primarily with the English-speaking, White co-founders of the organization. As soon as we were face to face with the promotoras, we realized we would not be able to do our research without a Spanish-speaking member of the team. We decided to hire a community member to serve as a translator. Not only would this help us engage with the promotoras, we also believed that paying a community member to work with us would benefit our reputation in the neighborhood as people who could "give back" to the neighborhood and not only "take away." The community member we hired was recommended to us through the promotoras, and she helped us conduct initial interviews with the promotoras. What we soon realized, because we had some Spanish facility as a team, was that the translations were not exact and were problematic because the translator did not take up the details of the interviewees' words in her question formulations. Backing off our plan to hire a community member as a translator, we decided to invite a then–first year doctoral student (Teeters) who was bilingual, had taught in Mexico, and whose family was from the focal neighborhood to work on our project as a volunteer.

Even with a bilingual translator on the research team, language was still a significant challenge for our research. This was stressed to us one evening when the researchers met with the lead promotora to plan for a workshop focused on articulating the promotora model. Teeters, who served as our usual translator, was not available to attend the meeting. A bilingual doctoral student and native Spanish speaker served as a translator instead. The discussion lasted more than an hour and had gotten deep into the details of the sociocultural theory driving our design research with Impact. When the researchers paused for a moment to check in with the lead promotora and her perspectives on the discussion, she stated in a rare moment of frustration that it all sounded like "English, English, English." This comment was hard to hear and stuck with the research team. We realized that not only were we privileging the language with which we had most ease, but we were also privileging our interest in theory above the practical concerns of the promotora. This interaction led Jurow (the principal investigator) to offer Teeters an official position as a graduate student researcher on the team. This experience made us realize that not only did we need a translator who understood the theories and research methods that guided our work, we also

needed someone who was deeply familiar with the promotoras' work and their cultural-historical experiences in the neighborhood.

Issues about language use are seldom only about language; they are also about the power relations embedded in historically established interactions between researchers and community members. When we used only English to talk about theory, we excluded the lead promotora from participating in a conversation that was fundamental to the design of the workshop. This was consequential for how promotoras could represent their work and its potential for improvement. This practice also reified the idea that English equals theory and Spanish equals practice, a social and linguistic hierarchy we wanted to avoid. We have learned over the years that our good intentions need to be turned into good everyday practices of interaction if we want to transform disempowering and historically entrenched patterns of research–community relations.

Identifying a Practical Problem on Which to Focus Our Design Efforts

We uncovered an unrecognized aspect of the promotora model through work-shops investigating it, planning sessions in which we worked with promotoras to develop the workshop series, and our ethnographic analysis of Impact's effort. We learned that the promotoras' compassionate and sustained engagement with community members enabled them to develop a critical perspective of the needs of residents, the inequities facing their community, and a sense of responsibility as emerging civic leaders. This view was significant to the promotoras them-selves; they routinely emphasized to us that the relationships they developed with community members were the foundation of Impact's success in South Elm (Jurow, Teeters, Shea, & Van Steenis, in press). They felt, however, that this was not fully acknowledged by the nonprofit leadership.

This expansive sense of being community advocates was relevant to the enactment of the promotora model because it shifted the promotoras' actions in the community. Their initial aim of establishing vegetable gardens had expanded to include a desire to challenge inequitable relations of power by reorganiz-ing residents' access to social, educational, and economic resources (Jurow, Tee-ters, Shea, & Severance, 2014). The residents involved in the backyard garden program, many of whom are immigrants, turned to the promotoras as infor-mal resources for information regarding medical care, legal troubles, and issues related to domestic violence.

Our growing understanding of the promotoras' unacknowledged and expan-sive enactment of community advocacy led to a shared desire to legitimize this powerful practice. The original aim to articulate the promotora model generated a practical problem of practice: how to develop a method for documenting the promotoras' extensive community advocacy work, as well as their work in creat-ing a more just food system.

Designing an Equity-Oriented Intervention

Listening to the promotoras, we learned that, for them, designing for equity-oriented learning required developing tools that would (1) help them to collect systematic data on all of the important dimensions of their practice, (2) allow them to share and extend their knowledge, and (3) build on their valued cultural practices. The promotoras told us they wanted to develop business skills, such as grant and report writing, accounting, data management, and technical English language. The promotoras also expressed that they wanted more training in how to work in the gardens and in how to be better community advocates. These desires stemmed from their motivation to be viewed and treated as professionals.

Through sharing our emerging data analysis with the promotoras and the Impact leadership, as well as discussions with experts in the field of international development focused on women's empowerment, we came to see that technology could be a powerful tool in our design work with the promotoras. Faculty in the technology for development program on our campus suggested they could help us design a software application with the promotoras that could help them meet their diverse goals of collecting systematic data on their garden and relational work, gaining valued professional skills and representing their work to grant funders and policy makers. We presented Impact and the lead promotora with a proposal to design a tablet-based application that could allow the promotoras to enhance their practices while more fully representing and circulating their expertise across temporal, social, and spatial scales (Latour, 1983).

In keeping with our participatory and equity-oriented approach to design, we began the work of developing a software application using what Gutiérrez (2014) calls a *syncretic* approach to design. As she explains, a syncretic approach to design involves envisioning designs for learning that can both acknowledge the assets and practices of a community and extend them in more powerful directions. The outcome of these syncretic designs are tools, practices, and/or activity systems that strategically combine the historically valued practices of a nondominant community with those that are valued in established institutions to create potent practices that are empowering without being oppressive.

In order to design a tool that could codify the promotoras' knowledge and streamline data collection on their visible and nearly invisible forms of work, we partnered with our university's Information Communication Technologies for Development (ICTD) program. The ICTD students were learning to develop culturally responsive, sustainable technology tools in one of their lab classes. Our collaborative design sessions with ICTD students and promotoras were well intended, but in practice did not work out as we planned.

Although the ICTD students were from diverse ethnic and cultural backgrounds, they were all male and all monolingual English speakers. The technology team relied exclusively on English to discuss and debate the technicalities

of the design of the software application. This form of discourse and interaction made it difficult for the promotoras, as well as the education researchers, to share their expertise and contribute to the design process. The design sessions, which were meant to be collaborative and dialogic, became expert-led and monologic.

In response to this failure of the face-to-face co-design efforts, Jurow and Teeters decided to remediate the design activities by meeting with the technology students and then brokering that knowledge to the promotoras. This allowed for one-on-one interactions that were not possible in a larger meeting dominated by English speakers. Moreover, this setting allowed Jurow and Teeters to build upon the trust they had established with the promotoras and to reorganize the interactions so that they could be both critical and oriented toward reflective action (see Freire, 1995).

These more personalized meetings were held with multiple promotoras at some times and with just the lead promotora at others. This allowed our team to learn about the promotoras' specific relationships with technology. For example, in one of the larger meetings, we discussed how to create the forms in an Excel spreadsheet before uploading the information to the application. It was not until we met in a smaller group that the lead promotora felt comfortable sharing that she had never used Excel. We were then able to provide her with training in it. Because the promotoras had facility with technology, but not always with the specific applications that we—as researchers—used, it was difficult to anticipate what they did and did not know. A more intimate setting allowed the promotoras to share their knowledge with us, such as correcting the forms to more closely align with the specifics of the growing season. Meeting in smaller groups was important to our participatory design work because it allowed us to share our mutual forms of expertise.

The collaborative, interdisciplinary design process that eventually emerged brought in the promotoras as designers, apprenticing them into practice (Lave, 1991). This process positioned the promotoras as novices with technology development and as experts in the community and in agriculture. This apprenticeship model also allowed the promotoras to be empowered with the skills to build technology, as opposed to simply being the recipients of designed tools. This deeply participatory approach mitigated the risk that our designs would further marginalize the promotoras.

The software application that we designed through this process is called the "Promotora App." The promotoras regularly use the application when they are in the community to collect quantitative data on garden productivity and qualitative data on their interactions with residents. The Impact team is now considering ways in which the data collected through the Promotora App can be integrated more fully into their assessment, training, and evaluation practices. The promotoras are also considering how they can participate in data analysis through the writing and creation of data reports.

Discussion

In our work with the promotoras and with Impact, our research team developed and tried out different strategies for creating transparent and equitable approaches to design work. We encountered challenges while negotiating equitable, participatory roles and outcomes, including working across differences of language and power and designing an equity-oriented intervention; these reinforced the importance of being explicit about research aims and approaches, and of being intentional about addressing issues of power and language. The emerging strategies have helped us address the challenges encountered as we developed our design process.

Our strategies were informed by Gutiérrez's (2008) "social design experiments" and Hall and Horn's (2012) writing on how representational infrastructure shapes what can be known, learned, and valued in a social setting. Perspectives on social change—drawn from sociology (e.g., Foucault, 1988), human geography (e.g., Soja, 2010), and economics (e.g., Sen, 1999)—also informed how we conducted our participatory design research. We also drew upon our experiences as teachers of native Spanish and English speakers. We did not set out with a predetermined approach to organizing our collaborative design work; yet, what we did was always deeply informed by theory and refined through ongoing and critical reflection on our process.

Through a disciplined yet improvisatory approach, we developed a productive relationship with the promotoras and designed a new tool (the Promotora App) that they use to collect systematic data in the field. The lessons learned through our design efforts speak to methods for organizing interactions between researchers and community partners that support productive co-design and the significance of ethnography for generating equity-oriented and sustainable designs.

Participation Frameworks for Supporting Co-Design

Our design research aimed to position the researchers and the participants as mutual collaborators. Although the research team and our community partners brought different expertise to the endeavor, as Erickson (2006) suggests, "studying side by side" in this way produces more authentic and holistic accounts of activity systems. By having the community members and researchers play a shared role in the design and the implementation of research, "ideas can be fed back, discussed, and negotiated as part of the ongoing practice of research" (Rogers, 1997, p. 69). The community members were positioned as experts in their work as gardeners and community advocates; their everyday interpretations and experiences were foundational to generating relevant problems of practice and sustainable solutions (Cahill, 2007). The researchers facilitated a reflective and action-oriented practice, propelling social change toward a vision of greater agency and equity

for all participants. By positioning promotoras and researchers as mutual collaborators working toward the same goal, we worked to ensure that the emerging interventions, such as the Promotora App, were not imposed from the outside, but rather were embedded in existing practices.

Our co-design process involved identifying leaders within the organization who wanted to work in small groups with the researchers to design activities and tools to create expansive learning opportunities for all participants. Our goals were fluid. Our main goal was to open up opportunities for the promotoras to expand their practices, but our specific goals were not defined at the outset. For example, when developing workshops for the promotoras, we began by working with the lead promotora. She then identified two other leaders based on leadership traits such as charisma, work ethic, and vision. With these promotoras, we met to draft a plan for the workshop. The promotoras led by defining what they wanted the outcomes and process to be, and then we organized the design of the specific activities by drawing on our expertise designing learning environments. All participants took active roles in the process of determining the shape of the collaborative knowledge building (Rogoff, 1994).

We enacted a similar process of collaboration in designing the tablet-based application that the promotoras currently use to record data related to their work. We began with a small group of interested partners. The promotoras led by defining their vision for how the application would be used, and we, with support from our ICTD partners, helped lead the design of a solution. These two examples of design, the first of a learning environment (i.e., the workshop) and the second of a learning tool (i.e., the tablet-based application), illustrate how diverse forms of expertise can be used to complement each other in a co-design process.

Ethnographic Analysis of Promotoras' Practices

Our designs for expansive learning in this project were embedded in participants' existing practices, rather than imposed from the outside. We drew on the promotoras' everyday experiences as professionals in the community as well as our analysis of ethnographic materials to ascertain "what people have to know to do work, and how that knowledge can be deployed" (Button, 2000, p. 319). Our deeply collaborative approach allowed us to develop design interventions that could support the promotoras' work practices. For instance, the user interface of the application was designed to reflect digital media that the promotoras were already using, such as Facebook, and the drop-down items in the application were selected based upon observations and reports from the promotoras of the practices that they wanted to codify. This approach not only helped ensure the sustainability of the designed products and processes, but it was also integral to our commitment to equity. One of the main reasons designed interventions—especially technological tools—fail is because they do not take into account the

contexts in which they will be used (Engeström, 2011). Designing tools that complement and expand existing tools have a greater likelihood to be used and sustained in practice. To the latter point, and more critically, embedding design solutions in everyday practices minimizes the chance that design solutions will be imposed in a top-down manner, invoking colonial models where outsiders present interventions with the intent of "fixing" or "saving" nondominant community members (Yapa, 1996). The long-term and multisited ethnographic work that we conducted in the local community, in the nonprofit office, and in the city and surrounding region informed our design decisions. The reflective way in which we engage in ethnography enabled us to understand participants' everyday practices and to understand which of those practices carry the most potential to open up new possibilities for future practices.

Toward Greater Transparency in Collaborative Design Research

As researchers in the learning sciences, our methodologies aim to respond to the need to address the situated and distributed nature of learning. We take up this challenge while foregrounding equity. We recognize that if we seek to generate equitable outcomes, the processes by which we enact change must be orchestrated such that equity is embedded in every stage. This deep focus on equity, as well as our intent of generating research designs that open up possibilities for new forms of future participation, necessitates that our research move beyond the confines of established institutions and into the dynamic contexts of community work and social movements for justice. In doing this work, we have been intentional and reflective about our design decisions so that we do not replicate historical patterns of marginalization.

How design decisions are made is an expression of historically developed values, dispositions, and perspectives on social change and learning. Different values, dispositions, and perspectives affect how designs are selected, implemented, and made socially significant (LeDantec & Do, 2009). Revealing how design decisions are made is important because it draws critical attention to issues of power and equity in the design of new collective possibilities. In this chapter, we have tried to reveal the typically untold processes of design. We drew critical attention to how we made design decisions in our routine practice: how we draw upon theory, how we refine and revisit our decisions, and how we have been responsive to community members' concerns. We coupled our commitment to rigorous design with a humble approach, recognizing the limitations of our tools and perspectives. This balance is always in progress. We need more conversations about how to do research *with*—as opposed to *for*—communities, designing powerful tools that can be taken up and sustained by communities themselves. Although opening up this conversation is imperative to generating more sustainable, more just research methodologies, it also involves risk. Revealing researchers'—at times—messy process of developing designs while simultaneously revealing the

theoretical commitments that have informed design decisions and iterations is necessary to move towards generating a more honest, vulnerable, and equitable dialogue around research methodologies.

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