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Studying and Designing for Equity-Oriented Social Change

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Abstracts

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Learning Sciences and Human Development, School of Education
Studying and Designing for Equity-Oriented Social Change
Dissertation Chaired by Professor A. Susan Jurow

1.)   **Relationships *de Confianza* and the Organization of Collective Social Action**
We examine the relational elements of community change, focusing on how community health workers (*promotoras*) build relationships *de confianza*. The analysis demonstrates how relationships de confianza have laid a foundation to (a) mediate social networks to organize for change and (b) promote solidarity through the response to urgent needs, creating a more holistic model of community health and sustainability. Drawing attention to relational resources foregrounds social actors and their ingenuity, promoting equity in social movements.

2.)   **Developing Social Alongside Technical Infrastructure: A Case Study Applying ICTD Tenets to Marginalized Communities in the United States**
This article provides a model by which to apply ICTD tenets within the context of the U.S. It presents a case study of co-designing a technology application with community health workers, *promotoras,* working in a historically marginalized community within the U.S. It examines both the process of co-design as well as the use of the designed product as interventions intended to enhance the promotoras' agency and ability to transform opportunities for themselves and their community. This article argues that designing equity-oriented design solutions involves ethnography and participatory design, as well as attention to both the social and technical infrastructure.

3.)   **The Challenge and Promise of Community Co-design**
In this chapter, we share our design story of collaborating with community advocates working in a historically marginalized community. We focus on equitable and empowering co-design processes and creating a technology tool to represent the community leaders' social justice activism: (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.

CONTENTS

Introduction

*"There is virtue in appreciating that Minds
/concepts, skills, goals, motives/
do not show up in heads or schools on their own.
Instead, it takes great activity on the parts of many,
not many really, but on the parts of all…"*

As the above excerpt from McDermott's (1994) poem suggests, learning is the product of joint activity. Concepts, skills, goals, and motives are situated within intricate webs of activity. To understand how learning is made to become consequential—how it comes to matter—we must locate learning in the context in which it is generated and in the context where it will be applied. Unveiling the processes that give value to learning can reveal the power relations that are at work in constructing a social world (Becker, 1982). Situating learning within the historical, social, and spatial contexts in which it transpires allows us to inquire not only how learning happens, but also allows us to critically question whose learning is taken up and under what circumstances. Power dynamics are embedded in and produced through the relationships between individuals, communities, and the social world. Studying how learning becomes consequential thus involves a call to action (Blomberg, 1993). As we learn about the relations that differentially give value to learning, we are called to design ways that individuals can more equitably participate. Designing for consequential learning that is equitable for all participants involves considering the cultural and historical nature of the participation structures and the tools that give them shape.

In this dissertation study, I aim to explore what it means to design for *equity-oriented consequential learning*. I conceptualize design for equity-oriented consequential

learning as that which supports marginalized communities in accessing resources to shape their own social futures. As certain ways of learning become more consequential than others, dominant notions of learning can often eclipse other ways of learning and becoming. My interest in *equity-oriented* consequential learning seeks to promote design and learning strategies that that do not favor one epistemology at the cost of another, but rather, that support the co-existence of multiple ways of knowing and being. Acknowledging, and making social room, for a diversity of perspectives is central to generating more equitable forms of social organization. In my dissertation work, I have aimed to foreground the lived experiences of participants as the basis for understanding social change..

Learning processes are often studied within the organizational boundaries of schools or workplaces where these institutions have been established and maintained through historical processes of value construction defined by dominant power structures (Lave & McDermott, 2002). In an effort to investigate more plural notions of learning, I locate my study within the shifting and often contentious context of social movements (Holland, Fox, & Daro, 2008; Tarrow, 2011). Social movements can be understood as series of campaigns and activities by which groups of people are explicitly aiming to challenge and change the structures that shape their lives and those of their communities (Tilly, 2004). Studying social movements offers an important alternative to the politics of the state, allowing us to draw critical attention to power and relationships (Voss & Williams, 2012). In social movements, values and ways of participating in society are in flux; they are contested as part of on the ground grassroots action and at the level of policy and institutional organization. These contexts make inequities more visible,

opening opportunities to question power/knowledge (Foucault, 1977), and offer mechanisms to disrupt historical patterns of participation to generate more plural notions of learning.

The social movement for increased access to food and social justice is compelling in that it has dimensions that are local and global; historical and contemporary; individual and collective (Pollan, 2010). Food access, quality, and sustainability are issues that reach across economic and cultural boundaries. My dissertation work is a part of the ethnographic and participatory design research project, Learning in the Food Movement (LFM), that seeks to study learning within the rich contexts of the movement for food justice. The work presented in my dissertation comes from our collaboration with a local non-profit, Impact,[1] an organization that is promoting social change by leveraging residents' cultural and historical practices. Impact aims to establish community food systems, empower residents, and develop economic opportunities. Specifically, my dissertation focuses on our collaboration with *promotoras*, community leaders who are striving to increase food access and social justice in their neighborhood

Impact uses a promotora model to leverage the histories and repertoires of practice of community members, promoting diversity as an integral component of supporting a resilient ecology (Gutiérrez & Jurow, 2014). Promotoras de salud is a community health worker model initially developed in Latin America to connect communities with inadequate access to health care to appropriate resources (Rhodes, Foley, Zometa, & Bloom, 2007). The approach, like community health worker models across the world was developed to build on the shared cultural traditions, linguistic

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[1] All proper names are pseudonyms.

practices, and value systems between community members with limited resources and lay health workers (Siraj, Shabham, Jalal, Zongrone, Afsana, 2010). Research on promotoras de salud indicates that although promotoras do not have advanced degrees, they can promote health care as successfully as professional health workers (Ayala, Vaz, Earp, Elder, Cherrington, 2010). Impact's promotora model is a unique use of promotoras because of how it leverages cultural-historical practices (Jurow & Teeters, 2015). Historically, social change that has led to meaningful and lasting reform has been built on the valued practices of community members (Jason, 2013). Studying the promotoras' role in the local movement for food justice is a robust context to seek to understand how changing forms of participation can become consequential and how this can move beyond the boundaries of the neighborhood to inform diverse ways of conceptualizing valued practices.

Three Articles

The focus of my dissertation is on better understanding the how the promotoras' work in South Elm is generating equity-oriented social change. The articles that constitute my dissertation are:

1. Relationships *de Confianza* and the Organization of Collective Social Action

2. Developing Social Alongside Technical Infrastructure: A Case Study Applying ICTD Tenets to Marginalized Communities in the United States

3. The Challenge and Promise of Community Co-design

The article, *Relationships de Confianza and the Organization of Collective Social Action*, discusses how the promotoras' relationships *de confianza*, of trust and respect, have

contributed to social change in the community. This article argues that attention to the relational resources employed to generate social change are center to the processes of promoting social equity. The article, *Developing Social Alongside Technical Infrastructure: A Case Study Applying ICTD Tenets to Marginalized Communities in the United States,* demonstrates the process of developing social infrastructure alongside technical infrastructure to generate technology that enhances participants' sense of agency. It argues (a) that ethnographic and participatory processes are integral to developing equitable technology, and (b) that the United States is a valuable context to consider information communication technologies for development (ICTD) projects. The third article, *The Challenge and Promise of Community Co-design,* discusses the process of developing equitable and empowering co-design approaches. This article presents the process of creating a technology tool to represent community leaders' social justice activism. These three articles are in dialogic relationship with each other; the methods and findings of each piece are informed by the others.

Relationships *de Confianza* and the Organization of Collective Social Action

Driving with Verónica [2] *in the neighborhood to check on gardens,*

we stop to visit with a family. The mother invites us inside to hear about

the family's recent trip to Mexico. The abuela (grandmother) serves cold

beverages while the mother presents Verónica with a bracelet made out of

seeds, a necklace fashioned into a flower, and traditional candies from

Mexico. The gifts are tokens of gratitude for Verónica's work and

friendship with the family. Verónica has been the family's promotora for 3

years. Working with the non-profit, Impact, Verónica has designed,

tended, and harvested a backyard vegetable garden with this family (and

many others like them) so that they can grow their own fresh vegetables.

The neighborhood has only one grocery store that is not within a 2 mile

walk.

The gifts are also reminders of Mexico, from where both the family

and Verónica have immigrated. Sitting in the family's living room for

nearly 30 minutes, Verónica talks with Mother and Abuela about their

vacation. They tell stories about their trip to the historical city of

Guanajuato, the surrounding countryside, and the beach in Manzanillo.

Abuela explains that the candies that she gave Verónica, which were in

the shape of mummies, were from the city of Guanajuato, where naturally

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[2] All proper nouns are pseudoynms

mummified bodies are displayed in a local museum and have become one of the city's tourist attractions.

We learn that while the family was in Mexico, their adult son did not water the garden enough, which explains poor quality cucumbers. We also hear tales of mistreatment at the border; the family swears never to drive to Mexico again, vowing to fly in the future. Abuela looks at Verónica with downcast eyes, telling her that the chile seeds that they had brought back with the intention of sharing with their neighbors and growing in their own yard had been thrown out by the border patrol. Abuela then mentions how she cut her foot on the beach in Mexico and that it was still bothering her. In quick response, Verónica directed her to the local butcher who had the necessary antibiotic, from Mexico, that would help the wound heal properly.

When we drive back to the Impact office, we pass other homes with gardens that Verónica has helped grow. Each house occasions a story about the people within - a child who committed suicide, a wife who suffered from domestic abuse and needed support. This is a community that Verónica knows well. Just two months before this meeting, these accumulated stories inspired Verónica and her colleagues at Impact to apply for a community health worker grant. With this grant, promotoras would be able to provide residents with greater awareness of and access

to physical and mental health care services.

Verónica is a *promotora* (promoter of health) who was hired and trained by the non-profit organization *Impact* to help families in the neighborhood gain greater access to nutritious food and resources related to health and nutrition. Impact's mission is to organize community based change, generate local food systems, and develop self-sufficient economies. Impact originally focused its efforts in South Elm because the neighborhood, located on the outskirts of the city's expanding downtown, was designated by the U.S. Department of Agriculture as a *food desert*. This contentious term is used by the government to identify a low-income neighborhood that has limited access to fresh, healthy, and affordable food. In 9 years of working in South Elm, Impact's view of the community has become more complex as they have expanded their understanding of other pressing community needs, capacities, and desires. They have transitioned their focus from an organization oriented towards promoting food justice to one that is centered more holistically around community sustainability and wellness. Promotoras have played a central role in this work. The relationships that they have developed with families in the neighborhood have supported the organization of equitable and sustainable social change grounded in the experiences and visions of the community.

Impact and their team of promotoras have designed and helped grow over 400 backyard gardens throughout the South Elm neighborhood. These gardens are but one piece of a broader, national movement for increased access to food and other basic resources for communities like South Elm that have been actively marginalized from conversations about the future of their neighborhood through historical and contemporary processes of racialization and exclusionary

practices based on language and educational hierarchies. This lived history significantly affects how people in the community and outside of it can work together to create more equitable futures. This is the focus of Impact's work and it is also the focus of our research.

The robust gardens that thrive throughout South Elm are a highly visible tribute to the promotoras' and the community members' work and commitment to cultivating a different future for the neighborhood. Though the gardens are a highly visible physical transformation, we argue that their less visible work of cultivating *confianza* (Fitts & McClure, 2015)*, defined as mutual trust and respect, is the foundation for developing equitable and sustainable change in the community. The relationships that the promotoras create support the process of generating new opportunities and connections in the neighborhood. The promotoras are engaged in the community organizing work of sharing and listening to individual residents' experiences with the aim of creating collective spaces for those experiences to be more widely heard and addressed. This process of linking individual experiences into powerful, action-oriented networks can be understood as scale-making, the process of extending ideas, practices, and technologies across time and physical spaces and thereby making social action consequential (Jurow & Shea, 2015). This process of privileging the perspectives of those who are not as commonly represented within food policy and urban development discourses orients the movement for food justice towards greater equity (Guthman, 2008; Slocum, 2006; White, 2000).

In this article, we look at the ways in which relationships were dialogically created through the promotoras' work in the neighborhood and how these relationships mediated powerful networks that extended the notion of confianza beyond those directly impacted,

inspiring new, and consequential forms of social organization that promote a stronger, healthier, and more just community. The analysis first demonstrates how relationships de confianza have laid a foundation by which to (a) mediate social networks to organize for change and (b) promote solidarity through the identification of and response to urgent needs in the community, creating a more holistic model of community sustainability. Through the analysis, we argue that drawing attention to relational resources foregrounds social actors and their ingenuity, promoting equity in social movements.

Relationships de Confianza as Resources for Social Action

Locally based social movements are important sites for studying generative social action. On-the-ground analyses of community organizing offer a way to study how "...individuals and communities gain the capacity to act" and develop alternatives to the status quo (Voss, & Williams, 2012, p. 8). One way in which this has been accomplished is through the relationships that develop between community organizers and individuals that can facilitate a sense of trust, shared values, and belonging in the movement (Brodkin, 2007). As Christens (2010, p. 887) writes, "(p)ractitioners and observers of the field of community organizing have noted that the development of relationships is central to the process of building grassroots power to pursue community change (Warren, 1998; Wood, 1997)." These relationships do not, by themselves, lead to community change; however, they are a valuable space for imagining new possibilities for social organization and interaction. It is important to keep in mind that they are part of a network of practices that include ideational and material resources from motivating framings of problems (Benford & Snow, 2000) to funding for initiatives that need to be coordinated by

participants at multiple levels in order to create sustainable change efforts (Jurow & Shea, 2015).

Without attention to relational resources, however, we run the risk of leaving people and their

ingenuity out of movements for social change.

Studying the interactions that activists and community members have with one another is

critical for understanding how organizing is accomplished. It is in the conversations and actions

in which participants engage with one another that people can gain a sense of how their

individual experiences are connected to collective experiences (Trinidad Galván, 2005). As

Erickson (2001) emphasizes, conversations are embedded within and can have effects on broader

social, spatial, and historical contexts. Dinner table conversations across the U.S. about gas

prices in the 1970s could, Erickson suggested, have led to a collective sense of discontent with

the economy and the subsequent election of Ronald Reagan in the 1980s. Analyses that can link

action across multiple scales of practice, for instance from relationships that develop in

conversations between residents to neighborhood transformation, are thus particularly relevant

for appreciating the effects of grassroots social movements (Bartlett & Vavrus, 2014).

A productive view on relationships as reaching beyond the interpersonal domain into the

realm of social action has been developed by scholars of activism in Latino communities. The

notion of confianza, which signifies a relationship of commitment, trust, and reliability, is rooted

in the history and circumstances of Latinos in the U.S.

> "Because Latinos had to succeed in schools, jobs, and other social institutions where
> rules of the dominant culture were sometimes murky and confusing, they had to rely on
> one another. Minorities often watched each other's backs and shared
> information...Economic survival and advancement required nurturing long-term support
> and trust" (Bordas, 2013).

While we do not want to essentialize the Latino experiences in the U.S., we do believe this perspective on cultural practices and values has some explanatory power (Gutierrez & Rogoff, 2003). Commitment in relationships de confianza, as suggested above through the emphasis on "economic survival and advancement" means more than just a sense of responsibility to one another, it also implies action to cement those connections.

When studying the everyday experiences of Latino immigrants in the U.S., the concept of confianza is particularly important to understanding how people living on the margins of society develop the agency and networks to effect social change. Without consistent access to more formal resources and networks, intimate relationships are crucial to the process of contextualizing individual experiences within a collective struggle of gender, family, and local politics (Trinidad Galván, 2005). Mutual relationships provide individuals with the opportunity to share their experiences and receive recognition and validation, which in turn supports people in developing the confidence to act (Dyrness, 2007). Confianza is an integral component of developing plans for action as well as expansive learning in diverse domains (Razfar, 2010).

In our research we investigate the relationships de confianza that facilitate the mobilization of communities. We focus on how relationships in community organizing in non-dominant communities can be used to promote greater equity. Our research focuses on the relational resources that form the foundation of social change in order to ground our understanding of social movements in the lived experiences of communities who are on the margins of society as a result of institutional constraints, such as legal documentation, language, formal education, and racism. Looking at relationships de confianza allows us to see how these

types of relationships, those that recognize and validate the "ingenuity of people living in tight circumstances" (McDermott, 2010) inspire action all the while grounding the movement in the desires, visions, and values of people who are not consistently represented in dominant structures. Focusing on relationships de confianza facilitates an understanding of how the social and cultural knowledge learned in intimate spaces can be the "location of radical openness and possibility" (hooks, 1990, p. 153) and can generate more equitable and sustainable social change.

Research Design

Site and Participants

Our long-term ethnographic and participatory research study of learning in the food movement has been conducted with Impact, a local non-profit founded by two white men with a vision for sustainable community change. Impact is located in the South Elm community, which is home to a significant immigrant population, 80.7% of whom are from Mexico (U.S. Census, 2014). Since many of the immigrants in the neighborhood do not have advanced degrees, legal documentation, and/or English fluency, they have had difficulty finding consistent employment. Moreover, since not all of the South Elm residents have legal documentation, their voices are not readily represented in politics and city decision-making.

Until recently, South Elm did not have light rail stations, ample bus stops, nor bike lanes. It also had not have sufficient options for fresh, affordable food. This insufficient infrastructure is compounded by its physical location with regards to the city center: South Elm community is sectioned off from the city's center by an interstate and transnational railroad tracks. These struggles, coupled with the rich resources and skills of the community, drew the two founders of

Impact to South Elm.

Impact's work is multi-pronged: they cultivate community food systems by putting in backyard gardens and a community garden; they generate economic opportunities through their work to build a community cooperative market and urban greenhouse; and they support community leaders by employing local residents as promotoras. The promotoras are integral to the success of Impact's multi-faceted efforts. They bring their "*charisma*" (as described by the promotoras), dedication to community building, and interest in gardening to their work in the community. The promotoras, who are predominantly female and from Mexico, also connect with the local residents based on their shared cultural background and linguistic base.

In our research, we have collaborated closely with the promotoras as well as the Impact directors, aiming to understand how this group was organizing community change and how we could best support this work. As the director of the organization said, they don't view us only as researchers, they also view us as "partners" committed to enhancing opportunities in South Elm (Email from executive director, 3/4/14). In this deeply collaborative work, our subject positions matter (Behar, 1993). As a first generation Indian-American, Jurow feels connected to the promotoras through a shared history of colonization and through membership in a non-dominant and "othered" racialized group in the U.S. The circumstances of Jurow's family's immigrant experiences were quite different from those of the promotoras. Her parents' arrival in the U.S. in the late 1960s was facilitated by the Immigration and Nationality Act of 1965, which aimed to attract highly educated and skilled workers into the country. This is in contrast to the contentious and hostile contemporary climate surrounding Mexican immigration into the U.S. The common

migration experience of needing to figure out how to navigate a new set of expectations, values, and institutions with help from other immigrants and their networks, however, provided a sense of solidarity between Jurow and the promotoras. Teeters has a deep history in the South Elm community. Her great grandparents, immigrants from Sweden, moved to the South Elm neighborhood in the 1940s. Her father grew up in a house (where her grandmother lived until 2008) two blocks from the Impact office. Raised in Denver, Teeters acquired proficiency in the Spanish language while she lived in central Mexico, where she taught high school history. Teeters' relationship with the South Elm community and her lived experiences in Mexico facilitate a shared understanding between her and the promotoras. Teeters has frequently served as a translator for the meetings. Her understanding of both the research and the local community has been key in not only translating language, but also in navigating cultural differences.

Data Collection and Approach to Research

  Data collection. Our approach to research has been informed by ethnography as well as methods of participatory design (Kirshner & Jefferson, 2015). As part of our ethnographic work, we have conducted participant observation focused on the promotoras' work in the neighborhood and the non-profit's work in the city, interviews with promotoras and Impact directors, focus groups with promotoras and community members, and completed artifact analysis of newspaper articles and social media covering the non-profit's work in the city. We have also organized and video-recorded collaborative design sessions with the promotoras to create new tools to improve their work practices. This collaborative work and the data sources we have collected have informed how we have come to understand how Impact and the promotoras have been

organizing for and enacting community change. We have used these information sources to support our collaborative design work. We have collaboratively developed interventions, such as professional development workshops aimed at better articulating the promotora model so as to replicate and refine it and the design of a tablet based application to streamline and improve promotoras' data collection.

Approach to research. In our collaboration with Impact and the promotoras, we have developed approaches that align with the philosophy and enactment of the organization's work in the neighborhood. As we have learned through our research with the organization, their approach to leveraging the community's assets are central to their ability to generate local food and bring opportunities to the community. This aligns with our view of how to engage with non-dominant communities so as to organize for empowering and decolonizing practices (Bhattacharya, 2009; Paris & Winn, 2014). From working closely with Impact, we have developed our research strategies so as to complement and extend the organization's work in the neighborhood. For example, our work building a tablet-based application was based on their existing practice of data collection. The promotoras were collecting data with pen and paper, and then later typing it into a database. The introduction and design of a tablet based application did not generate a new practice, rather, it introduced a new tool into the activity system that offered the promotoras a new way of thinking about the content and value of their work.

Generating relationships of trust and respect is also central to Impact's approach to community work. To this end, our research approach has been similarly premised on conducting work grounded in trust and respect. Many of the data sources that have informed how we think

about organizing for social change have been collected in intimate spaces, such as in our homes and those of local residents and in the promotoras' cars on the way to gardens. We have engaged as participants, collaborators, and friends, frequently putting away our audio recorders so as to hear, and share, the more vulnerable stories that constitute our realities. Our regular meetings naturally flowed into our personal lives, and together, we have commiserated over the loss of family members, health challenges, and family concerns. We celebrated professional milestones, shared family experiences, and enjoyed holiday traditions. This process of mutual engagement served as a venue for the promotoras' stories to be articulated, heard, mirrored back, validated, challenged, and expanded. The development of trust, of confianza, between researchers and participants is an essential aspect of culturally appropriate research design (Foley & Valenzuela 2005). We have protected the personally revealing stories shared with us by keeping all data that were collected confidential, receiving permission for the data pieces that we do use, and soliciting feedback on our research findings.

Analytic Approach

We employed an *emic* approach to our research, privileging the themes that the promotoras identified as central to their practice. Our collaboration with Impact began when the co-founders invited us to study the promotora model. We reviewed the literature and researched local organizations using the promotora model to establish a base for understanding the history and current iterations of this model. As we conducted interviews, focus groups, and shadowed the promotoras (as they worked in gardens and visited residents' homes), they told us, "*Todo comienza con la amistad,*" (it all begins with friendship)*"* (Alejandra, Interview, 1/28/2013). In a

review of the fieldnotes, interview transcripts, audio recorded meetings, and artifacts produced

by the promotoras and Impact that we collected in our first six months of ethnographic research,

confianza was discussed and/or indexed repeatedly as a foundational aspect of what the

promotoras do and the success of Impact's work in the community. This pattern of talking about

"confianza," "amistad," and "reciprocity" indicated to us that this idea and the set of practices

that were linked to confianza were important aspects of being a promotora. As our research

progressed, and as the trust and vulnerability between us and the promotoras grew, the

promotoras moved from telling us about these relationships de confianza to showing us. When

we set up meetings with the promotoras, for instance, they would make sure to also plan time to

take us to visit a garden (75% of the meetings we had in a one-month period). Regardless of the

task at hand, the promotoras emphasized the importance of relationships, either through their

explanations or by taking us to meet the families with whom they worked. In this way, the

promotoras directed our focus towards relationships. We then revisited the literature to

understand how relationships have been conceptualized as part of social movements.

As we reviewed our interviews and fieldnotes to understand both the nature and role of

the relationships in the promotoras' community organizing work, we also looked for times that

their initiatives were not successful in that they were not sustained. In analyzing these instances,

we found that the relationships de confianza between participants and Impact had not been fully

established. Our analysis helped us see that these close connections, relationships de confianza,

developed over time and in conjunction with expertise and available resources, including

material, linguistic, cultural, and ideational. When one or more element is not fully developed,

the relationships can be more tenuous. For example, visions of a community gathering and celebration of the harvest in the neighborhood were not fully realized due to linguistic and cultural barriers between the Latino promotoras and community members, and non-Latino community members, such as the Somali Bantu community living in South Elm. Although the harvest event was meant to facilitate the emergence of relationships de confianza, these barriers made it difficult to organize an inclusive community event. Through a systematic search for and review of confirming and disconfirming examples of confianza in relationships, we found that confianza was an important dimension of the community organizing facilitated by the promotoras.

Study Limitations

The South Elm community is largely Latino. Impact and its promotoras primarily serve this population. Our analysis centers on the stories and experiences that the promotoras chose to share with us and these have been largely about the female, Mexican immigrants to the neighborhood. Our data collection and analysis has been primarily focused on the recent Mexican immigrant community. We have not focused on the experiences of Mexicans who have been living for a longer time in the neighborhood nor the non-Mexican immigrant groups that also live in the neighborhood. Since our research has focused on Impact, and since they have focused on the new immigrants from Mexico, we have as well. We think there is value in bringing forth the visions of this group as their views have not been consistently represented in the dominant discourses of food policy and urban development.

The Mediation of Equity-Oriented Action through Confianza

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"If you really want to make a change, go to someone's house and eat with them. The people who give you their food, give you their heart." adapted from Cesar Chavez, painted on the wall of Impact's South Elm Cooperative Market

The relationships de confianza that the promotoras have cultivated with residents in South Elm have generated spaces for meaningful and equitable social change by privileging the experiential knowledge of members of non-dominant communities (Solorzano & Delgado Bernal, 2001). In doing so, the local movement for food justice has taken shape in response to the needs and experiences of the community. Foregrounding the experiences of non-dominant communities validates diverse perspectives and visions, generating resistance to unjust social policies and inspiring action to organize for more just social futures (Calmore, 1992).

The co-founders of Impact were strategic in their intentions to use a promotora model as the basis for their approach to community development. They knew that for their mission to be equitably and sustainably implemented in the South Elm neighborhood, they would need to access and enhance the relational network within and beyond the local community. In our analysis, we demonstrate how the relationships de confianza have made the experiences and desires of the people living in South Elm more visible and consequential through linking them to broader networks of social action. These perspectives were used as the foundation by which to mobilize residents for collective action. We first discuss the nature of the Impact promotora model and the relationships de confianza. We then show how these relationships have served as the foundation by which to (a) mediate social networks to organize for change and (b) facilitate the identification of and response to urgent needs in the community.

Imagining New Possibilities for Self, Community, and Action

The co-founders hired the promotoras for their "strong communication skills, passion for working with the community, ability to develop close relationships" and then built on their interests in gardening by offering them official training in gardening techniques (Job description, 1/2016).

Confianza. The work of being an Impact promotora involves entering residents' homes, planning garden plots, rototilling yards, building garden beds, installing irrigation systems, planting seeds and tending growing plants, and harvesting produce. Through the course of establishing and maintaining the backyard gardens, the promotoras visit residents' homes weekly. Participating in the process of providing food for local families has allowed for the promotoras to identify themselves as contributors to the community:

> Ahora es más fácil hablar con la gente. Estar en contacto con la gente
> que me ha ayudado. Yendo a los jardines, trabajando juntos, me ha dado
> confianza. Cuando fui a las casas, yo no sabía la cantidad de que se plantó
> crecería, y todo lo hice. Había muchas verduras y frutas, y para ver la cantidad
> de crecimiento, y para sentir y ver el éxito fue muy inspirador, me hizo darme
> cuenta, sí, puedo ayudar a la gente, que pueden crecer. (Ana, workshop, 2/1/2013)

> Now it is easier to talk to the people. Being in contact with the people has helped
> me. Going to the gardens, working together, has given me confidence. Going to
> the houses, I did not know how much that was planted would grow, and it all did.
> There were many vegetables and fruits, and to see how much grew, and to feel
> and see the success was really inspiring, it made me realize, yes, I can help
> people, I can grow.

The notion that Ana shared of how being a promotora has expanded her sense of her abilities and made her feel like a greater part of the community was shared by other promotoras. María captured this sentiment by explaining how working as a promotora changed her sense of

possibility:

> Oooh, cambio bastante grande les comentaba yo el año pasado que yo pensaba como que mi vida era ya nada mas era trabajar, cuidarlo lo ninos, Como que no tenia opciones, de no habia posibilidades y cuando empezaría trabajar en Impact me di cuenta de que grande esta mundo y hay posibilidades y que se estaba disposición de todos que quieran. (María, Interview, 10/8/2012)

> Oooh, I changed significantly. I would tell you last year that I thought that my life was already nothing more than work, than taking care of my children, that I had no options, that I had no possibilities. And when I started to work with Impact I realized how big the world is, that there are possibilities and that I was at the disposition to do anything I wanted.

Through their work with Impact, and their emphasis on confianza, relationships, and empowerment, the promotoras discovered new ways of imagining oneself. As María explained, in their community work, the promotoras found the opportunity to explore one's potential in the world. Moving beyond work and domestic duties, the promotoras connected to a bigger vision that included the possibility of creating lasting change in how people nourish themselves and sustain their families.

Like the promotoras, the backyard garden participants have also acknowledged how participating in the Impact garden initiative was a source of possibility, pride, and connection to other residents. One backyard garden participant, Jorge, explained how his garden was a source of connection with other residents: "I wanted it (the fence around my new garden) to be short and with big gaps so that the neighbors could see what I was doing, see what was possible" (Impact Interview with Jorge, 7/20/2015). He continued to explain that he wanted his neighbors to feel comfortable entering his garden, and enjoying the fresh produce. In building a fence that contained the vegetables and invited his neighbors to share his gardening experience, Jorge made

the process of cultivating prolific produce right in the center of an urban neighborhood, the process of changing his own habits, visible and accessible to others. This transparency of learning is central to fostering connected, community-wide relationships.

Through interaction with the promotoras, other garden participants, and their neighbors, the local residents have found increased opportunities to share their experiences and visions and to access an extensive network of people and resources. As one of the promotoras explained, the work of installing gardens established a shared interest that opened conversations for more personal exchanges:

> Podemos ayudarles un paseo un poquito. Enseñandoles un poquito acerca de jardin. Oh, por ejemplo, tambien cuando ellos tienen a veces ganas de platicar y empiecen a contarnos su historia y por ejemplo, cuando traen muchos problemas ya con un poquito te hablen y como que les hacen sentir muy bien. (María, Interview, 1/28/13)

> We can help them a little. Teaching them a little around the garden. Oh, for example, also when they sometimes have a desire to talk and begin to tell their story and for example, when they bring many problems and with a little bit as they speak to you and they tell you how you make them feel good.

In South Elm, growing gardens and nourishing relationships have been a dialogic process. Engaging in the work of growing food, the basic element of human life, inspired people to feel connected to the soil, their surrounding place, and each other. As these connections strengthened and spread, so did the number of households engaged in this work.

The act of engaged listening, which was as Maria expressed it linked to activities of "teaching," "helping," and creating a space for sharing stories, has been an integral component to generating confianza. In the following, María explains how listening can foster a sense of camaraderie, of *convivencia* (communalism):

> Cuando me conoce a la gente, ellos confían en mí con sus problemas. A pesar de que no siempre puedo resolverlos - emocionalmente, sienten que les he ofrecido ayuda, los he consolado por escuchar. Cuando voy a las casas, y están llorando o triste, me han ayudado a ser más tranquilo. Yo puedo estar con ellos. (María, Interview, 10/8/2012)

> When I get to know the people, they trust me with their problems. Even though I can't always resolve them - emotionally, they feel that I have offered them help- I have comforted them by listening. When I go to (people's) houses, and they are crying or sad, I have helped them become calmer. I can be with them.

Although the problems facing community members are sometimes beyond the capacity of the promotoras to resolve, as María explains, the very act of listening, of being together, establishes a sense of calm, a sense of connection. Through sustained and responsive listening, the promotoras provide local residents with recognition and validation, supporting a sense of solidarity throughout the community. As Rosa explained to Impact's board, the time that they dedicate to each family extends beyond the hours spent tending the garden, "*se planea una visita de un hora, pero si la familia está triste, o la familia está llorando, o la familia tiene problemas*" (a visit of one hour is planned, but if the family is sad, crying or family, or the family has problems). While Rosa explained that the relational work is time-intensive, Verónica, interjected: *"o si la familia tiene fiesta"* (or if the family is having a party) (Promotoras' presentation at Board meeting, 1/20/2016). Rosa and Verónica laughed after sharing this explanation, suggesting that it might seem unusual to the board that whether the family is experiencing a personal challenge or throwing a party, as promotoras, their job is to be a part of these events, which have significance to residents beyond the event itself. With the promotoras, local residents gain access to the skills and resources that support them to grow food to feed their family. This collaborative work mediates the process of cultivating a sense of camaraderie that affirms residents' belonging

to the community and validates their unique experiences, all the while contextualizing these experiences within a broader system (Dyrness 2007). This sense of affirmation of the perspectives and experiences of those whose voices are not consistently heard and represented within more formal institutions can generate an expanded sense of agency and empowerment (Trinidad Galván 2006).

The notion of confianza, however, extends beyond this sense of affirmation to include a deep commitment to that other person and their family. The commitment that is characteristic of these relationships was evidenced by the collective care of a community member's family when the mother of the family, Rosa, was deported. Rosa's employment supported the family, which included her children as well as her parents. Upon her deportation, the promotoras organized to raise money to support the family. They had developed a relationship with the family through their work in the gardens. Yet, their commitment to developing mutual relationships throughout the community meant that their mission as community organizers extended beyond their work in the garden to encompass the personal well-being of the family. It is thus that they organized the community to support this family in the absence of the mother. Through this intensely intimate and committed work, the promotoras tend gardens, supporting families in providing for their own daily sustenance. In doing so, they also cultivate a sense of community and collective agency.

Building Social Networks to Organize for Change: Developing Local Food Systems

In 2009, Impact started their backyard garden program with 7 gardens**.** The co-founders of Impact drew on their university training, service work in Central America, and local social

networks to launch the organization. Upon securing grant funding, support from the city, and other local organizations in the neighborhood for their initial work, they worked with and trained the promotoras to begin the work of developing backyard food systems. Impact provided residents with soil, compost, fertilizer, seeds, seedlings, irrigation systems, timers, and food scales. Although the resources the Impact provided the families were significant, it was the promotoras' abilities to cultivate relationships de confianza, in addition to prolific gardens, that helped the work of the promotoras grow rapidly. Within 6 years, Impact's gardens have grown from 7 to over 400. The organization now has a waitlist of additional families who want their services.

Given the rapid increase in the number of backyard gardens, Impact has experienced difficulty keeping up with the demand. The organization has struggled to hire promotoras who have the skills and dispositions for doing the work well. Some applicants for the position have explained that they desire to build relationships with community members, but they do not want to engage in the work of gardening. Others who have the skills of being bilingual in Spanish and English, which is highly valued in a neighborhood as diverse as South Elm, do not want to apply for the position because they can get higher paying jobs because of their bilingualism in an office setting. The promotoras who have been successful with Impact demonstrate a high degree of perseverance to this physically, emotionally, and time-intensive work.

The promotoras who have worked with Impact for multiple years have gained trust in the community through their patience and commitment. The process of establishing new relationships with residents can be challenging at times, requiring dedication. The promotoras

returned to homes when no one answered the door, and made phone calls to follow-up on visits. When they made entry into a home, they needed to establish themselves as trustworthy by patiently listening and connecting families to each other and to resources. They expanded their influence by encouraging garden participants to knock on the doors of their neighbors to share their produce. They established themselves as responsive by documenting the needs and desires of the garden participants. And then, in collaboration with the Impact office staff, they did their best to design a response. For example, when residents expressed an interest in learning how to use some of the new vegetables that they were growing, such as eggplant, they planned and ran community cooking classes, as well as canning and health and nutrition classes at Impact. In these ways, the Impact promotoras, in collaboration with the non-profit co-founders and staff, have instigated community-wide interest in both local food and the local community: the landscape has been overtaken by backyard gardens, community members gather to take nutrition, cooking, and exercise classes, and neighbors meet to share their produce with each other.

The success of the backyard garden initiative encouraged the community, including Impact and its staff and promotoras, to consider how to further develop the local economy and expand the local food initiative. Impact brought the community together to design a multi-stakeholder food hub where consumers, producers, and employees could all own part of the market. The *South Elm Food Cooperative* received a grant from the U.S. Department of Agriculture to support the purchase of a 74,000 square foot neighborhood "junkyard" (as referred to by the community) that is now being turned into a full-service grocery store that will be led and run by community members. Impact estimates that the cooperative market will "create 30

local jobs for the community; it will generate $2.5 million in annual revenue to sustain operations; it will enable 20,000 residents to increase access to affordable and healthy foods; and it will provide 1,000+ co-op members ownership of the food hub" (Impact website, 2/11/2016). Impact's plan and initial steps to transform this food desert into a "food oasis" and its vision for community change has been nationally recognized, via the federal grant and a national TEDx talk. Although the executive director presented the TEDx talk, the organization acknowledges that "much of Impact's current success is due to the dedication and passion of these promotoras" (Impact website, 2016).

The promotoras ability to "weave together a community of support and security" has been integral to transforming this food desert into a thriving community food system (Impact website, 2016). As evidenced in the establishment of a community owned cooperative market, relationships de confianza extend far beyond the moment-to-moment interactions that give way to respect, trust, and individual affirmation. They have generated a sense of solidarity and empowerment that have resulted in the organization of the community around the generation of new and valuable resources that promote the wellbeing and sustainability of the neighborhood. The promotoras carefully listened to and documented the experiences, needs, and visions of community members. With the Impact staff, they generated a responsive plan of action that acknowledged and leveraged the community's historical practices of subsistence farming and community care.

The Mexican immigrants in South Elm celebrate a deep history of agricultural self-sufficiency. Mesoamerica, the pre-colonial territory that is now Mexico, was a cradle for plant

domestication. The agricultural practices cultivated in this region, prior to colonization, promoted sustainable practices, such as planting corn, beans, and squash together so that the nutrients from the beans could replace the nitrogen in the soil that corn depletes. Through the Spanish acquisition of indigenous land, colonization rendered indigenous farm workers as laborers on Spanish owned haciendas and ranchos. The struggle for landownership for rural farmworkers in Mexico continued throughout the 19th and 20th centuries, and included struggles for livable working conditions. The battle for basic human rights in agricultural work migrated from Mexico to the United States. It is thus that Impact's work in supporting urban, Mexican immigrants with the tools to reclaim their historical practices in this new setting does work far beyond the dinner table. It sets forth a healing process of decolonization.

From Listening to Action: Promoting Solidarity to Create a More Holistic Model of Community Sustainability

As a result of working regularly in homes across the neighborhood, the promotoras have accumulated hundreds of stories. In these stories, they heard a call to action, inspiring them to bring people and resources together to improve the well-being of the community. This responsive organizing work represents the intense social relational work of community building. In the process of documenting their work listening and responding to the community's needs the promotoras identified recurring patterns. One theme that emerged from the promotoras' weekly garden visits with residents was that of domestic violence. We share excerpts of the promotoras work to decrease incidents of domestic violence in South Elm to illustrate how their relational work in the gardens have mediated the process of identifying and responding to urgent community needs. Their work developing resources and support groups exemplifies how the

relational elements of community organizing can inspire new and valuable forms of social organization that promote holistic models of community sustainability.

Identifying pressing community concerns. The promotoras regularly shared the residents' *testimonios* involving domestic violence with us, both to convey the expansiveness of their work and to solicit ideas to support the residents. They confided these stories with us before and after meetings, via email, on the phone, and most frequently, while driving together through the neighborhood. As we would pass by homes, the promotoras would be reminded of what they knew of the household behind its close doors. Such was the case on a summer day when we were driving with Verónica to a garden. She shared that she had just come from the home of a woman being emotionally and physically abused. She told us the situation as tears welled in her eyes and she questioned how to best support this woman. She continued by explaining the varying types of abuse she was witnessing, lamenting that some of these stories were occurring within her own professional circle. For example, Jocelyn's husband executed great control over her life and was unhappy that she was employed as a promotora. He did not support her working outside of the home for fear that it would distract from her domestic duties and put her in contact with too many unknown individuals.

When we arrived at the home to which we were driving, that of Maricel Torres, two other promotoras were already there, engaged in the strenuous work of clearing the garden plot and rototilling the land. In conversation with the promotoras as they took a break for some water, Rosa remarked to us that the resident looked Asian, but had a Hispanic first and surname, suggesting that she "must" have married a Mexican. This explanation could have made sense

given the large number of Mexicans in the neighborhood, however, it did not explain why the

resident's first name also sounded Hispanic. As we were sitting in Maricel's backyard, Jurow

asked directly about her ethnic background. With enthusiasm, Maricel shared that she is Filipino

and that the Philippines and Mexico shared a history of colonization by Spain. This, she noted

happily, was why her name sounded "Mexican."

As the promotoras continued the strenuous work of rototilling the land in preparation for

a garden, Maricel returned to her kitchen where she was cooking arroz caldo, which, as she

explained, is a traditional Filipino soup of rice and chicken, flavored with ginger. Shortly

thereafter, Maricel set the outdoor table with cold refreshments and the freshly cooked stew.

At Maricel's insistence, the promotoras paused from their work to enjoy the homemade meal.

As we sat together, Maricel told us of her family and her children. She had been married and

divorced twice. She recounted the lessons learned from her marriages, and after sharing a story

of mistreatment from her first husband, she asserted to us that 'if your husband doesn't treat you

well, just throw him out.' Verónica referenced our earlier conversation in the car, sharing that

there are some women in the community that could use that advice. Over the course of the meal,

the women shared stories of their experiences with immigration, marriage, and children, at times

relating their own experiences to those of other women in the community.

In this scene, the process of gardening and sharing food united the women and

encouraged them to freely share the personal and vulnerable stories of their lives. Moreover,

Maricel's shared history with the promotoras of Spanish colonization helped to create a sense of

co-membership among the women, encouraging an unguarded sharing of information. These

types of exchanges allowed for the promotoras to understand the real and lived struggles of local residents and encouraged a collective analysis resulting in the location of individual struggles within larger struggles of gender, immigration, and social position. This sharing of information across households generated a sense of solidarity amongst South Elm residents.

Responding to community concerns. "*La violencia domestica impacta mucho la comunidad y es parte de los problemas de la vida diaria"* (Domestic violence significantly impacts the community and is part of the problems of the daily life) (María, Board Presentation, 1/20/2016). Inspired to do something to support the women in the community, Verónica and another promotora, María, decided to apply for their first grant. Drawing on the experiences and expertise of individuals in their network, such as a local translator and Impact board member and our research team, they solicited funds from a city foundation to apply for resources to support the local community members. Upon getting the grant, the promotoras set forth in surveying the local need as well as the available resources. They expanded their network and knowledge base by attending local trainings for community health workers. These trainings helped prepare them to connect local residents with the appropriate care and expertise. They developed and distributed a resource handbook and spoke at local gatherings.

In the process of doing this awareness work, the promotoras heard the women asking not only for resources with which to connect, but also a space for peer support. Subsequently, they organized a support group and informal course, held in the local elementary school. They identified a curriculum that addressed both interventions focused on and the prevention of domestic violence. They met once a month as a whole group at the school, sharing experiences,

providing each other with guidance, support, and convivencia (communalism) (Trinidad Galván, 2005). María explained that often victims of domestic violence do not take action "*no se hable a veces por miedo y a veces porque les desconoce*" (they don't talk about it sometimes out fear and sometimes because they don't know where to turn) (Presentation to Impact Board, 1/20/16). She continued by stating that what they can do for the community members is to provide a sense of solidarity and support, encouraging courage and strength: "*les hacemos saber que estamos ahí, que no están solos*" (we let them know that we are there, that they are not alone) (Presentation to Impact Board, 1/20/16). After the course in the school, they continued meeting in the privacy of their own homes.

After 5 months of meeting together, Verónica shared triumphantly, yet with tears in her eyes, that they had just won their first court case. She spoke in the plural "*nosotros*," as opposed to the third person, "*ella,*" as she told us about the promotoras' experience with a local woman who had suffered abuse from her husband. The woman's story slowly came out through the course of the living room gatherings, and in time and with the support of the other women, she made the decision to take action against her husband. Verónica shared that the woman chose to file charges against her husband, and on the day of the court hearing, the promotoras and some other local women filled the benches on her side of the courtroom, "*dándole confianza para compartir su cuento*" (giving her confidence to share her story in the courtroom) (Verónica, 11/13/2015). She won her case, getting a restraining order against her husband. One of the promotoras offered the woman a room in her house, as she saved money for her own place. This example shows how the work of supporting local women in their effort to establish healthier and

safer relationships resulted in networking into the legal system, a hyper-institutionalized network of power. This scale-making was a result of the relational work of the promotoras to establish and extend notions of confianza.

The promotoras' work in domestic violence illustrates how the individual stories that they were hearing while entering homes to tend the backyard gardens were accumulated throughout the neighborhood. Through the process of establishing close and confidential relationships they were able to share their experiences and those of others. As seen in Lupita's backyard, the activity of gardening work brought together women from different backgrounds. The promotoras and the community member exchanged gardening expertise and food, engaging in a process of mutual storytelling. Sharing one's own stories encouraged others to share theirs, and in doing so, the individual narratives become contextualized, creating a collective narrative. In this narrative the promotoras heard a call to action. They are now in the process of submitting another grant to support their continued work in domestic violence intervention and prevention. In this grant, they propose to continue the awareness work through the distribution of materials and the support of community members by holding support groups and intervention and prevention courses. They also plan to increase their work with the court system, supporting community members in seeking legal protection. Through their relational work in the backyard gardens, the promotoras recognized that their work promoting healthier communities had to also include the social and emotional health of the South Elm residents. They created a sense of solidarity amongst local residents, empowering them to access institutional resources, such as legal services, and to demand for their personal rights (Delgado Bernal, Elenes, Godinez, & Villenas, 2006).

Although activities such as directing residents to medical resources, as seen in the opening vignette, and providing assistance to fight domestic violence, are not in the official promotora job description, these activities represent the intense social relational work of community building. This, at times, nearly-invisible work, is not only about identifying and responding to community needs, but is the work that actually builds the relational networks by which community-based change can spread (Jurow, Teeters, Shea, & Van Steenis, 2015). By responding to the diverse needs of the community, the promotoras are supporting residents in enhancing their own agency to advocate for themselves, their community, and their collective visions for a healthier, more just future. This scale-making work extends the residents' perspectives and experiences into powerful networks of people and resources.

From Confianza to Action: New Forms of Social Organization

The relationships de confianza have resulted in an increased sense of solidarity and agency in the South Elm community, inspiring new forms of social organization to address pressing community issues. Through their work in the community, the promotoras have explored new possibilities for their own lives that extend beyond their domestic duties and allow for them to recognize their own potential to generate community-based change. The promotoras have increased their communication and gardening skills via their work with Impact and the South Elm community. Through the work of cultivating local food, individual households have become more connected to their neighbors, and together, the community is engaged in imagining new possibilities for their future. The South Elm residents have recognized their role in increasing material resources in the neighborhood via Impact. In an effort to develop local food systems,

and thus local economic opportunities, the community, with Impact, has organized for educational classes and a cooperative market. Through this work, the residents have come to see themselves as part of a "community" as opposed to individuals who are residing in the same geographic location. To this end, they are supporting each other to generate healthier dinner tables and healthier personal lives, engaging in work such as domestic violence advocacy and prevention. These new forms of social organization have been mediated through the networks and connections made possible by relationships de confianza.

Discussion

Social movements can generate durable cultural innovations and new forms of social organization (Rao, Morill & Zald, 2000). They can offer alternatives to the politics of the state. There is also a risk, however, that they can reproduce the socially and historically entrenched politics of the state. In order to generate new forms of social organization that open up opportunities for participation for people who belong to groups that have been historically non-dominant, we have to value the social relations that make change possible. The human relationships developed in the work of mobilizing people for social action are crucial to building enduring networks of learning. Social relations, and the contexts in which they exist and change, facilitate the flow of ideas in ways that make prior forms of participation consequential and make subsequent forms of participation possible (Nespor 2008). In our research, we have aimed to understand the connection between social relations and the forms of social change that they inspire so as to better understand how to organize for transformation that is equity-oriented .

Creating spaces within social movements for individuals to share their own experiences

grounds the movement for food justice in the lived experiences of individuals who are contending ingeniously with legacies of exclusion due to processes of colonization and discrimination that we are all trying to un-learn. By bringing attention to the face-to-face interactions that help shape social movements, we foreground the experiences of those most directly affected by the injustices being addressed. Privileging the lived experiences of a new immigrant population that is largely undocumented allows for the social movement to be directed and shaped by the visions and desires of those who do not have access to more formal outlets. Acknowledging the change inspired by relationships de confianza brings awareness to the valuable and tireless, yet often invisible, work to bring about social change that is happening in intimate spaces. In our work, we have sought to extend the notion of confianza beyond the direct impact it has on those engaged in these relationships to show how the relational elements of community organizing inspiring new forms of social organization. Framing relationships de confianza as a strategy orients people towards solidarity and collective work (Razfar, 2010). Further, drawing attention to who, how, and where change is inspired mitigates the risk that unheard voices will be excluded through the process of attributing change to top level processes and more visible and institutionally recognized perspectives.

In studying the relational elements of social change, it is important that we bear in mind the institutional and structural forces that threaten the sustainability of community-based change. In South Elm, the community food system and domestic violence prevention program have been inspired by the pressing needs that have been articulated via trusting relationships. This change has been made possible through the promotoras' and Impact's organization of networks of

people, ideas, and material resources. In one sense, this system of organization, one grounded in

and owned by the community, works to ensure the sustainability of these programs. Yet, in

another sense, these appealing programs, serving the people that brought voice to their needs, are

threatened by processes of city development. The work of Impact and the promotoras has made

South Elm a more appealing community, with local food, local industry, and a tight network of

community support. In a city that is rapidly expanding due to economic success and desirability

of lifestyle, there is an increasingly present risk that this neighborhood, which is home to mostly

low-paid workers, will start drawing populations who can afford higher rents and who are

attracted to the food system, sense of community, and cultural diversity of South Elm. Although

community change should be accessible to everyone, it also is important that the process does

not push out those who inspired the new systems so as to improve their own lives. Change

happens in networks of people and resources. In considering the social change in South Elm, it is

important that community members and non-profit leadership continue to coordinate with the

city's people and institutional resources to ensure that the programs generated in this community

will continue to be available to those that built them.

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Developing Social Alongside Technical Infrastructure: A Case Study Applying ICTD Tenets to Marginalized Communities in the United States

Information and communication technology has widely been lauded as a "key step in reducing poverty and improving the lives of marginalized people" (Oppenneer, 2009). New information and communication technologies (ICTs) have been positioned as an integral part of development (e.g., Friedman, 2006; Greenberg, 2005; Roy, 2005). Although research in ICT has extensively developed tenets for information communication technologies for development (ICTD), there has been little research that has applied these principles within the national context of the United States. This article uses a case study developed from a longitudinal design and ethnographic research study conducted with a marginalized community in an urban city in the Rocky Mountain West to illustrate how ICTD principles can help empower people to improve their own communities.

This research has been oriented around the process of organizing opportunities for enhancing professional practices and promoting equity with a group of resident-activists seeking social justice for their historically marginalized community, South Elm.[3] South Elm's affordable rental market and close proximity to the city's downtown has historically attracted a significant immigrant population. 2014 Census data reports that 80.7% of the population are Mexican immigrants. Although currently public officials and local non-profits are directing financial and

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[3] All proper names are pseudonyms

intellectual resources into developing the community, historically it has been under-resourced, making it challenging to develop competitive schools, neighborhood parks, bike lanes, and community resource centers. The rates of formal education and stable employment are low while the rates of unemployment, drug abuse, and poverty are high. Additionally, there are limited grocery stores, classifying the neighborhood as a food desert, meaning that there is limited access fresh, affordable food. As part of the effort to provide improved infrastructure to South Elm, a local non-profit, Impact, is working to improve the residents' access to healthy, affordable food. Impact, established in 2007, has developed a community-based agriculture program, a community-supported agriculture-buying club, and a resident owned co-operative market.

Impact's mission is to support community leaders, generate local food systems, and cultivate self-sufficient economies. A key component of Impact's approach is their *promotora* model. The model was developed to leverage the shared cultural traditions, linguistic practices, and value systems between community members and the promotoras (Siraj, Shabham, Jalal, Zongrone, & Afsana, 2010). Impact's promotoras support community members in designing, installing, tending, and harvesting their own backyard vegetable gardens. In 2015, Impact's backyard gardens produced more than 54,400 pounds of fruits and vegetables. The neighborhood now has 400 gardens and a waitlist with 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.

In addition to this highly visible work in the neighborhood, the promotoras also serve, unofficially, as advocates for residents. Through the process of working across hundreds of

backyard gardens, the promotoras have learned about the challenges of the neighborhood's residents: access to health care, education, legal services, and concerns with addressing and preventing violence against women. The promotoras heard these challenges as a call to action and began organizing as advocates, connecting community members to resources and writing grants to further support their work.

The intensive work of maintaining thriving gardens and the extensive work of community advocacy had not been fully documented as part of Impact's data collection efforts prior to the initiation of the research described below. This has made it difficult to specify programming needs, to report on the effectiveness of the model, and to understand areas for growth. The promotoras expressed desires to enhance their professional abilities as gardeners, as non-profit employees, and as community advocates. In order to secure funding for professional development resources and to know which skills to best target, there was a need to more fully document their practices and streamline data collection.

The aim of our research team has been to support the non-profit in developing strategies to enhance learning and professional practices so as to support their work in the community. This article focuses on one of our co-designed interventions: a technology application that allowed the promotoras to collect systematic data. The case study presented in this paper shares the process of taking on the design challenge of surfacing the varied dimensions of the promotoras' work. It examines both the process of co-design as well as the use of the designed product as interventions intended to enhance the promotoras' capacity to inform professional practices. The case study is organized to answer the question: how does the co-design and introduction of a new

technology- the *Promotora* App- increase community members' agency to transform the opportunities for themselves and their community?

Literature Review

Beyond Access and Towards Equity

In an era where technological access is seen as a fundamental freedom and an imperative to development (e.g. BBC, 2010; Oppenneer, 2009; Sachs, 2005), there is a need to push beyond questions of access to consider questions of equity. Equitable technology development entails developing tools that reflect the values and knowledges of diverse people and open up new and valued opportunities for users. Although technology has the potential to provide access to education, healthcare, financial tools, and improve existing practices, it can also serve to reinforce existing inequalities (Kliene, 2012). As Tomayo (2010) argues, "technology- no matter how well designed- is only a *magnifier of human intent and capacity.* It is not a substitute" (italics in original, p. 15). Focusing solely on access to technology risks deflecting attention from the underlying economic and social structures of inequity. There is therefore a need to further develop strategies of technology development that foreground equity and attend to the social infrastructure in addition to the technical infrastructure. Paying attention to equity requires examining opportunities for individuals and groups to advance while also creating infrastructure for the reorganization of social systems. By attending to the social infrastructure alongside building the technological infrastructure, we can move beyond conversations that focus exclusively on the digital divide, developing strategies that appreciate local capacities, social

networks, and cultural repertoires of non-dominant groups as resources for developing tools that expand opportunities.

Strategies for Developing Sustainable Solutions

For technology solutions to thrive, they have to account for the user's ecosystem as well as be supported by human networks and knowledge infrastructures. For example, Digital Green was designed to leverage, extend, and enhance the skills of local community members. Digital Green does this through (a) a participatory process for content production; (b) a locally generated video database of videos on agricultural practices; (c) human mediated instruction for dissemination and training; and, (d) structured sequencing to initiate new communities into Digital Green's community of practice (Gandhia, Veeraraghavan, Toyama, & Ramprasad, 2007). Similarly, Groupe Speciale Mobile Association's (GSMA) Mobile for Development's agricultural program, mAgri, works with mobile operators and local communities to enhance the capacity of smallholder farmers by improving access to information, financial services and supply chain solutions (mAgri, 2016). With programs in India, Kenya, Tanzania, and Mali, mAgri employs user-centered design to understand the ecosystem of the users, allowing for the product designers to better meet the needs, challenges, constraints, and desires of the users. In Tanzania, for example, the mobile service, Tigo Kilimo, provides agronomic information on local crops, market price tips, and weather forecasts. Users of Tigo Kilimo service are 30% more likely to be growing new crops and 39% more likely to report increased income than those who do not use the service (Palmer & Pshenichnaya, 2015). Digital Green and mAgri are two examples of technologies that were developed alongside human abilities and have effectively

served as tools that 'magnify' human capabilities (Tomayo, 2010). Their success is due to their ability to both leverage and enhance communities' skills, desires, and networks.

The Choice Framework provides a promising framework to analyze and evaluate the effectiveness of technological tools and interventions, such as Digital Green and mAgri. Drawing upon Sen's (1999) Capability Approach, Alsop and Heinsohn's (2005) work on operationalising Sen's theories, Duncomb's (2006) work to apply the Sustainable Livelihoods Framework to ICTD, and in-depth research with microentrepreneurs' use of ICTs in Chile, the Choice Framework was developed to holistically evaluate technology for development. The Choice Framework departs from traditional models of development in that (a) it values holistic measures—including measures of well-being, as defined by individuals—as opposed to econocentric measures, (b) it is systemic as opposed to linear, (c) it is user-centered as opposed to top-down, and (d) it is choice-led as opposed to supply-led. In short, it allows people to identify the practices they most value, and then leverages those as the foundation for development. This framework encourages the assessment of social structures, agency, and dimensions of choice, or what Alsop and Heinsohn (2005) refer to as degrees of empowerment. This holistic approach extends far beyond limited notions of access when evaluating the outcomes of ICTD, allowing for users to determine the ways in which they envision using technology to expand their own opportunities.

In this article, I draw on the work of user-centered ICTD design and the Choice Framework to analyze the process of developing ICTs within a marginalized community in the United States. I argue that in order to develop social and technological infrastructures aimed at

expanding opportunities for marginalized communities, we need collaborative design methods that incorporate diverse forms of knowledge and expertise and that allow for expanded user agency. The success of technological interventions should not be measured only by increased access nor by financial growth, but rather by increased agency to transform one's opportunities and the opportunities of one's community (Haapasaari, Engeström, & Kerosuo, 2014; Kleine, 2009). Developing technological solutions *with* community members, as opposed to *for* community members allows for technologists to understand local values, promoting equity and sustainability.

The case analysis presented in this article looks at how participatory design can enhance the social and technical infrastructure so as to provide users with an enhanced capacity to shape their own professional practices. To measure the enhanced ability to shape professional practices, the analysis presented in this article examines how technology has supported the users in representing their own practices and how it has increased their ability to transform their own work in the community.

Research Context and Design

Background of Collaboration and Initial Data Collection

The work of designing a technology application emerged from our long-term participatory research project organized around the design of participant structures, knowledge trajectories, and technical tools that could enhance Impact's approach to food justice and community advocacy (Jurow, Teeters, Shea, & van Steenis, 2015). Impact was founded in 2007,

and in 2009, it started its backyard garden program with 7 gardens and 3 promotoras. By 2016, they had grown to 12 promotoras and 400 backyard gardens.

Our partnership with Impact and the promotoras began in 2012 when we were invited into the organization to help Impact better articulate the promotora model and enhance their practices so that it could be replicated elsewhere. Our first year of partnership consisted of ethnographic work aimed at understanding the promotoras' professional practices, including their strengths, desires, and challenges. We interviewed promotoras and the Impact directors, reviewed historical and contemporary artifacts on the promotora model, and engaged in participant observations of the promotoras' and Impact's work in the community.

In collaboration with the promotoras and Impact directors, we then organized for a series of professional development workshops aimed at articulating and enhancing the promotoras' work with each other and community members. We documented the co-planning process, the workshop implementation, and post-workshop reflections with videotapes, fieldnotes, audio recordings, and artifact collection.

Our data collection and analysis proceeded simultaneously so that each could inform the other (Strauss, 1987). The analysis of our ethnographic data and workshop data drew attention to key themes, indicating an interest in further professional development, a desire for greater awareness of the layers of the promotoras' work, and a need for more streamlined data collection. To address these needs, 20 months after we began our collaboration with Impact, we commenced the process of co-designing a technology solution that could support the promotoras

in designing surveys that would allow them to collect, aggregate, and analyze data on what they

believed was most essential in regards to their work in the community.

Data Collection on ICT Development and Implementation

Our team documented our participatory design process of developing a software

application (called the "Promotora App") using audio and video recordings as well as fieldnotes.

We shadowed the promotoras in the field prior to observe their methods of data collection. We

did this prior to developing the Promotora App and throughout the multiple iterations to

developing and implementing the Promotora App. We conducted informal interviews focused on

the promotoras' experience using the Promotora App and on Impact's staff's and co-directors'

experience using its data.

It is important to note that in addition to interviews, observations, artifact analysis, and

documentation of our collaborative workshops and technology design sessions, much of the

material that has contributed to our analysis emerged from confidential conversations. We

learned about the promotoras' challenges and successes while driving to gardens, sharing meals,

attending community events, and shadowing the promotoras in the gardens. These informal

meetings provided invaluable access and allowed us to understand what mattered to the

participants and how changes could be imagined. This cultivation of trust allowed for

participants to share more contentious and politicized experiences and concerns. This trust and

rapport is integral to the design of equitable and sustainable interventions (Delgado-Gaitan 2005;

Foley & Valenzuela 2005; Villenas 2001). We have protected the personally revealing stories

shared with us by keeping all data that were collected confidential, receiving permission for the data pieces that we do use, and soliciting feedback on our research findings.

Analytic Approach

Throughout our collaboration, data collection, technology design, and analysis have been iteratively employed, so that each process could be informed by a systematic review of data, as related to the literature (Glaser & Strauss, 1967). The case study draws on the Choice Framework, focusing on structure, agency, and degrees of empowerment (Kleine, 2013). I reviewed data sources on the initial impetus for the design work. It focuses on the process of co-designing the Promotora App, analyzing participation and the execution of agency. It proceeds with an analysis of how the process of co-design and the use of the new tool affected the social organization of the promotoras' work, its representation within Impact, and its durability as a practice that could be reflected upon and revised over time.

In addition to the iterative nature of data collection and analysis, triangulation was used to ensure rigor (Denzin, 1989). The study triangulated methods, using diverse forms of data collection (e.g. interview, participant observation, video analysis). Additionally, there is a triangulation of sources, collecting data from different stakeholders (e.g. the promotoras, the technologists, the co-directors, office staff, community members) so as to ensure a thorough representation of perspectives.

Case Study Findings

Understanding the Social Infrastructure

Developing an application was one of the interventions that we co-designed with Impact to support the co-directors and the promotoras in enhancing their understanding of each other's work and to support the promotoras in improving their professional repertoires. The promotoras' enhanced ability to generate and pursue professional opportunities was not the result of any one intervention; similarly, it was not the result of their comprehensive collaboration with us, the university researchers. Rather, it is most appropriate to understand it as part of a larger system that was already in motion. Designing a technological tool, alongside conducting ethnographic research and designing workshops, was embedded within an existing activity system. Our design was successful because of our ability to recognize, and work with, the momentum of the city, the neighborhood, the non-profit, and the promotoras. Our ethnographic work investigating the food movement at the state, city, and community levels helped us understand the multiple scales of participation that made this movement so vibrant. This broad view provided by the ethnography provided us with a deep understanding of the promotoras' expansive activity system (Jurow & Shea, 2015).

Identifying Gaps between the Social and Technical Infrastructure

In an effort to generate reflective spaces where the promotoras could articulate their work and generate visions for their collective future, we organized a series of three workshops that took place over three months. Through mediated dialogue, reflective writing, guided *teatro*[4], and the creation of representational artifacts, the promotoras were able to generate shared desires, visions, and frustrations. During the course of the workshops, the promotoras had the opportunity

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[4] a form of role play that allows for critical examinations (Boal, 1997)

to articulate the extensiveness of their practice, which included not only gardening tasks such as clearing plots, rototilling, planting seeds, troubleshooting infestations, and harvesting plants, but also included community networking efforts. They shared that they took great pride in their work and desired for more tools and resources to enhance their practices.

As we documented the layers of the promotoras' work, noting that it was not fully visible to non-profit leadership, we also heard frustrations with current methods of data collection. In the years prior to the development of the app, the promotoras went from house to house, conducting surveys with pen and paper to gather feedback on the community's attitudes towards the backyard garden initiative and to evaluate desires for other initiatives, such as community classes. These surveys were later entered into a computer-based database. Not only was this method inefficient, but the information was difficult to gather due to language and literacy issues. As the lead promotora shared:

> Yo pienso que un obstáculo es que la gente no tiene educación. La gente no sabe leer y escribir. Así que, cuando hago una encuesta, es difícil.

> One obstacle that I think is that people do not know how to read and write. So, when I do a survey, it is hard. (Meeting Transcript, Verónica, 12/14/12).

The promotoras were going from door to door, asking residents to provide feedback on their own work, but at times, residents did not have the literacy skills to complete the language dense survey, and thus the promotoras had to read the survey to the residents, asking them questions, such as, "How well did your promotora meet your needs?" Having the promotoras collect data on their own practices resulted in potentially inaccurate results. Furthermore, collecting the data with pen and paper, later to be transcribed into a computer database, was inefficient.

Moreover, the organization was collecting data on pounds of vegetables harvested, health of the gardens, and satisfaction of community participants, but were not capturing the day-to-day tasks that made these results possible. As a result, describing the specifics of their work had been difficult. As one promotora shared:

> Lo que nos falta es saber que somos un equipo. Estamos en el mismo lado. Trabajamos juntos por la misma organización.

> What we are missing is to learn that we are a team. We are on the same side. We work together for the same organization. (Meeting Transcript, Maria, 2/11/2013)

The promotoras not only struggled to articulate their work among each other, but also within the organization.

The difficulty of describing and supporting the robustness of the promotoras' work, at the start of our research with Impact, was further compounded by the division of tasks within the organization: the promotoras conducted the work of growing and maintaining the gardens and establishing community relationships while the co-directors and a small team of office staff engaged in the work of securing grants, networking with city officials, and marketing the organization. This division of labor, in addition to incomplete documentation of the fullness of the promotoras' work, resulted in different understandings between the office staff and the promotoras regarding existing practices and visions for how to improve the organization. In a whole group meeting, the lead promotora asked that the co-directors become more involved in the community:

> A mi me gustaría mucho que Impact, o sea [names co-directors], hmmph, se involucran más con las necesidades de la comunidad. Que ellos aprenderán a conocer las necesidades más. No, no más de la alimentación porque en la comunidad hay necesidades al respecto de la salud respeto a la educación…

> I would like very much that Impact, namely [names co-directors], hmmph, become more involved in the needs of the community. That they will learn to know the needs more. Not only about the nutrition because in the community there are needs with respect to health, with respect to education... (Workshop Transcript, Verónica, 5/6/2013)

This request that the co-directors better know the needs of the community demonstrates that the promotoras knew that improving their work would require that the co-directors understand the needs that they encountered when they went out in the community. More fully documenting the promotoras' practices and streamlining data collection would allow for the organization to secure funding for professional development resources and to know which skills to best target. Moreover, greater visibility of the promotoras' practices could result in more informed programming decisions and enhanced ability for the organization to meet the needs of the community.

Analysis of multiple data sources, including video recorded workshops, audio recorded meetings, audio recorded interviews, and fieldnotes of participant observations indicated a need for an intervention that could support the promotoras to: 1) enhance the professionalism of their practice 2) make the extensiveness of their work more visible 3) share and expand their knowledge and 4) provide them greater access to resources. Through conversations with technology experts, the promotoras, and Impact leadership, we decided upon building a software application using open source data collection tools (Brunette et al., 2013). A software application could serve the function of a manual, but would also allow for iteration, capturing the dynamic nature of the promotoras' practice. This appealed to the non-profit leadership due to the potential to "track key metrics and progress" so as to better report on and improve its work in the South

Elm community (email exchange between research partners and Impact director, August 9, 2013). The idea appealed to the promotoras as a tool to better represent their work, increase communication with each other and with the non-profit leadership, and allow for enhanced access to resources to improve their practices. A tablet-based application could address the organization's needs by (a) supporting the promotoras to enhance their technological skills (b) allowing for them to gain greater professional recognition (c) connecting them to other professional networks and (d) providing Impact with targeted data.

Coordinating Social and Technical Development

In order to develop a software application, we collaborated with faculty and Masters of Science students in the College of Engineering at our university. This partnership brought together professionals with diverse backgrounds and forms of expertise. The promotoras brought their expertise in gardening, community building, and Spanish language communication. The three technologists with whom partnered brought their expertise in technology design and implementation. They are male, native to the U.S. and native English speakers. The education researchers, which included myself and the project P.I., brought expertise in ethnographic research and designing learning environments.. We are both female, and native English speakers with Spanish language abilities. The success of our partnership was reliant on the diverse expertise and diverse backgrounds of each group.

Developing a software application that would truly support the promotoras in enhancing their professional practices required consideration of the diverse knowledges and planning opportunities for equitable engagement in the design process. As we quickly learned, equitable

participation in the design process did not mean equal participation at every stage. In one of our very early meetings, we recognized that we would have to design our collaborative meetings with specific attention to language, gender, and culture. This became apparent in a meeting with the English speaking male technologists, the bilingual male co-director, the Spanish speaking female promotora (who is developing her English proficiency), and myself, a bilingual education specialist. I was positioned as the translator, yet, as the conversation became increasingly technical, Verónica struggled to follow the conversation and I similarly struggled to find the language to translate it. Therefore, although Verónica had significant expertise regarding the intended use of the technology, as the meeting moved along in quick, technical English, Verónica leaned over and whispered to me "me da sueno" (this makes me sleepy). (Meeting Transcript, Verónica, 12/2/2013).

The challenges of this whole-group design attempt resulted in a re-organization of the collaborative process so as to better mediate the collaboration. I led the effort to meet with the technology students where they shared their expert knowledge of technological platforms with us. This knowledge was then brokered in smaller meetings with the promotoras. As we shared the features of the suggested platforms with the promotoras, the promotoras then shared their expertise of the content that would populate the application, enabling everyone to imagine how the application would best be implemented. In this way, our collaboration developed *boundary practices,* where we generated hybrid practices from both research and practice (Akkerman & Bakker, 2011). As we integrated these boundary practices into routine work, we opened up opportunities for new, and potentially transformational, learning and systems of organization.

These more personalized meetings allowed for the research team to learn about the promotoras' specific uses of technology, making it possible to meet them 'where they are' when training them to use the Promotora App. For example, in one of the larger meetings, we discussed how to create the forms for the application in an Excel spreadsheet before uploading the information to the application. It was not until after the whole team meeting, when I met one-on-one with Verónica, that she felt comfortable sharing that she did not have experience with Excel. This information then allowed for Jurow and I to work with her on the basics of using Excel. This example illustrates one of the times that we were not able to fully anticipate how the promotoras used technology. In these more intimate settings, the promotoras made suggestions, such as generating interactive forums that could support sharing gardening problems and solutions among promotoras, and they modified the content, such as better aligning the questions in the different forms to mirror 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. Our roles were not static. Shortly after our team worked with Verónica to develop her excel skills, she began developing forms and piloting the curated application. When she led a training session, which included our team, to train the promotoras on the use of the tablets, she teased Jurow that she now "es una alumna" (is a student) also learning how to use the new technology (Training Session Transcript, Verónica, 1/14/14).

As the work progressed, we began meeting all together as an interdiscplinary team again, but with just one representative from each specialty area. In these smaller meetings we organized

for different people to lead various stages of the collaboration. For example, in developing a requirements document, the promotoras shared their vision for how it would be used and the technologists created a document describing what that would mean for technical requirements. They detailed: (1) ease of Use: a.) monolingual with an ability to change language; b.) simple graphical user interface (GUI); c.) automatic WIFI synchronization; d.) standalone platform; and, (2) Power of Data a.) pre-populated answers for common reporting variables; b.) pictures c.) secure; d.) compatible with existing infrastructure; f.) easily learned (Viggio, Dudley, & Buckner, 2013). The co-director, the lead promotora, and the technologists collaboratively selected a platform from the options identified by the technologists. The team decided upon using a platform developed via Open Data Kit (ODK) called Formhub.

Formhub was created by the Columbia University Sustainable Engineering Lab to aide in small-scale offline data collection. It uses ODK applications to interact with the data collected, sending it to a Formhub server, which aggregates the data into readable outputs (Pokharel, et al., 2014). The technologists led the work of selecting a platform that would meet the promotoras' needs. Then, upon deciding on this software, the promotoras led the process of developing the content of the 'Promotora App.'

This collaborative, interdisciplinary design process positioned the promotoras as designers, apprenticing them into the practice using tablet-based applications to collect data on their work (Lave & Wenger, 1991). This model allowed for the promotoras to acquire the skills necessary to contribute to the design of technology, as opposed to simply being the recipients of a designed intervention. This deeply participatory approach aimed to mitigate the risk that our

design solutions could further marginalize non-dominant participants (Kliene, 2013). In this way, the process of co-design was as much a tool for empowerment as the actual technology.

Implementation and Iteration of New Infrastructure

Upon completing the design of the technology platform, we organized for a series of hands-on trainings. The lead promotora, Verónica, led these sessions. In preparation, Jurow and I met with Verónica and one technologist to make sure that she was comfortable guiding the promotoras through setting up the hardware and software. Together we developed a presentation that would lead the group of promotoras through the process of taking the tablets from the box and setting them up, downloading the required software, accessing the forms that Verónica created, and moving through the process of how they would use the application to input information and take pictures while in the garden. Verónica carefully tried to anticipate questions or confusions that the promotoras might have. For example, she included instructions on how to power on the tablet, noting that the Android tablets' basic features were different than the promotoras' smartphones, which were mostly iOS.

This training took place in the winter, a few weeks before the promotoras planned to enroll families in the backyard garden program. A week after the promotoras began using the application to enroll residents and collect household demographic information, Verónica sent me an email in which she wrote:

> Pues ya empezamos desde la semana pasada, parece que todo va funcionando bien, (I hope), Yo no ando haciendo aplicaciones, andan algunas de las promotoras y promotor.

> Well, we already started last week, and it appears that all is working well (I hope), I have not been going to do the applications, some of the promotoras and the promotore are going. (Email, Verónica, 1/22/2014).

Of note in this exchange is that shortly after being trained on using the new technology, the

promotoras were successfully using it to make their work of filling out resident applications

easier. They were able to input the information directly into the software, as opposed to

gathering it, and then later inputting it into their database. The enhanced efficiency allowed the

lead promotora to stay in the office, analyzing data to immediately inform next practices.

     The initial report that "all is working well," did not last through the gardening season. By

mid-summer, the lead promotora shared this list of complications with me in an email:

1.) Muchas veces cuando quiere enviar una forma sale que es error y no se manda.
(Often when we want to send a form it comes up as an error and it won't send.)
2.) A veces cuando se va a tomar la foto se apaga.
(Sometimes when we take a photo it turns off.)
3.) En ocasiones se batalla para bajar las aplicaciones.
(Sometimes we struggle to download applications.)
4.) Eso es lo que pasa mas en las tabletas y nosotros en la oficina muy seguido
tenemos problemas para tener acceso a form hub, y es muy frustran.
(This is what occurs most frequently in the tablets and in in the office we also
have problems accessing formhub and this is very frustrating.)

                                                 (Email, Verónica, 7/10/14)

As I began troubleshooting these glitches with the promotoras, the Impact leadership was

simultaneously expanding their vision for their technological needs. The platform that we were

using for the Promotora App was not compatible with the software that the organization was

considering adopting to support their grant writing, financial management, and needs assessment

of the neighborhood. In seeking both a solution to the promotoras' frustrations and the

organization's expanding technical needs, the team found that Formyoula © best met the non-

profit's low cost and offline requirements. We therefore started the process of moving the data

system over to the new platform.

A few months into using the new platform, we learned that elements of the software that the technologists and I assumed to be intuitive were not so for the promotoras. The co-director sent one of the technologists, John, and me an email reading:

> So the promotoras are all filling out forms on the tablets, but they are not sending into Formyoula - there are only ten responses showing in total in Formyoula and I can't figure out how to get a view that shows responses per form, etc… can you help us? Thanks! (Email, Matt, 1/28/2015)

John used his tablet and phone to test the software, and when he tried it, the problem described in the email was not present. Not being able to understand the promotoras' difficulties via email, John and I set up a time to meet with a group of 5 of the promotoras. When observing the promotoras' use the application, we were able to understand that we had made assumptions about how the promotoras would use the software. This fieldnote excerpt details the process of understanding why the backend database was not showing the completed forms:

> Verónica logs into the website on her computer. She points to the 10 'recent' forms on the dashboard, saying that is all that is showing up. Anna (another promotora) and Verónica are both saying, 'where do they go?' 'where are they?'
>
> John then goes to each form, and shows how the individual forms have a selection action button, where you can see all of the forms. Verónica had not been using this. (problem #1, solved) Nonetheless, the promotoras have done around 90 applications and only 9 new participants and 29 returning participants are showing up.
>
> We get into the tablets and, looking at Anna's, there are a lot of forms listed, but next to them there is a grey icon reading 'draft.' The forms had never been submitted, just saved. Jocelyn (another promotora) has not yet done any applications. The other tablets though, also look the same, with the forms showing draft. The forms have not been submitted.
>
> John shows how to submit the forms. When he does so, they show up in the database.
>
> Verónica then explains that she doesn't press submit because then she can't start a new application and when she is out in the neighborhood, she often has to fill out 10 applications before she can logon to internet to 'send' them. John is confused by this and

so he tests it by turning off the wifi on the tablet and then trying. He is able to submit it (it saves, then showing the logo: 'local,' which means that it is submitted but offline, so when it syncs, it will be uploaded) and then open up a new form. Verónica shares that she assumed that she shouldn't submit, but didn't try it. (Fieldnote, 1/29/2015)

In designing technology with users, you can anticipate needs, but you can't anticipate how that will be taken up. This example illustrates how we could not have foreseen that the promotoras would 'save' rather than 'submit.' When we were troubleshooting via email, we could not have imagined the root cause for the forms not being uploaded. Understanding what was going on required that we observe how the promotoras were using the software. After this initial glitch, the promotoras took on greater responsibility for using both the application and the tablets. They have reported using the tablets: "Cada vez que van a un jardín, todos los días" (Every time that they are in a garden, all of the days) (Email, Verónica, 511/2015).

Sustaining Social and Technical Changes

The process of co-designing and using a technology intervention has supported the promotoras' increased sense of agency. Our designs were embedded within an activity system and worked to generate momentum to incite change alongside the actions of the co-directors, the promotoras, the residents, and other local non-profits and city leaders. The very desire for an application to improve their professional skills is evidence that our collaboration was part of a changing system that was already in motion.

How the promotoras use the App. Having the tablet-based application streamlined the promotoras' data collection, facilitating their daily work. The lead promotora shared:

Les gusta mucho porque les facilita mucho el trabajo y no tienen que traer tantos papeles.

> They like [the app] a lot because it supports their work and they don't have to carry so many papers. (Email, Verónica, 5/13/2015)

Not only has the Promotora App enhanced the promotoras' work and facilitated data collection, it has also encouraged the promotoras to explore new ways to use different features of the tablet. They use the tablets to communicate amongst each other, sending emails, sharing photos, and coordinating calendars. As the lead promotora wrote of the whole team: "estan mas comunicados entre si" " (they are in more communication with each other) (Email, Verónica, 5/13/2015). They also use them to record their daily activity, logging garden tasks, recording details about the families, tracking how produce is used, delineating next steps in the garden, and detailing their work that extends beyond the task of gardening.

The promotoras have also integrated the use of the tablets into their daily lives. Several promotoras shared that their comfort using the tablet has increased through routine use of it in their work in the gardens. As a result, they were now using the tablet to check their children's school's website and do online banking. Verónica shared that the promotoras use the tablets:

> para jugar, jajaja, no aparte de eso para sus e-mail, para su calendario, creo que ya es parte de su vida diaria

> to play, hahah, no, aside from this, for their emails, for their calendars, and I believe that they are a part of their daily life. (Email, Verónica, 5/13/2015)

Additionally, the promotoras share the tablet with their family members. One promotora reported that her son uses it to play games and took on the responsibility of updating the operating systems and applications.

How the App has shifted responsibilities. The process of engaging in co-design and of documenting practices via technology contributed to the promotoras' expanded sense agency. As

all of the promotoras use the Promotora App to codify their practices, their work has become more fully visible. As a member of the office staff reported, the practice of systematically documenting their work via technology allowed for "amazing data collection" (Email, Caroline, 5/18/2015). The more systematic, streamlined data collection has enabled the organization to more fully report and solicit funding for the promotoras' work, including elements of their advocacy and community building work. Moreover, the increased visibility of their work has allowed for the promotoras and the non-profit co-founders to provide each other with more specific, and timely, feedback on their work and in turn allows them to improve their skills and supports the non-profit in more effectively achieving its goals of promoting food justice.

The Promotora App has increased communication between members of the organization and has brought the promotoras' work into the office in a more visible way. The promotoras are now charged with the technical work of documenting and analyzing their own practices. The lead promotora took on the responsibility of generating the forms for the Promotora App. With this technical responsibility also came the request for a laptop computer and a transition from being paid hourly to being on a salary. The co-directors responded to Veronica's shifting role, acknowledging the need for resources and appropriate compensation to accompany her shifting responsibilities. Similarly, Impact reorganized the structure of the roles within the organization to adopt a distributed model of leadership, where promotoras share roles and responsibilities, participating in diverse tasks, such as grant writing and strategic planning.

The participatory design work in which we engaged was premised on the notion that all participants have diverse expertise and that sustainable design requires that the diversity of

expertise be leveraged and expanded upon. As participants share equal responsibility for the design and implementation of new infrastructure, their view of their own work within the organization shifts as they take greater responsibility for generating and maintaining designed systems. Enhancing participants' agency through expanded participation is an integral component of social justice work. By shifting the responsibilities within the organization, Impact gets closer to meeting its goals of developing community leaders and generating self-sufficient economies.

Discussion

As technological innovations are increasingly suggested as a promising solution to generate opportunities for marginalized communities, it is imperative that we look beyond questions of access to critically consider questions of equity. Technology can be a tool for expanding freedom and a source of unfreedom. Kleine (2012) writes, technology is a source of unfreedom "...when people feel or are forced to use technologies which do not reflect the lives they value" (p. 42). Generating technology solutions that expand freedom involves knowledge, and appreciation, of the activity system in which the technology will be used.

Ethnographic work was critical to our ability to understand Impact's activity system. It is through our ethnography that we were able to echo back what were hearing and support the organization in deciding on the tools that could help them improve their organization. In this sense, the ideas for design came from the community partners, but our role as ethnographers and our critical eye towards equity helped shape the collaboration. Our ethnographic work not only gave us an understanding of the organization's and community's activity system, it also provided

us with a more national and global context by which to understand Impact's work for food justice. Embedding our design within the existing activity system provided it with the relevance and momentum that supported it in being fully taken up and owned by the users.

Our initial ethnographic research guided our collaborative design work and facilitated our participatory process. The process of participatory design was as empowering as the implementation of a new technology tool. This collaborative approach allowed for the consideration of stakeholders' everyday experiences, historical practices, and cultural values. Moreover, the process of engaging the users in the design generated a sense of familiarity with new technology platforms and modeled and encouraged processes of design, analysis, and trouble-shooting, empowering the users to engage with technology in new ways.

Although there will always be unexpected consequences when designed tools are implemented, participatory approaches mitigate the chance that the unintended outcomes are detrimental to historically marginalized populations. In participatory design, researchers operate simultaneously as designers and ethnographers, taking on a critical perspective that addresses unequal power dynamics and moves towards a more just solution (Barab, Dodge, Thomas, Jackson, & Tuzun, 2007; Grills, 1998).

This case study demonstrates not only the role of ethnography and participatory design in generating equity-oriented design solutions, it also provides a model by which to apply ICTD tenets within the context of the U.S. Notions of development should include marginalized and under-resourced communities within our own nation. Moreover, working within our own nation may support the design and implementation of development projects. In our research, living in

the city where we were working provided us with a deep understanding of the non-profit organization and its larger context. This relationship with the physical place where we were researching and designing facilitated the process of generating boundary practices, hybrid research/practitioner practices (Akkerman & Bakker, 2011). Generating these hybrid practices, where we leveraged the promotoras' existing practices and extended them via resources and skills available to our research team, was integral to processes of transformation, sustainability, and equity.

Engaging in ICTD in local contexts encourages the sharing of diverse resources, perspectives, and knowledges amongst different subgroups that co-reside within a larger community. It allows for different forms of knowledge to travel across institutions (e.g. from the University context to the non-profit; from the promotoras to the University). In our work, the learning was fluid between participants. Each individual brought a different set of expertise and a different perspective that enriched both our design work and our theoretical understandings. Developing better understandings and networks, sharing resources, and enhancing communication within our local contexts can generate stronger and more equitable societies.

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The Challenge and Promise of Community Co-design

Leah Teeters, A. Susan Jurow, Molly Shea

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, 2011). 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 health care 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 non-profit 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 that we developed have been 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, nor the South Elm community. When we began our partnership with Impact, our initial focus was on learning about the promotoras and their work in the community. We developed a foundational understanding of the promotoras' role in the community 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 to 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 non-profit. 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 non-profit 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 non-profit 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 exchange below 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 towards 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 in 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. The reflections from 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 workshops investigating the promotora model, 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 themselves; 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, under review). They felt, however, that this was not

fully acknowledged by the non-profit 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 through reorganizing residents' access to social, educational and economic resources (Jurow, Teeters, Shea, & Severance, 2014). The residents involved in the backyard garden program, many of whom are immigrants, turned to the promotoras as informal resources for information regarding medical care, legal troubles and issues related to domestic violence.

Our growing understanding of the promotoras' unacknowledged and expansive 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 creating 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 non-dominant 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 re- mediate 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 Excel. Since 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 encountered 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 towards a vision of greater agency and equity for all participants and their associated social contexts. By positioning promotoras and researchers as mutual collaborators working towards 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 drew on our understanding of what tools and participations structures could best 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" non-dominant community members (Yapa, 1996). The long-term and multi-sited ethnographic work that we conducted in the local community, the non-profit 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 (Le Dantec & Do, 2000). 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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