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Learning in Equity-Oriented Scale-Making Projects

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This article examines how new forms of learning and expertise are made to become consequential in changing communities of practice. We build on notions of scale making to understand how particular relations between practices, technologies, and people become meaningful across spatial and temporal trajectories of social action. A key assumption of our perspective is that the scale relations that give meaning to our actions are not natural but are contested in social, cultural, and political projects. Studying these contentious activities can help us understand the nature of changing participation in dynamic and historically developed practices. Using case materials from 3 groups engaged in the local food justice movement in the western United States, we illustrate their engagement in equity-oriented scale making. Defining features of this work included identifying leverage points within inequitable systems; developing strategies for remediating scale relations to include the perspectives of historically marginalized groups; and coordinating trajectories of practice across settings, activities, and time so that these interventions became increasingly consequential. We conclude with a discussion of the significance of equity-oriented scale making as a lens for organizing design efforts and for studying their implications for nondominant communities.

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Design research is value-oriented research; our interventions and how we conduct our studies may reproduce, disrupt, or possibly reimagine inequitable power relations and social structures. Acknowledging the value orientation of our designs is critical because how we design, what we design, and with whom we design have implications for determining the meaning and consequentiality of social action. Questions about consequentiality are critical for the study and design of learning; answering them requires understanding how the social world is and gets organized so as to make certain ideas, practices, and identities valuable.

Situated learning theory provides a valuable perspective for design research because it highlights how learning is a process of “changing participation in changing communities of practice” (Lave, 1996, p. 150). Implicit in this description is that this participation needs to be consequential—that is, of significance—in order to count as learning. Nespor (2004), describing a complementary perspective, explained that learning is only consequential in relation to the networks of activities and values that make it matter. The consequentiality of learning is therefore not located either in individuals’ changing forms of participation or in changing community practices alone; it is found in their mutual relations (Beach, 1999; Dreier, 2008; Hall & Stevens, 1995; Jurow & Pierce, 2011; O’Connor, 2003).

As researchers, we are committed to designing for equitable futures in which people from marginalized communities have greater access to and control over resources to design for their own futures. The learning sciences has tended to separate a social change agenda from its analysis of learning; we argue that they need to be considered together to address how people’s lives are situated in and develop as part of unevenly developed historical, spatial, and social circumstances (Gutiérrez & Jurow, 2014). With this aim in mind, we report on our analyses of learning in a social movement to (a) draw out the contentious nature of creating new trajectories of participation that challenge historically entrenched configurations of power/knowledge (Foucault, 1980) and (b) develop analytic strategies that can help us understand how consequential learning gets organized through collective action.

To study how learning becomes consequential, we must acknowledge the possibility that people acting within arenas of limited influence can still have profound influence over their own lives. Scholars have used the notions of scale and scale making to describe the interrelations that exist and can be made between cultural practices, tools, and people that extend across particular spaces and times and thereby give meaning to situated social action (Hall & Leander, 2010; Nespor, 2004). This use of scale differs from its typical usage in the education literature. Oftentimes, people talk about scaling up, which involves taking some thing and making that same thing bigger. Our use of the term scale refers to the system of temporal, social, and spatial relations in which that thing exists and has meaning. We use scale making as an analytic lens to study how people are thinking across
dimensions and institutional relationships to reorganize and build toward more equitable futures within their communities.

We studied learning within a social movement, specifically the movement for greater access to food and social justice for marginalized communities in the western United States. We combine an analytic focus on how learning is made to be consequential across different orderings of activity over time and across settings with a view of how groups of people intervened within complex and unjust systems to organize within this equity-oriented social movement.

To make these ideas more concrete, consider the scale relations that defined community in one neighborhood where we have been conducting long-term ethnographic research. Over the past generation, the neighborhood demographics shifted, with large numbers of new residents arriving from a number of different countries, including Mexico, Guatemala, Syria, and Nigeria. These new residents speak a variety of languages and engage in distinct cultural practices. In addition, there were not a lot of common areas for gathering and getting to know one another, nor were there adequate public transportation options for doing so. Many residents also reported that they felt that the neighborhood was safe, so they often drove when they traveled in the neighborhood. The historical configuration of immigration patterns, the social interactions constrained by the diversity of languages and cultural practices at play in the neighborhood, and residents’ experiences of restricted mobility within the neighborhood and city make up the scale relations defining community in this instance.

Understanding the scale of community has helped us appreciate how scale-making efforts on the part of the nonprofit Impact, which we have studied over 3 years, have contributed to the organization of newly valued and consequential actions for residents. Scale making highlights the work that actors do to create and disrupt flows of ideas, practices, and people across spatial and temporal orders. This perspective on transforming scale relations offers a way to see how new forms of participation can become meaningful in relation to changing practice, what we take as our definition of learning.

Impact has a backyard gardens initiative that we view as a scale-making project. The focus of the program is to teach residents of this neighborhood, many of whom have limited geographic access to fresh and affordable food, to grow their own food. Over 5 years, the program has expanded from 7 to 300 gardens. When the program first began, residents were fairly anonymous to one another. Now, residents are sharing know-how about gardening as well as vegetables. They are also discussing their concerns and plans for improving their lives in the neighborhood. Alongside these changes, different forms of participation in the neighborhood have become valuable.

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1 All proper names are pseudonyms.
As one example, residents working with the nonprofit, called promotoras, have identified domestic violence as a pervasive and poorly addressed problem in the neighborhood. In response, a pair of promotoras applied for and received a grant from a city foundation to develop resources for preventing domestic violence.

In this example, there is a transformation in the scale relations defining community. Caring and responsive relationships between residents working with the nonprofit and community members have developed over multiple years in and across the privacy of people’s homes and gardens. These changes have reconstituted the conditions for the knowledgeable skilled performance involved in being a community advocate, making those who can, for instance, get grants to improve the collective life of the neighborhood distinguishable as competent participants. Following from Lave (1996), to appreciate the learning in this situation, one needs to study how the changes in the scale relations defining community became mutually involved with the new forms of community advocacy actions that have become consequential for residents, the promotoras, and the neighborhood.

Social movements, such as the local food justice movement, provide a useful setting for investigating the role of scale making in organizing for consequential learning because these collective efforts are launched to change how knowledge, resources, and opportunities for future participation can be enacted (Avis, 2007; Holland, Fox, & Daro, 2008). It is important to underscore, as Tsing (2004, p. 58) wrote, that “scale is not just a neutral frame for viewing the world; scale must be brought into being: proposed, practiced, and evaded, as well as taken for granted. Scales are claimed and contested in cultural and political projects.” How scales are defined matters, in other words, for what counts as valued ways of knowing and being.

In this article, we report on what we call equity-oriented scale making in the local food justice movement in the western United States. These scale-making projects involve rerouting the flows of people, technologies, and practices that constitute historically developed systems that the groups with whom we engaged identified as inequitable. Scale making is not always about seeking equity, but it is our interest to study those efforts that aim to redistribute access, resources, and power in more equitable ways. The aim of equity-oriented scale-making projects is to facilitate the organization of consequential and improved opportunities for marginalized communities to become recognizable as competent participants in situated practice and to exert agency within existing systems.

In the following, we present three examples of equity-oriented scale making. Our aim is to argue for the utility of using a scale-making lens to understand the organization of equitably consequential learning. Using the first two examples, we illustrate the nature of these projects in the local food justice movement. Defining features of this work included identifying leverage points within inequitable systems, developing strategies for remediating scale relations to include the perspectives of historically marginalized groups, and imagining and coordinating
trajectories of practice across extensive networks so that these interventions can support learning as it is made to become consequential over time. With our third example, we explore how shifts and reorganizations of cultural practices and changing forms of people’s participation can be coordinated with one another so that learning becomes of consequence for the broader cultural system and for individuals. We conclude with a discussion of the significance of equity-oriented scale making for the learning sciences.

**SCALE MAKING AS A LENS FOR STUDYING AND REORGANIZING PRACTICES**

Scale making takes place at multiple levels of intertwined situated practice (Hall & Leander, 2010). Our analysis focuses on ontogenetic change, which describes change at the individual level of learning and identity development; and socio-genetic change, which describes transformation in the development of social, cultural, and historical practices (Saxe, 1991). One way in which the work of scale making, although it has not been referred to as such, has been evident in research on learning is in regard to the multifaceted problem of engaging nondominant and historically underserved communities in consequential, disciplinary learning (e.g., Bang & Medin, 2010; Rosebery, Ogonowski, DiSchino, & Warren, 2010). Much of the scholarship in this arena stems from the view that including members of marginalized groups in efforts to improve education, rather than as targets of remediation, is beneficial to youths’ engagement in school and their civic identities (Kirshner & Ginwright, 2012). In the following, we use the lens of scale making to highlight how learning scientists have been involved in changing the flows between people, places, times, and practices to create newly consequential knowledge and identity trajectories. We foreground only some dimensions of these broader projects that resonate with our intent.

Gutiérrez (2008) introduced the work of social design experiments as educational interventions that aim to transform both pathways into valued practices and those practices themselves. They are organized around creating greater hope and possibility for nondominant communities. Remaking scale relations is a fundamental aspect of these designs. Consider Gutiérrez’s writing about the Migrant Student Leadership Institute at the University of California, Los Angeles. The college preparatory institute invited migrant students to the university to study in its classrooms and to take advantage of the wealth of resources on the university campus. Locating the program on a university campus with university professors, graduate students, textual resources, and other migrant students rerouted students into activities in an elite academic setting.

In Migrant Student Leadership Institute classes, instructors used pedagogical strategies that privileged the migrant students’ histories. For example, they used
a community-based genre with which migrant students were deeply familiar (i.e., testimonios) to deepen their understanding of a fundamentally related academic genre about which they were not familiar (i.e., extended definitions). Through this syncretic (Gutiérrez, 2014; Hill, 2001) approach to literacy learning, migrant students’ lived experiences of dispossession were brought into contact with expertise in academic writing. At the same time, the university-based academic practices were connected with and informed community ways of knowing and valuing. This mutual impact was critical in changing the scale of valued literacy practices, which then instigated new forms of participation on the part of students when they returned to their communities (e.g., they demanded advanced placement classes and organized a student political group, Mecha, to promote higher education for young Chicanos), and in changing how the students saw themselves as participants at elite institutions (Gutiérrez & Jurow, 2014).

Taylor and Hall’s (2013) study of counter-mapping practices in a large metropolitan city is an example of a social design experiment focused on spatial justice. In their research, they documented nondriving African American youths’ changing sense of mobility, their future trajectories, and their city as part of an afterschool bicycle construction and riding project. Building on their physical experience of moving in and around their city on bicycles, the youths’ experiences were then connected to the efforts of urban planners who were designing bicycle routes through the city. The young people used tools used by the professional urban planners to create interactive maps and participated in community meetings organized by these planners to imagine new, safe, and useful pathways for community members to traverse through neighborhoods. This rescaled the youths’ situated experiences of living in the city by transforming how they could travel to parts of the city that were hard to get to and effectively off limits to them. Through the production of the interactive maps, individual experiences with navigating the city were made more durable, extending their timescale, and other people were allowed to draw on these individual experiences in their own navigation, thus extending their spatial scale. This new configuration of practices led to a transformation in how these youths, whose communities were not usually part of urban planning conversations, became designers for a city that could be more responsive to their current needs and simultaneously shaped their aspirations for where they could go and who they could be.

Social and community-based design experiments, rooted in deep understanding of the histories of communities and the problems that matter most to them, are efforts in which learning sciences researchers have aimed to instigate changes in the contexts in which learning is made consequential (see also Engeström, 2011). Our research in the local food justice movement is similar to these in that these designed activities were also responding to a problem felt by the community. A key difference is that the designed activities we studied were initiated and
carried out by diverse stakeholders in the community who took it on themselves to intercede in what they viewed as an inequitable food system.

ANALYTIC APPROACH TO STUDYING SCALE MAKING

Examining scale making in the local food justice movement enabled us to understand the decentralized actions that enabled and limited flows of people and materials and how they became consequential practices. Although this article is meant to provide an argument for the utility of an analytic perspective on scale making for equitably consequential learning, because it includes empirical illustrations, we briefly outline the principles that guided our research. First, as social movements stretch across local and global contexts, we took a multisited ethnographic approach in order to understand networks of practice, their intersections, and their points of political and cultural contention (Marcus, 1995). The thread that connected the groups we studied was their interest in creating a more equitable food system. With each group, members of our research team took on different positions on the continuum of participant to observer depending on the relationships we had developed with the organizations and their needs (Erickson, 1986). For the sake of creating comparable cases, the analysis we present in this article focuses on each group’s primary aims and the strategies and tensions that the groups faced as they tried to achieve these. We draw on extensive ethnographic materials (including field notes, interviews, and artifact analysis) that we collected in three sites over 2–3 years to illustrate our analytic perspective. Second, we paid equal attention to people and technologies working together to organize contingent contexts in which new meanings and practices could circulate across scales. We strived against reducing the actions or motivations of these networks to any one actor, human, or technology (Latour, 1987). Third, we attended to the interpretations and actions that actors took based on these historically evolving and contested definitions of consequential learning. Given our approach to learning in shifting contexts, we examined the “arrangement of persons, ideas, opportunities, constraints, and interpretations . . . that allow or even require that certain facts are searched for, discovered, measured, recorded and made consequential” (McDermott, Goldman, & Varenne, 2006, p. 13). These were our central foci as we studied what Lave (2012, p. 169) described as “politically critical sites of political change” that were collectively organized by community activists across locations.

When we were able to see the work involved in creating, maintaining, and transforming scale relations, we then asked critical questions about issues of equity across ontogenetic and sociogenetic levels. Who controls access to different economic, cultural, intellectual, and material resources that flow in and across scales? How does this affect what kinds of learning and identity trajectories are
developed and able to flourish? What kinds of categorization systems and hierarchies are created through these scale-making projects, and, following Bowker and Star (2000), who suffers because of them? Through a comparative analysis of what we identified as scale-making projects, we noticed patterns and variations across the local food justice interventions we studied (Charmaz, 2006). Doing so led us to name a particular form of scale making: equity-oriented scale making.

RESCALING THE FOOD SYSTEM TO ORGANIZE MORE EQUITABLE FUTURES

For 3 years, our research team has been studying groups involved in the local food justice movement in three western U.S. cities. As this international movement has taken shape, it is clear that food is an issue that matters to many people, for many different reasons. Most who are involved in this movement do agree, however, that the food system—how food is produced, distributed, and consumed—is broken (Gottlieb & Joshi, 2010). How groups frame the nature of the breakdown in the food system matters for what actions are pursued and who benefits (Benford & Snow, 2000). For example, some organizations focus on issues within the broken food system including environmental pollution, the epidemic of obesity among children, or genetically modified organisms in our food supply. The groups we study have chosen to focus on issues of food access among the most underserved communities in the state. These include people living in poverty, vulnerable immigrant populations, and historically marginalized communities residing in neighborhoods with limited access to healthy and affordable foods. The problems facing these communities are multifaceted and have been shaped by federal, state, and local government policies and regulations; historical patterns of immigration; urban renewal campaigns; and shifts in global and local economies. Understanding how groups have chosen to intercede in the food system so that it can better serve vulnerable communities requires studying their efforts at changing the historical, spatial, and social configuration of practices that define these communities’ experiences of the food economy.

In this section, we articulate the work of equity-oriented scale making in the local food justice movement and draw on examples from our multisited research study. Equity-oriented scale making is the analytic lens we have developed to describe what we understand the work of these groups to be; it is not how they themselves describe their efforts. The examples that appear in this section situate the work to reassemble scales, which entails changing the valued forms of knowledge, practices, and identities related to the food system. Examining community organizing strategies across study sites has led us to identify commonalities in their designs for sustainable and equity-oriented change. Each group was grounded in the recognition of the ingenuity of communities living in
“tight circumstances” (McDermott, 2010, p. 144). This perspective facilitated the identification of misalignments and breakdowns in the network of practices comprising the food system that have had disproportionately negative consequences on historically marginalized communities. Building on this, they each designed interventions that attempted to remediate (Cole & Griffin, 1983) social, spatial, and temporal dimensions of these practices to reorganize the flow of valued knowledge, expertise, and resources within the food system. The approaches the groups took, and which aspects of the system they chose to disrupt and reassemble, varied from a primary focus on culture, bureaucracy, and/or technology. Each intervention embodied different strategies and emerging forms of expertise for creating ongoing changes within the food system. This matters for the kind of learning that can take hold as a result of their efforts and for the connections that get made—intentionally, inadvertently, and tentatively—to other scale-making projects.

The first example of an equity-oriented scale-making project considers changing the scale relations defining food production from a national to a neighborhood level through the leveraging of a community’s sociocultural practices. This project was led by a nonprofit working in an urban food desert, a label used by the U.S. Department of Agriculture to indicate that the neighborhood has a high proportion of people living in a low-income area with limited access to healthy foods (U.S. Department of Agriculture Economic Research Service, 2012). The nonprofit was established by two White men who were raised in the state and share a strong commitment to the city’s future. Many of the residents in the neighborhood are immigrants from Mexico and have had experiences with agriculture and growing their food on family farms. Since immigrating to the United States, some of these residents have grown their own gardens and, in keeping with the practices of their upbringing, shared their produce with family in the neighborhood.

Building on the needs and assets of the community, one of the nonprofit’s many projects is focused on growing backyard gardens. The cofounders intentionally designed the program to leverage the cultural and historical backgrounds of the large Mexican population that lives in the neighborhood. The program relies on a small team of resident leaders known as promotoras who teach families to grow vegetable gardens in their own yards. The promotora model is a public health model that originated in Latin America; it was developed to help institutions like hospitals capitalize on the shared cultural practices and language backgrounds between promotoras and residents to facilitate desired health goals (Elder, Ayala, Parra-Medina, & Talavera, 2009). The nonprofit leadership recognized the potential of this model for improving the life circumstances of the focal neighborhood. It trained a small team of promotoras who had demonstrated skills in growing food in their own gardens and some experience or at least desire to work with Spanish-speaking residents to improve the quality of their neighborhood.

Through this program, the gardening skills and social connections of the residents were extended spatially across 300 backyards throughout the
neighborhood. This changed the physical landscape of the neighborhood and residents’ access to fresh, organic food. The rescaling efforts also implicated temporal changes in that they involved organizing an extensive network of garden participants who now regularly share resources, ideas, and questions with one another via the promotoras and community-wide events organized by the nonprofit. This stands in contrast to how the residents of the neighborhood used to be fairly anonymous to one another and to the promotoras.

The equity-oriented scale making in this case was supported by the joint work of the promotoras and the rest of the nonprofit’s staff. The group’s vision, fundraising activities, alliance building in the city, bilingual Spanish–English-speaking skills, and farming experience are fundamental to this work. The scale-making project has also created new forms of expertise in the neighborhood exemplified in the practices of the promotoras, who have developed a newly valued skill set, including how to design and grow gardens, communicate with a multilingual group of residents with a range of experiences with gardening, listen and respond to resident concerns, and organize for collective action.

The changes in this neighborhood, like other kinds of social change, have not unfolded seamlessly. One of the ongoing tensions that has shaped the nonprofit’s work is how it engages other racial and ethnic groups, including other immigrant communities, who also live in the neighborhood. The program began with a focus on the Mexican immigrant population of the neighborhood, using Spanish as the primary means of communication and relying on a set of relatively shared historical and cultural practices around the notion of community. This focus left out the White families who had been living in the neighborhood for decades as well as newer immigrant communities who also struggle economically. The nonprofit leadership has recently decided to expand the scope of the organization to include the growing number of Somali Bantu refugees in its vision for building a community-based food system. This has required modifying the promotora model for working with this new community using the Somali language and its vibrant history of engaging in agrarian practices. This expansion, fueled by the cofounders of the nonprofit’s desire to improve food access for a broader population in the neighborhood, has been met with some frustration on the part of the promotoras, who value the focus on the Mexican community. As the group becomes more heterogeneous, the goals and methods involved in changing the scale relations defining the food system and who is participating in this transformation are shifting. The tension of rerouting resources and expertise in the neighborhood is not separate from the scale-making efforts but is a driver of its evolving nature.

The second example of equity-oriented scale making comes from another site within our ethnographic fieldwork. This example was a statewide, cross-organizational effort comprising governmental departments, nonprofits, and professional associations working to intervene across bureaucracies to make local produce more accessible for families living in poverty. The assumption that
grounded the work of this group was that families did not suffer a deficit in their understanding of nutrition or how to shop; rather, bureaucratic practices were deficient in that they did not adequately account for the constraints that families living in tight circumstances face. The problem that motivated this group was multi-dimensional and implicated a number of activities that together rendered local, fresh, healthy produce inaccessible to almost all households who were eligible for the federal government’s Supplemental Nutrition Assistance Program (SNAP). The cross-organizational group wanted to understand the bureaucratic structures, local activities, and cultural practices across groups that routed the majority of families in poverty into food choices that “fill the belly but don’t nourish the body” (SNAP participant interview, 2012). The initial correspondence, written by the lead organizer and local food activist, invited various people to the table in order to “learn about the challenges to making healthy food available to children and families in need. We are seeking partners with expertise in food assistance programs to help us develop an action plan and collaborate on this opportunity with us.”

The mediational tool that was used to engage in scale making was fairly mundane but significant: bringing together organizations from federal, state, and local levels that aimed to serve the same vulnerable population. Each group had, however, been working in fairly separate ways. For example, the federal government was focused on enrolling qualified families into SNAP, a state organization centered on ending hunger was focused on increasing the potential of food banks, and another state organization along with the Farmers’ Market Association had been attempting to get Electronic Benefits Transfer machines installed at more farmers’ markets to accept families’ SNAP currency. Our research team, at the request of the collective, was invited to help the group understand patterned variations in food procurement, purchasing, and cooking practices among families within the state who qualified to receive SNAP. In order to reorganize the bureaucratic scale relations that allowed these inequities to persist, the group members transformed their sociospatial and temporal routines to create regularly scheduled meetings to inform one another, hold one another accountable, and work through cross-organizational systems of bureaucracy.

Coordinating efforts to transform the food system so that it could be more inclusive of families in poverty was an aim of the group’s equity-oriented scale-making project. A challenge that the group faced in these planning efforts was that it was almost exclusively organized for and not with low-income families. These tensions were known limitations of the group and were managed, to some extent, through ethnographic interviews with eligible SNAP participants across several communities within the state. That said, although the outcomes of their multifaceted efforts have not yet come to full fruition, the meetings led to new partnerships, new trainings for farmers’ market volunteers to use and process
SNAP benefits, a wider focus of influence across organizations, and a broader awareness of poor families’ experiences.

The purpose of sharing these examples is to illustrate how equity-oriented scale making has been taken up in the local food justice movement. Creating new scale relations involves more than simply declaring new forms of knowledge to be valid or valuable; rather, as these examples show, it involves developing social practices wherein new forms of knowledge come to be seen as such by a wide range of participants across far-reaching networks of engagement. In the next section, we present an analysis of the efforts of another food justice organization. This group introduced a new food production technology to remediate the inequities of an unevenly developed food system. We use this example to highlight the work of coordinating sociogenetic and ontogenetic levels of activity to support the development of new practices and consequential learning for neighborhoods and people.

**EQUITY-ORIENTED SCALE MAKING IN NORTH PLACE**

North Place is a predominantly Latino working-class neighborhood in a major western city. Its present form was produced through the intersections of modern industrialization, transportation, and immigration. The neighborhood has essentially been cut off from the rest of the city by a major interstate, railroad tracks, and a wall of factories. Isolated as it is, North Place has been classified as a food desert. In part because of this inglorious designation and history, public, private, and citywide organizations have turned their attention to improving the quality of life in the neighborhood.

Each group takes a different approach toward developing the capacity of the neighborhood, including focusing on reducing obesity through increasing residents’ activity levels, developing farmers’ markets, offering courses on food justice, and constructing a sustainable system for growing produce year-round in a greenhouse. These groups can be understood as organizing—together, apart, and sometimes in opposition to one another—for particular kinds of futures for the neighborhood (Gutiérrez, 2008). Each approach has implications for North Place’s residents and the social and cultural practices of the neighborhood and broader city community. Residents have been involved in these projects to varying extents, and engaging them is one of the challenges that the group we studied, an urban farm and educational nonprofit called FreshRoots, faces in its equity-oriented scale-making efforts in the neighborhood.

FreshRoots was the joint vision of a successful developer/restaurateur and a community activist. Led by a team of ambitious and capable young men, FreshRoots aims to change the scale relations defining access to food production, distribution pathways, and economic markets that comprise the food system.
As White men who are not from North Place, the team works reflectively to create an inclusive organization.

Over the past few years, the FreshRoots team has turned a former flower nursery into a greenhouse that includes a high-tech ecosystem for growing vegetables to be sold throughout the city, an area in which residents can grow vegetables in several raised aquaponic beds, and a community marketplace where people from the neighborhood can buy and trade seeds. In these ways, FreshRoots is reassembling the social, spatial, and temporal trajectories that had previously defined the neighborhood as a food desert in order to turn it into what it hopes will become a regional food hub. This transformation has implications for the networked flows of food, money, and ideas that impose different timing and coordination structures for the neighborhood and its residents. As we discuss in our case materials, it also implicates different divisions of labor and linked knowledge and identity trajectories.

The local government has also recognized the potential of FreshRoots’s efforts for revitalizing the city’s economy. It sees local food as not only about growing and eating organic vegetables and fruits; it is also a way to keep money in the region rather than moving outside of it, a way to create jobs for residents, a way to empower communities, and a way to foster environmental sustainability (Pollan, 2010; Rauzon, Wang, Studer, & Crawford, 2010; Shuman, 2012). Redirecting the flows of food production, practices around eating and buying food, and institutional consumption across neighborhood, city, regional, and national scales so that local food can become part of a new kind of future is a highly contentious scale-making project. Examining how the multiple scale-making projects of different groups—governmental, business, nonprofit, and community—come together (and do not) in North Place can help us understand how different conceptions of learning and becoming take hold in this system.

ORGANIZING FOR CONSEQUENTIAL LEARNING

Equity-oriented scale-making projects involve interrupting the flows of people, technologies, and practices that comprise entrenched systems. These interruptions matter for what becomes consequential learning for individuals and communities and for the development of social and cultural practices. The staff at FreshRoots are challenging how the scale—the social, temporal, and spatial reach—of the local food economy has negatively affected and further marginalized the residents of North Place. With this interest, our case presentation begins with a focus on the sociogenetic level of activity (Saxe, 1991). Attending to how new cultural forms emerge and spread such that they transform practices provides a way to understand how communities are dynamic and provide a shifting context in which people participate and learn.
In sharing the work of FreshRoots, we outline how new cultural forms related to food production and distribution have developed spatially, over time, and through social interactions. A scale perspective on these changes draws attention to the ways in which practices not only are social and historical but also have spatial dimensionality, which affects how practices are made to become consequential over time and across contexts. We argue that the scale relations defining the configuration of the local food economy have been transformed through the efforts of FreshRoots so as to have become more inclusive of this historically marginalized neighborhood. The specific cultural forms on which we focus in this discussion are hydrofarming and social entrepreneurship.

Coordinating between shifting sociospatial and temporal dimensions of practices and people’s participation in these practices is fundamental to organizing consequential learning and is an important dimension of equity-oriented scale-making efforts. This coordination work is highlighted in our discussion of FreshRoots. In doing this, we draw attention to how a focus on equity-oriented scale-making activities can enhance the ways in which situated learning has been used to study “changing participation in changing communities of practice” (Lave, 1996, p. 150, emphasis added).

Remediating Scales of Food Production and Distribution to Incorporate the Neighborhood

At FreshRoots, the activity that leads the equity-oriented scale-making projects is focused around changing the scales that define the food production and distribution pathways so that they can incorporate this marginalized neighborhood. As the leaders of the nonprofit see it, FreshRoots can become a food hub for the region, which can then improve the neighborhood economy by creating jobs and improving access to healthy foods. In this way, the organization can be understood as attempting to carve out new routes on which produce, money, and new forms of knowledge can flow through the neighborhood to facilitate community and economic revitalization.

Toward this end, they have introduced a new technology to remediate the current food system: a vertically oriented hydroponics system that allows for growing large quantities of food locally and year round while minimizing energy, soil, and water inputs. Hydroponics is a method of growing plants in water without soil.

The driving force behind FreshRoots’s efforts to become a food hub is its hydrofarm. The hydrofarm is a highly technical space. Its temperature needs to be carefully controlled, its crops require a special organic liquid fertilizer, and the whole system is monitored via a computer to ensure ideal fertility and pH levels. Hydroponic systems are particularly susceptible to common plant diseases, and a well maintained system can significantly reduce the production cycle of a crop. This is a scientific space in which only those who are highly trained with
the techniques and timetables of the growing cycles can enter and interact with the products. Although the hydroponics system is core to the long-term financial sustainability of the organization, access to the space and the accompanying new forms of knowledge in the neighborhood is limited to a select group of people on the FreshRoots team.

Leveraging its innovations with the hydrofarm, FreshRoots has been able to produce large quantities of locally and sustainably grown lettuce, a fast-growing and high-yield product. To organize a new distribution pathway on which the lettuce can travel, FreshRoots uses the alliances and affiliations with food distributors and restaurants that the founding restaurateur/developer has made over his years in the city. The organization has carved out pathways to and from its greenhouse to neighborhood groceries, the natural food store Whole Foods Market, and farm-to-table-style restaurants throughout the city. The funds that travel on these pathways feed back into FreshRoots to support the hydrofarm, the community aquaponics farm, and educational space that is the second dimension of its equity-oriented scale-making efforts in North Place.

Remediating Relations Between the Community and Food Production and Distribution Scales

FreshRoots’s equity-oriented scale-making efforts focused on turning this marginalized neighborhood and food desert into a regional food hub. This included introducing new cultural forms, in particular hydrofarming techniques, into the food system so that it could stretch out from the neighborhood and into the city. FreshRoots’s organizing efforts also included a plan for including North Place community members in its vision for the future. This is evident, for example, in the FreshRoots building, which has an intentionally designed multipurpose space for community members to gather and to learn and exchange ideas about growing local food. This is an attempt not just to put the geographic neighborhood on the map of the food system but also to include its residents in this system.

The FreshRoots team along with community volunteers have transformed a location blighted by urban decay into a welcoming building filled with art and hand-painted quotations written throughout the community space. The quotes hearken back to the work and ideas of activists such as Paulo Freire and Cesar Chavez as they aim to inspire present and future interactions that take place in the building. As a community space, the aesthetics of the building purposefully index the Latino community’s activist history to encourage residents to think with the artifacts and practices of this proud past (e.g., quotes and creating murals) to organize a different future for themselves with and in relation to groups like FreshRoots.

The building also has a designated urban roots area that is filled with raised beds for residents to grow their own vegetables, a small demonstration farm where
staff teach gardening and permaculture courses, and an area designated for a future marketplace where community members can sell and trade seeds and produce. This gardening area is next to the hydrofarm where the high-yield crops for regional distribution are grown. The two growing areas are physically next to each other but are linguistically marked in distinct ways, with Spanish and English used in the gardening area and only English in the hydrofarm. Movement between the two spaces is carefully controlled because the hydrofarm requires very specific temperature, air flow, and humidity inputs. This limits opportunities for residents who are not trained in monitoring the hydrofarm to participate in the activities that make the hydrofarm practices significant in this newly scaled food distribution system. Getting to grow a head of lettuce in a community plot at the greenhouse, for example, is not the same as getting to organize the production and distribution of lettuce across dense networks of restaurants, stores, and people who can pay for locally grown and organic food. These activities have different implications for variously positioned individuals, their practices, and their futures in relation to this system. The vexing problem of unequal participation and access to resources for North Place’s residents thus emerges again even in this newly scaled food system. This certainly does not condemn the approach that FreshRoots has taken in North Place. It does, however, point to the difficulties of equity-oriented scale making and the need for actors in these projects to be ever mindful of the scales on which their interventions rest and the implications of their designs for differently positioned participants.

Coordinating Changing Scales of Practice and Changing Forms of Participation to Support Consequential Learning

Within and against this shifting background of changing practices, FreshRoots has also developed initiatives aimed at cultivating new and newly valued skills, knowledge, and values among community residents. It offers, for example, gardening and permaculture courses, including one for aspiring urban youth farmers. This program introduces youths into practices around farming, community leadership, and social entrepreneurship. Through social interactions with experts and material resources available through FreshRoots classes, young people are developing skills, knowledge, and values regarding growing food, social justice, and developing business models for supporting sustainable social enterprises.

FreshRoots has also developed partnerships with local foundations to pay high school and college students from the neighborhood to apprentice with them in the technical aspects of maintaining the hydrofarm. The intention behind these types of education programs is that over time, the young participants will help to develop a robust, local food economy that can provide employment, nutritious food, and capital to organize a more hopeful future for this marginalized and economically struggling neighborhood.
These efforts recognize that it is not enough to change knowledge and practices of production; they must also prepare the world in which these young urban farmers and social entrepreneurs can be successful. Toward this end, FreshRoots also supports the development of new sociocultural values alongside new economic landscapes. Community education courses run by FreshRoots focused on nutrition and cooking aim to pave the way for pathways connected to urban farming to become feasible. That is, as community members come to appreciate locally grown foods, their taste, and their health benefits, they will want to buy this kind of food and see farming as an important profession. The establishment of a marketplace at FreshRoots where urban farmers can sell their food, as well as the development of partnerships with local restaurants, farmers markets, and grocery stores that purchase these foods, also works toward ensuring that there could be an economic future for this food and these farmers.

FreshRoots’ equity-oriented scale-making projects are grounded in the recognition that they need to imagine individual and collective learning pathways while simultaneously developing the social, technical, and economic capacities of the hydrofarm, in the neighborhood, and in the city and region. Affiliations, alliances, and connections must become mutually involved with one another if they are to extend their values about local, healthy food beyond the walls of their greenhouse (see also Latour, 1987).

DISCUSSION

Equity-oriented scale-making projects are profoundly situated in social and historical practices. Therefore, in our analyses of these projects we approached them not as the outcome of some ideal plan but as embedded in historic practices that generate possibilities for transformation. We identified a pair of tensions within these practices that we view as openings for critical reflection. Power is deeply implicated in both of these tensions, and because power is not fixed but embodied in social practices, it is to these practices that we must attend (Foucault, 1976).

The first tension revolves around practices of participation and exclusion. This was most evident in relation to the inclusion of the Somali Bantu community in the social relations organized by the community-based nonprofit and promotoras around the neighborhood’s future. Which groups can participate in the creation of new scale relations? How is the struggle over inclusion in these processes organized and enacted? These are empirical questions that we should engage, as they matter for whom and what might become relevant in these dense networks of practice.

The second tension regards the issue of doing with versus for in relation to social change efforts. This issue was present in all of our case materials as groups led by outsiders to the community tried to organize new pathways that would
benefit community members. A question we should ask is this: How can groups engaged in social change efforts, where unequal power relationships are ongoing, arrange their organizational practices, and the assumptions on which they are based, to be more inclusive and community driven?

In all of the groups we studied, there was an attentiveness to issues to equity. In fact, this is what instigated the initial efforts at change. At the same time, the groups had a strong commitment to making their desired changes happen in and with existing structures of power. These two desires did not always work hand in hand. On this point, it is helpful to keep Foucault (cited in Dreyfus & Rabinow, 1982, p. 187) in mind as we consider the design and impact of equity-oriented scale-making projects. As he wrote: “People know what they do; they frequently know why they do what they do; but what they don’t know is what what they do does.”

This warning does not mean that we should avoid doing anything for fear that it may reinforce or reproduce social inequalities and disparities. But we should be mindful of how we organize the practices and their relations that make our designs come to life because it is in their enactment that consequentiality is borne.

CONCLUSION

Learning unfolds in and across multiple and historically developing contexts (Engeström, 2011; Holland & Lave, 2001). Taking this as a fundamental assumption, we began this article by stating that we need ways to study contexts that acknowledge their inherent dynamism and recognize how their shifting nature shapes what gets counted as consequential. Although the cultural and historical situatedness of learning is a fundamental view of learning in the learning sciences (Bransford et al., 2006), we are still developing the theoretical and methodological tools that will help us understand these processes as part of generative social practice.

Studying scale-making projects, the contentious and ongoing work in which actors reorganize the social, spatial, and temporal dimensions of practice that give meaning to their actions, was the methodological strategy we used to understand “changing participation in changing communities of practice” (Lave, 1996, p. 150). We studied community organizers who were designing for more equitable futures by challenging the way in which resources, people, and practices got distributed across their communities. In each case, participants reached beyond the walls of their building and beyond the accepted knowledge practices within established communities of practice. Their work across settings, time, and activities was a key dimension of their social change efforts. This type of scale-making work demands taking a broad perspective on design and requires studying flows of people and practices within and across multiple contexts.
Although interventionist research such as design and social design experiments also involves the transformation of contexts to improve practice (see Bell, 2004), we chose to focus on social change efforts led by nonresearchers. Their design efforts were political and worked across scales, brokered new kinds of acknowledged expertise, and transformed spaces in order to enhance equity. The projects we highlighted in this article foreground how, with, and for whom scale-making projects are being organized and to what ends. Community organizing, created through the improvisational actions of people challenging the status quo, has great potential to create lasting and meaningful change (Jason, 2013; Oakes, Rogers, & Lipton, 2006). That said, learning sciences research has not taken these kinds of on-the-ground movements as part of its broad agenda.

There is a dual significance of equity-oriented scale making for the learning sciences. First, it draws attention to the moral dimensions of the interventions that are made on behalf of and sometimes with marginalized communities. In the groups we studied, their commitments and interests—which were heterogeneous, occasionally in tension with one another, and evolving—powered their collective design activities. The work that we too do as learning sciences researchers is also ideological; we never stand still or completely apart from what we study or the interventions we design, nor should we. Many learning sciences researchers strive to reduce social inequities and work toward social justice. Doing research that is motivated by these goals requires that we consider our stance and methods seriously. Our designs and how we conduct our research may reinforce and/or pose challenges to inequitable power relations, social structures, and values. Acknowledging the activism, stated or not, of our own scale-making projects is critical, as how, when, what, where, and with whom we design has implications for organizing the consequences for particular ways of knowing and knowers.

Second, our analysis of equity-oriented scale making underscores the potential that community organizing can have for making lasting social change (Shea, 2013). This point resonates with the work of scholars including Scribner (1986), Rogoff and Lave (1984), and Rose (2004) on the power of everyday cognition. To create consequential learning, we must understand learning in its many forms and locations. Attending to the politically engaged work that groups like the ones we studied engage in can also help researchers who want to collaborate around these issues understand how and where their contributions can be most beneficial. We hope our research inspires further investigation of the actions of community members and activists working together to transform the scales that shape their, and our, futures.

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