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Nature, Technology, & the Pursuit of Justice: Urban Agriculture Networks in San Diego County

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by

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ABSTRACT

Nature, Technology, & the Pursuit of Justice: Urban Agriculture Networks in San Diego County

by

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This dissertation investigates the significance of soil in distinguishing various forms of urban agriculture (UA) in San Diego County. Once dominated by traditional "soil-based" community gardens, UA is increasingly joined by technologically-advanced "soilless" growing methods like hydroponic, aquaponic, and aeroponic. These farming approaches embody different urban political economies and ecologies and engage unique, locally articulated networks of human and non-human actors that shape the way food is planted, grown, harvested, marketed, desired and consumed in the city. This research aims to uncover and examine these differences as they relate to justice, specifically the narratives, practices, and relationships that are deployed in the making of "just" urban agricultural commodities. I begin by examining how UA organizations discuss their practices in online discourse. Then, using a selection of soilless and soil-based UA projects that emphasize social justice in this discourse, I compare the material relations that promote or inhibit their justice practices. Finally, using the same subset of projects, I examine the way food justice

"commodities" are materially and discursively produced through the placed networks that support their commodity circuits.

To examine these distinctions, I use mixed methods, integrating topic modelling, mapping, and multi-locale ethnographic analysis using US Census, website content, interview, and participant observation data. To guide my investigation and interpret my findings, I use a robust theoretical framework that combines urban political ecology, economic geography, and Actor-Network Theory. The results illustrate that while the way food is grown is an important factor for UA organization's identity and practices, it is but one among the many factors that influence justice such as socio-spatial context. Justice is an ongoing process that is built from the ground up and evolves as UA commodities travel through their commodity circuits and interact with *placed* networks filled with intentions, actions, discourses, objects, actors, and forces. If we want to understand and enact justice, we have to look at this entire process of circulation – the discursive and material, the intentions and the actions, the human and non-human – to see the opportunities, possibilities, and vulnerabilities of justice.

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I. Introduction

Before attending the 2016 Grow Local O.C. conference, "The Future of Urban Food Systems," I had a relatively uncomplicated view of urban agriculture. My assessment was simple and straightforward – farm the city and achieve a sustainable and equitable urban food system. Underneath the blind faith in the power of proximity I had inherited from the popular discourse on urban agriculture, was an ignorance of its complexities. As I sat watching panels and presentations on urban growing, my naivety slowly unraveled – urban agriculture in practice is far more complicated and evasive than the popular local food movement portrays.

First, farming the city, which conjures images of bountiful gardens set against backdrops of skyscrapers and school children pulling carrots from the dirt, is increasingly diverse – there are many ways to do it and not all of them require soil or even sunlight (although the latter forms are marginal in sunny southern California where the conference took place). The conference hosted panelists representing community gardens, urban farms, vertical gardens, and aquaponic and hydroponic greenhouses (soilless methods), each with their own set of diverse actors, attitudes, histories, and affairs.

Second, while all of these actors were seemingly united under the banner of "The Future of Urban Food Systems," these relationships were tenuous at best. Growers using soil-based and soilless methods rarely sat on the same panels and divisive comments, such as one farmer's quip "This generation doesn't like to get their hands dirty," highlighted tensions among these groups. Other differences revolved around their missions to feed the world, solve local food insecurity, provide job training, or encourage community building.

Third, the content of the panels that separated the two groups highlighted their unique challenges. For instance, soil-based panelists confidently reported on the creation of

community capital and justice using urban agriculture, but explained how they struggled with accessing economic capital during the "Urban Farming and the Creation of Community and Economic Capital" panel. Soilless panelists, however, mostly discussed the technical components of scaling up and its economic advantages, but failed to integrate concepts of community and social justice during "Controlled Environment Farming in the City." The internal conflicts of urban agriculture were undoubtedly on display at the conference. I left the conference perplexed, but filled with questions which would soon become the basis for this dissertation. I wondered, is this representation correct? Are soilless urban growers solely profit-driven or do they create social benefits like fostering justice? Are there tradeoffs between sustainability and social justice? Do opportunities exists to more meaningfully unite the two groups?

Thinking through these questions led to one broad research question: What is the relationship between the growing method chosen for urban agriculture, whether it be soilless or soil-based, and social justice? This dissertation examines this question in the context of San Diego County's growing urban food system using a comparative approach. To organize my research, I break down this main question into three related sub-questions: (1) How do soilless and soil-based urban agriculture organizations *think* and *talk about* food justice?; (2) How do these urban agriculture organizations differ in *doing* justice?; and (3) How are food justice "commodities" materially and discursively produced through that place-based that scaffold their commodity circuits? To answer these questions, I integrate content analysis, spatial exploratory spatial data analysis, and multi-locale ethnographic analysis using a robust theoretical framework that combines urban political ecology, economic geography, and actor network theory. The next section discusses relevant literature on urban agriculture

and justice, which leads to a discussion of the theoretical framework, a discussion of methods, and an overview of the rest of the dissertation.

A. Review of Relevant Literature

Urban agriculture has a rich history in the United States, evolving from a 20th century strategy for self-sufficiency during times of war and economic depression to a radical and alternative approach to food production in the 1960-70s (Belasco 2014). Today, urban agriculture has grown in popularity and is an increasingly commoditized feature of urban lifestyles (Joassart-Marcelli and Bosco 2014, Bosco and Joassart-Marcelli 2017, 2018a). The move towards urban food systems is part of a larger trend to localize foodways in the United States by decreasing so-called "food miles" (Smith and Mackinnon 2007, Pollan 2006, Lappé and Lappé 2002,) and reconnecting food consumers and producers to create trust, accountability, and transparency (Hunt 2007, Seyfang 2006, Ostrum 2006, Ross 2006, Feagan 2004). Underneath this umbrella, urban agriculture symbolizes a myriad of ambitions including increased well-being via access to 'good' food and green space, improved sustainability, stronger local economies, and a greater sense of community (Feenstra 1997, Bosco and Joassart-Marcelli 2018a). Urban agriculture is also an important component of more radical movements like of food justice and food sovereignty (Holt-Giménez 2011).

Researchers have critiqued the assumptions underlying local food systems and urban agriculture, namely that this myriad of benefits will come from localizing food sources. Born and Purcell (2006) challenge this "politics of scale" (see Smith 1992) which privileges local food production without critically examining actors' agendas and confuses broader goals like food justice and means like localization, calling it the "local trap" (p. 195). Researchers have also illustrated the racial tensions surrounding local food, noting that participants tend to be

primarily affluent and white (Slocum 2007; Guthman 2008b, 2011), transforming urban agriculture into "a way for local elites to create protective territories that narrowly serve their own interests" (Goodman, Dupuis, and Goodman 2014, p. 18). This "defensive localism" (Winter 2003, p. 26) can "create and maintain social exclusion, economic inequality, and social justice" (Goodman, Dupuis, and Goodman 2014, p. 31). Researchers instead call for an embedded, "place-based" perspective (Joassart-Marcelli and Bosco 2014, DeLind 2010, Born and Purcell 2006) that incorporates a progressive sense of place (Cadieux and Slocum 2015) and "attends to [food's] historic, political, economic, sociocultural, and scientific aspects" (Joassart-Marcelli and Bosco 2018a, p. 17), calling upon visions of spatial justice (Agyeman 2013, Bosco and Joassart-Marcelli 2018b).

Spatial justice incorporates justice with important geographic concepts like space and place. Indeed, justice unfolds within and across spaces that either create or restrict opportunities for representation, access, participation, and belonging (Soja 2010, Mitchell 2003, Lefebvre 1972). Space has been a source of productive conversation among geographers, growing from the absolute, Newtonian conception of space as a container to the abstract, relational space of the cultural turn that inspires this research (Cresswell 2012, Mitchell 2003). The relational concept, inspired by Lefebvre's conception of space as the product of interrelations (Murdoch 2005), has been incredibly influential in the discipline, shifting the focus from topography to topology. This relational approach sees space as produced through relationships that reflect power inequalities (Murdoch 2005). This view of space has been influential for theorists like Smith (2010, 2005) and Mitchell (2003), as well as Massey (2005), and drives this research. As Joassart-Marcelli and Bosco (2018) argue, the concept of space contributes productively to concepts like food justice by considering "how

the spatial organization of the food system generates economic inequality, health disparities, social oppression, and uneven environmental barriers" (p. 24).

Place is also an important concept in geography that underlies this research. Place can refer to a geographic location where practices unfold, the locale or setting of practices, or to a feeling or experience of place (referred to as *sense of place*) (Cresswell 2014, Agnew 1987 in Joassart-Marcelli and Bosco 2018a). In thinking about social movements, "place is both a setting for and situated in the operative of social and economic processes, and it also provides a 'grounding' for everyday life and experience" (Martin 2003, p. 732). Place undoubtedly matters in local food movements like urban agriculture (Joassart-Marcelli and Bosco 2018a, Harris 2010, Winter 2003) and underlies concepts such as civic agriculture and community-based agriculture (DeLind 2011, 2002). Further, place as a locale (or socio-spatial setting) is important for understanding justice as embedded within local socio-natural geographies.

As urban agriculture has grown and evolved, it has become more diverse in its form and spatial distribution, transforming a growing number of places in the process. Traditional, *soil-based* models like community gardens and urban farms are increasingly joined by *soilless* models, particularly hydroponics and aquaponics, that grow in greenhouses and even in buildings. Hydroponics uses a "nutrient solution root medium" to grow plants in place of soil (AFSIC 2019). This method is praised for its reduced water and agrichemical use (Alshrouf 2017, Barbosa et al. 2015, Putra and Yuliando 2015). Aquaponics uses a similar method, but incorporates aquaculture "to produce fish and plants in a closed-loop system that mimics the ecology of nature" by recirculating water with nutrient-rich fish waste that is filtered by the plants, enriching them and reducing waste (Pattillo 2017). However, these

methods often require more energy inputs than conventional production schemes (Barbosa et al. 2015).

Although the majority of urban agriculture in the United States is still soil-based, soilless models are expected to become an increasingly present feature in urban landscapes. Soilless urban agriculture has yet to feature prominently in scholarly and popular literature on urban food systems, although targeted searches will return articles on "Z-Farming" or farming on zero acres (Specht, Siebert, and Thomaier 2016, Thomaier et al. 2015, Specht et al. 2014), rooftop greenhouse gardening (Sanyé-Mengual et al. 2015a; Sanyé-Mengual et al. 2015b), vertical farming (Al-Chalabi 2015, Besthorn 2013, Despommier 2009) and popular books like *The Vertical Farm: Feeding the World in the 21st Century* by Dr. Dickson Despommier (2010). Aside from rooftop agriculture (Specht, Reynolds, and Sanyé-Mengual 2017), which often still use soil-based growing practices, very little critical literature considers the social justice impacts of soilless agriculture. Reynolds and Cohen (2017), however, do note that "high-tech projects such as rooftop farms and other entrepreneurial urban agriculture initiatives" are overwhelming white, middle-class, and male and may draw attention (and funding) away from more radical, soil-based projects undertaken by people of color, low-income communities, and women.

The technological innovation that attracts funders to soilless urban agriculture thrives in urban landscapes (Ettlinger 2001) where shared landscapes and cultures, increased competition, and public-private partnerships stimulate invention (MacKinnon and Cumbers 2007, Gibson and Kong 2005, Rantisi 2002, Markusen 1996). However, access to cultures of innovation is not ubiquitous and often reinforces social division between high-paid "knowledge workers" who tend to be "mostly male, mostly white, very highly educated…"

and the low-wage service workers whose labor undoubtedly supports innovation (Dyer-Witheford 1999, p. 301). This division is reinforced by an "ideology of technocracy" that sees those with technical knowledge as more valuable to society (Marcuse 2004). The knowledge workers that develop soilless technologies such as scientists and engineers have been theorized as members of a "creative class" (Florida 2005, 2003) that thrives in cities. This "creative city" discourse complements neoliberal policies that influence economic development in cities (Langegger 2015, Peck 2005) and urban agriculture (Bosco and Joassart-Marcelli 2017, Joassart-Marcelli and Bosco 2014, McClintock 2014, Kaufman and Bailkey 2000), favoring entrepreneurial approaches (Gandy 2006, Harvey 2002) that reinforce "market-oriented economic growth, commodification, and the rule of capital" (Brenner and Theodore 2002, p. 362) and create social exclusion by privileging the urban elite (MacLeod 2002).

The neoliberal agenda caters to a corporate food regime which includes food enterprises, as well as reformists strategies in urban agriculture like those emphasizing 'food security' (McClintock 2014, Holt-Giménez 2011, Agyeman and McEntee 2014). Indeed, the rise of the 'social enterprise' to address food insecurity and relieve federal institutions from the "vagaries of food assistance programs" (Allen 2003, p. 123), as well as provide job-training and workforce development, falls squarely in the realm of neoliberalism (Brenner and Theodore 2002, Graefe 2002). The focus on entrepreneurialism draws attention away from "deeper social injustices like racialized poverty, educational disparities, and political disenfranchisement" (Reynolds and Cohen 2016, p. 6; also see McClintock 2014) and ignores the significant barriers that communities of color face in transforming their food environments. The neoliberal model of urban governance shifts fiscal responsibilities onto

communities and nonprofits that, at least in low-income neighborhoods, are poorly equipped and ill-prepared to address social problems (Joassart-Marcelli 2012, McClintock 2014). The role of the state is reduced to that of a facilitator, encouraging private investment and innovation through partnerships, rather than providing a social safety net. Furthermore, by increasing low-income neighborhoods' attractiveness to outsiders, urban agriculture has been tied to gentrification or the displacement of long-term residents by more affluent and primarily white newcomers (Reynolds and Cohen 2016, Joassart-Marcelli and Bosco 2014, 2018b, McClintock 2014, Crouch 2012). Displacement, which ties directly to questions of land ownership, is higher in low-income communities of color who have histories of marginalization that have created barriers to becoming property owners (Shapiro et al. 2013, Engel and McCoy 2008, Massey and Denton 1993).

Acknowledging the structural inequities that underlie urban agriculture (Colasanti, Hamm, and Litjens 2012, Cohen and Reynolds 2015, DeLind 2015), food justice and food sovereignty take more radical approaches to urban food systems. Food justice – the idea that every person has the right to access affordable, healthful, and culturally appropriate food produced in an ethical and environmentally sound way (Just Food 2010) – begins the task of unraveling the race-, class-, and gender-based inequities that shape food production, distribution, and consumption (Alkon and Agyeman 2011, Holt-Giménez 2011, Gottlieb and Joshi 2010). Food sovereignty, arguably the most radical approach, seeks to dismantle systems of privilege like capitalism and neoliberalism, enabling marginalized communities to plan and make decisions about their foodways through participatory and community-oriented projects (Cadieux and Slocum 2015, Holt-Giménez 2011, Alkon and Agyeman 2011).

Geographers, in particular, have taken the lens of spatial justice (Lefebvre 1972, Soja 2010, Harvey 2010[1973]) to examine food justice, asking "who is included, who belongs, who has access to resources, and who benefits from these opportunities" in particular food spaces (Joassart-Marcelli and Bosco 2018a, p. 24). Further, they consider the role of socio-spatial setting in producing particular ideas of justice (Harvey 1996), including distributive justice, which stresses fairness in outcomes (Walker 2009) like access to food (Eckert and Shetty 2011, Walker, Keane, and Burke 2010, McKentee and Agyeman 2010), and procedural justice, which emphasizes fairness in procedures such as participation in decision-making and food system planning (Walker 2009). The right way to define or do justice, particularly within the so-called alternative food movement has been the source of productive scholarly conversations (Cadieux and Slocum 2015, Hinrichs 2003, Allen 1999, Herman and Goodman 2018). However, researchers like Goodman, Dupuis, and Goodman (2014) have urged that we move away from standard setting towards a more nuanced, imperfect understanding of justice that is situated, admits conflicts, and is malleable to present conditions. As Sbicca (2018) argues in a special issue of *Local Environments* on "new spaces of food justice," it is time that we acknowledge the multiple ways of *doing* food justice, while at the same time recognizing the universality of food struggles. Focusing on the practices of food justice requires that we pay attention to growing methods, among other things.

The connection between the growing method (soilless and/or soil-based) and justice has been undertheorized – although, assumptions around the motivations of actors (Reynolds and Cohen 2016) and romantic images of children with dirty hands (Guthman 2008a, 2008b, 2014, Kobayashi and Peake 2000) persist in the food movement. Little is actually known

about how burgeoning soilless urban agriculture contributes to justice. This dissertation seeks to fill this knowledge gap by examining soilless and soil-based urban agriculture in San Diego County. To this end, I developed a theoretical framework that combines urban political ecology, commodity circuit analysis, and actor-network theory, in order to rigorously approach my research questions.

B. Theoretical Framework

This research is underpinned by a theoretical framework that integrates three areas of theory – political ecology, economic geography, and actor-network theory – that have been exceptionally influential in the field of geography and, more recently, in the study of food. Political ecology, particularly urban political ecology provides the foundation for this dissertation, as it frames the way I theorize nature in the city, allowing me to abandon dualisms that produce a priori assumptions about different forms of urban agriculture. Urban political ecologists, Heynen, Kaika and Swyngedouw (2006) argue "there is nothing *a priori* unnatural about produced environments like cities" (p. 11). Indeed, cities are simultaneously social and natural, discursive and material "socio-ecological assemblages" (Heynen, Kaika and Swyngedouw 2006, p. 6, Whatmore 2002). This view removes long-standing dualisms between nature and society that undergird the capitalist exploitation of environmental resources and labor (Goodman 2017, Smith 2010, Castree and MacMillan 2001) and frame popular discourses on urban agriculture (Alkon 2013). However, scholars have noted that it fails to upend the nature-society dualism, instead framing nature and society as two spheres with a dialectical relationship, which can still lead to prioritization of particular domains (Castree and MacMillan 2001). Relational geographers instead argue for a hybrid approach (Whatmore 2002), that recognizes "the intimate, sensible and hectic bonds through which

people and plants; devices and creatures; documents and elements take and hold their shape in relations to each other in the fabrications of everyday life" (Clark 1997 in Whatmore 2002, 3). Such an approach, which emphasizes networks and connections, shares much in common with actor-network theory – one of the three main theoretical foundations of this dissertation.

Nonetheless, urban political ecology unveils the power relations underlying uneven urban landscapes, with implications for food justice (Agyeman and McEntee 2014). Swyngedouw (2004) notes, "the material conditions that comprise urban environments are controlled, manipulated and serve the interests of the elite at the expense of marginalized populations" (Heynen, Kaika, and Swyngedouw 2006, 6). Indeed, in capitalism, raw materials, capital, and land are unevenly distributed and concentrated among a few individuals and corporations. This ownership gives this group power to exploit labor and nature. These material relations are embedded into particular spaces (Harvey 1989) and commodities, obscuring exploitation (Heynen, Kaika and Swyngedouw 2006). The corporate food regime uses this "commodity fetishism" to hide the socio-natural relations of productions that might dissuade consumers and inhibit endless capital accumulation (Swyngedouw and Heynen 2003). Work in economic geography on global commodity chains and circuits (Challies 2008, Castree 2001, Cook 2004, Leslie and Reimer 1999, Mansfelt 2005) has sought to "lift the veil" on the secret lives of commodities in the apparel (Gereffi 1999, 1994, Crewe and Davenport 1992) and agri-food industries (Cook 2004, Raynolds 2002). This work seeks to unravel the 'geographical knowledges' (Cook and Crang 1996) or 'political ecological imaginaries' (Goodman 2004) that people possess about settings, biographies, and origins that obscure the material and social relations of production and consumption (Evans and Joassart-Marcelli 2017, Cook and Crang 1996). Revelations on these material and social relations of

production have stimulated a rise in ethical consumerism (Evans and Joassart-Marcelli 2017, Goodman 2004, Wright 2009), although a *double fetish* can still occur when products are valorized by virtue of their alterity (Evans and Joassart-Marcelli 2017, Goodman 2004).

The commodity circuits approach has undoubtedly been fruitful in research on the geographies of food (Cook 2006). Stemming from critiques of commodity chain analysis stating that it was too focused on production, the circuit approach accounts for the role of consumption and culture in the lives of commodities, examining "how culinary culture is constituted through commodity meanings and practices as they circulate and are reconstructed across systems or networks from one site to another" (Watts 2005, p. 116).

The idea of circuit connects productively to actor-network theory, the final leg of this theoretical framework. This relational approach, sees the world as a collection of heterogenous assemblages (networks) made up of hybrid human actors and non-human actants, the latter describing anything that is a source of action, but lacks the motivation we typically associate with human actors (Latour 2005, Ginn and Demeritt 2009, Bosco 2015), such as soil, water, and organic certification. Their networks are constantly being (re)negotiated through processes of translation in which actants are enrolled in network assemblages (Latour 2005, 1993). This theory is useful for examining urban food networks which are composed of "interconnected networks of farmers and gardeners, government agencies, supportive organizations, foundations, and investors, as well as the natural environment and the policies and programs that affect city's food and environmental systems" (Reynolds and Cohen 2016, p. 12). For instance, Goodman (2017) argues that different forms of agriculture represent competing collectives that "must foil efforts by competing collectives to translate and enroll their constituent entities" (p. 30). Actors may

shift and enroll in competing networks as a reaction to changing circumstance or events. Similarly, new actants will emerge and become part of networks as new policies, spaces, products, technologies, and stories emerge. This concept connects to arguments that see different forms of urban agriculture, like soilless and soil-based, as part of difference (and at times competing) networks (Reynolds and Cohen 2016).

Actor-network theory has undoubtedly been useful in the study of geographies of food (Morris and Kirwan 2010, Murdoch, Marsden, and Banks 2000, Whatmore et al., 1997). One of the strengths of actor-network theory is its ability to bring together the material and discursive to consider how narratives are produced by different actors in ways that reflect and shape practices (Bosco 2007a). Actor-network theory has also been particularly fruitful in understanding social movements (McFarlane 2009, Bosco 2007, 2006b, 2001), with ramifications for the study of alternative food movements such as urban agriculture (Stassart and Whatmore 2003, Marsden 1997, Whatmore and Thorne 1997, Jarosz 2000, Goodman 1999). However, it has been the source of scholarly critique, particularly around how it treats power relations. For example, Ginn and Demeritt (2009) argue the theory "merely describes rather than also critiquing persistent inequalities… remain[ing] complicit in reproducing relations of inequality" (p. 308). This conceptualizes power as de-centralized within networks, potentially ignoring the disproportional power particular actors have to persuade, and thus enroll, others, including non-human actants, into their network. Instead, researchers call for a weaker actor-network theory, that recognizes that "agents, while social, natural, and relational, vary greatly in their powers to influence others; that power, while dispersed, can be directed by some (namely, specific 'social' actors) more than others" (Castree and MacMillan 2001, p. 222).

The three theories connect productively to questions of justice. Inspired by Marxism and political-economy, urban political ecology examines the uneven power relations and inequities – such as exploitative land and labor practices – that underlie commodities like urban agriculture in the context of capitalism. Commodity circuit analysis and actor-network theory come together to unveil these inequities by "following" urban agriculture across its local commodity circuit and examining the networks of actors and non-human actants that scaffold the material and symbolic lives of urban agriculture commodities. In combining these three perspectives, my theoretical framework allows me to examine the race- and class-based power relations that are embodied in various urban agriculture networks and draw conclusions about justice.

C. Methodology

This research uses mixed methodology – a subcategory of research methods that allows data from multiple sources to be integrated to create comprehensive, empirical accounts of phenomena (Axinn and Pearce 2006). Specifically, this research uses a *quantitative preliminary design*, which consists of using quantitative observations as a starting point to inform a broader qualitative study. This design may be used to accomplish two goals: 1) to explain quantitative results with qualitative research and 2) to use quantitative data to inform sampling choices for subsequent qualitative analysis (Cresswell and Clark 2007). This research capitalizes on both of these strengths. Here, quantitative analysis, specifically topic modelling, is the starting point for understanding how people at various urban agriculture sites t*hink* and *talk about* justice and is subsequently elaborated using a qualitative method called multi-locale ethnographic analysis. This in-depth form of analysis allows us to further understand the nuanced, everyday experiences of justice that exist throughout urban

agriculture commodity circuits. The prerequisite topic modelling also informs sampling, particularly the urban agriculture sites chosen as case studies for ethnography, and is supported by exploratory spatial data analysis. Combining quantitative and qualitative methods allows me to thoughtfully answer the questions at the heart of my dissertation with rigor that would arguably be limited by choosing a single method.

1. Data Collection

Multiple forms of data were required for this research. First, an exhaustive list of urban agriculture production sites and regional organizations in San Diego County was compiled in Excel with respective geographic locations and website addresses. For sites and organizations with websites (omitting webpages hosted on Facebook), textual data on all webpages were pulled and compiled in .txt files. The abstracts of scientific literature on urban agriculture were also downloaded using the Web of Science database and compiled into a .txt file to aid in topic modelling of website textual data. To analyze the socio-economic landscapes in the county – population, economic characteristics (like median household income, unemployment, poverty rate, among others), race, ethnicity, and immigration, housing, and businesses data – I use tract-level data from the 2013-2017 American Community Survey 5-Year Estimates, of the United States Census.

Multi-locale ethnographic analysis required ethnographic fieldwork. This fieldwork included two years (2016 to 2018) of extensive participant observation at multiple sites in the local urban agriculture networks of three case sites chosen through analysis of textual data from websites and geographic data from exploratory spatial data analysis. Thirty-four semi-structured interviews with actors in these networks including city planners, growers, technical experts, funders, nonprofit leaders, farmers' market vendors, chefs, consumers –

were also performed. The interviews were approximately an hour in length and covered institutional histories, actors' personal motivations for participating in urban agriculture, their growing practices, their perceptions of the local food environment, and the struggles and barriers they perceive to urban agriculture. Finally, secondary data, particularly newspaper and magazine articles, were pulled to supplement the primary data collected at these sites. Ethnographic data collection across multiple sites is consistent with the multi-locale ethnographic approach which moves away from the convention of examining a single site as an isolated container of examining social relations (Falzon 2016).

2. Data Analysis

Textual data from websites and scientific literature were analyzed using topic modelling – a common content analysis research method (Blei 2012). The main objective of topic modelling is to condense textual, verbal, or visual messages into concepts or categories that can be used to describe phenomena and build conceptual maps (Elo and Kyngäs 2007). Topic modeling has been used to analyze various texts, including journal articles (Blei 2012), blogs (Adams and McKenzie 2013, Paul and Girju 2009), and more recently, Twitter data (Ghosh and Guha 2013, Hong and Davison 2010). Here, this technique was used to discern how members of soilless and soil-based urban agriculture organizations *think* and *talk about* food justice, specifically in online discourse. First, the abstracts from scientific literature on urban agriculture were condensed and modelled to create a reference for a second model of the textual content of local urban agriculture organization and business websites. This subsequent model was used to build discursive maps that unveiled the connections between online discourse, affiliation, and growing method (soilless and soil-based). Discursive maps also provided a visual representation of the discursive relationships between urban

agriculture production sites in San Diego County which aided in choosing case sites for ethnographic analysis.

Socio-economic maps were also used to choose the case sites. These maps were created using ESRI Geographic Information Systems (GIS) software. They combined the geographic locations of urban agriculture sites with the Census tract level data on socio-economic landscapes of San Diego County. Using these geographic maps, the discursive maps, and basic information on site characteristics such as growing method and affiliation, three case sites were chosen for further analysis: Coastal Roots Farm, Mt. Hope Community Garden, and Solutions Farms. Stakeholders at all of these food growing sites expressed concerns for social justice issues like poverty, racial oppression, and homelessness, respectively. Coastal Roots Farm and Mt. Hope Community Garden were chosen because they, interestingly, the sites shared discursive concerns – they are on top of one another on the discursive map – and use soil-based growing practices, but are located in neighborhoods with incredibly disparate socio-economic circumstances. Their discursive similarities and geographic differences, and seemingly different approaches to justice, make these sites interesting for further analysis. Solutions Farm, an aquaponic social enterprise model, is another interesting site because it is discursively and geographically distant from the other two sites, and uses a soilless growing method to tackles social concerns.

With the case sites chosen, targeted exploratory spatial data analysis (ESDA) was performed to examine and understand the socio-spatial landscapes and place characteristics that influence their actor-networks. ESDA has become a popular method in social science research including human geography because it enables researchers to visualize and explore socio-economic data and identify spatial patterns (Goodchild et al. 2000, Anselin 1999). This

analysis enriched our discussion of interview and participant observation data. These data were coded using secure, online coding software called Dedoose. Both a priori and emergent coding schemes were used to understand justice narratives and practices described and embedded in these data. The a priori coding scheme was designed to encompass direct acknowledgments of justice including food security, food justice, social justice, and food sovereignty narratives and practices, as well as the barriers network members perceive to urban agriculture. Emergent coding was focused on more nuanced expressions of justice illustrated in everyday events that reveal the power dynamics and struggles that influence justice. Combining and analyzing ethnographic data collected at multiple sites within the actor-networks spanning the three distinct commodity circuits was necessary for examining the "people, connections, associations, and relationships across space" (Falzon 2016, p. 1) that influence justice narratives and practices.

These methods – topic modelling, exploratory data analysis, and ethnographic multi-locale analysis – were integrated to deepen understandings of justice in San Diego County. Together, they allowed us to move from the publicly-available information displayed on growers' websites to a more detailed examination of the nuanced, everyday experiences that unfold across the actor-networks that scaffold their entire commodity circuits (of which a production site is merely a single place where justice evolves).

D. Overview of Dissertation

This dissertation is divided into three papers related specifically to the three research questions outlined in the introduction of this chapter. They are tailored to each question individually, but build upon one another productively to reveal the broader connection between food justice and multiple forms of urban agriculture in San Diego County. In the

first paper, "Untangling method and motivation in urban agriculture: moving beyond a politics of technology," a collaborative effort with Tim Schempp, M.S. and Dr. Andre Skupin, we begin the process of examining urban agriculture in San Diego County by investigating the themes underlying urban agriculture actors' online presence, specifically website content. Themes, first identified through topic modelling of scholarly literature on urban agriculture, include *location*, *food security*, *community gardening*, *social movements*, *food access*, *climate* change, and *innovation*, among others. We use a novel, computer-mediated method that combines natural language processing, dimensionality reduction, and data visualization to create discursive maps of the themes that urban agriculture organizations and businesses in San Diego County use to represent themselves. The discursive maps allow us to examine the associations between content themes (or topics) present on websites and factors including growing method (soilless or soil-based) and affiliation (e.g., community, school, church, business, etc.). The primary goal of this paper is to understand whether there is a connection between the growing practices organizations and businesses use and the themes present on websites, especially those associated with justice.

This paper quantitatively grounds further discussion of the discursive realities of urban agriculture in the second paper, "Thinking and doing justice: urban agriculture in San Diego County." Using three case studies chosen based on their online discursive representations (from paper one), socio-spatial settings, and growing characteristics, I examine how local urban agriculture organizations, including soilless and soil-based, define and practice justice. This paper takes a reflexive approach to justice that moves away from "politics of perfection" (Goodman, Dupuis, and Goodman 2014) and is embedded in spatial justice and a progressive sense of place that is "open and receptive to diversity and plurality" (Cadieux and Slocum

2015). Specifically, I assess the role of distribution, participation, and recognition in justice narratives and practices, paying special attention to the socio-spatial settings they are embedded in locally. Analysis centers around the role of land, labor, and capital—all of which are used in urban agriculture in various degrees and forms. Using a spatial perspective that acknowledges the importance of place and context, I explore the role of these three factors in producing opportunities and barriers for the three organizations to achieve justice, highlighting disparities in access, ownership, and management among them.

Building on these case studies, the final paper, "Connecting the dots: local urban agriculture commodity circuits," in collaboration with Dr. Pascale Joassart-Marcelli, use multi-locale ethnographic analysis to explore the complexities and nuances of justice across the three case sites' entire commodity circuits. Here, we examine the complex symbolic and material lives of the urban agriculture commodities at these sites and the unique, locally articulated networks of human and non-human actors that support them. These networks embody different, but often overlapping, urban political economies (governing political and economic structures) and political ecologies (socio-environmental relations) that materially and discursively shape food production, distribution, and consumption. We juxtapose vignettes from various nodes (or "dots") along each case's commodity circuit to understand the place-based socio-natural relationships, including those related to class and race, that scaffold urban agriculture commodities and invite readers to "connect the dots."

Together, the three papers present a thorough account of the idiosyncrasies of justice in the growing, and increasingly diverse, urban food movement in San Diego County. They acknowledge, but ultimately abandon divisive narratives that make a priori assumptions regarding the connection between growing method (soilless or soil-based) and justice and

instead unravel the question of how different forms of urban agriculture contribute to justice. As will become clear in the coming chapters, justice is more complicated than an abstract concept or measurable outcome – it is a process that is constantly unfolding within and across space.

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II. Untangling Method and Narrative in Urban Agriculture: Moving Beyond a Politics of Technology

Urban agriculture has a rich history in the United States, evolving from a 20th century strategy for self-sufficiency to a radical and alternative approach to food production in the 1960s and 70s (Belasco 2014). Today, urban agriculture is a highly-commoditized feature of the urban landscape and represents a growing sector of the green economy (Alkon 2012; Joassart-Marcelli and Bosco 2014). It is also more diverse than ever – traditional, *soil-based* practices like community gardening and farming on vacant, urban lots are now accompanied by small-scale, technologically-advanced, *soilless* forms of food production like hydroponics and aquaponics that enable food to be grown on rooftops, in greenhouses and abandoned buildings, and in mobile shipping containers. These physical distinctions are also accompanied by interrelated variances in "scope, scale, type of access and for whom, participants, and goals" (Horst, McClintock, and Hoey 2017). For instance, the participants undoubtedly (although often unequally) influence the narratives and goals of an urban agriculture project, whether it be environmental sustainability (Smit, Nasr, and Ratta 1996; Deelstra and Girardet 2000); human health and well-being (Brown and Jameton 2000; Armar-Klemesu 2000); distributive justice and economic autonomy (Alkon 2012; Alkon and Agyeman 2011; Feenstra 1997); challenging historical legacies of privilege and marginalization (Reynolds and Cohen 2016); and/or participation in the new food economy (Blay-Palmer and Donald 2006). Recently, researchers of urban agriculture have begun paying attention to actors' motivations (Born and Purcell 2009; Joassart-Marcelli and Bosco 2014) and the narratives underlying them (Alkon 2013, Guthman 2008a). However, this literature focuses almost solely on actors operating in the traditional networks of urban agriculture practice (e.g., community gardens, farmers' markets, co-operatives, and related

organizations and institutions), paying little attention to recent and innovative approaches to urban agriculture that incorporate technology.

This research provides an inclusive account of the narratives, specifically online webpage content, of urban agriculture sites and organizations in San Diego County – a county with a rich agricultural tradition that possesses both soil-based and soilless forms of UA. We use a novel, computer-mediated method that reveals hidden trends and avoids unproductive researcher biases. The result is a map of discursive relationships that transcends what we call *politics of technology* in which the narratives, and ultimately goals and motivations, of urban agriculture sites are taken for granted based on their growing methods. This politics of technology, which classifies certain forms of growing as either 'good' or 'bad' based upon their use of technology, is misleading. Instead, we argue that there is nothing inherently good or bad about urban farming methods. To support this claim, in this chapter, I examine the motivations and goals that are highlighted in the narratives presented on the websites of San Diego's main urban agriculture organizations. The primary focus here is the ways organizations represent themselves and their work to the general public, including volunteers, policy makers, and potential funders. In subsequent chapters, I will turn my attention to the practices of these organizations in an attempt to draw connections between discourses and on-the-ground activities.

A. Review of Relevant Literature

The growing diversity of urban agriculture calls for research that accounts for its increasing complexity. This means more inclusive research that recognizes the many forms of urban agriculture, including new soilless configurations. For the purpose of this research, we define soilless urban agriculture as urban food production in greenhouses and in/on

buildings that use hydroponic, aquaponic, or aeroponic technology. This definition expands the idea of "ZFarming" – referring to farming on zero acres including "rooftop gardens, rooftop greenhouses, indoor farms, and other building-related forms" (Specht, Siebert, and Thomaier 2016) – by focusing less on the location of urban agriculture and more on the production process. It excludes vertical and rooftop farms that do not incorporate hydroponics, aquaponics, or aeroponics and avoids vague monikers like 'innovative' or 'high-tech' (University of California Division of Agriculture and Natural Resources 2017; Reynolds and Cohen 2016). The physical descriptors associated with soil-based and soilless urban agriculture differ in the literature (Fig 1). Using the term 'soilless' allows us to untangle our classification from those already established in the urban agriculture literature and draw attention to actors, technologies, and spaces commonly missing in definitions of urban agriculture.

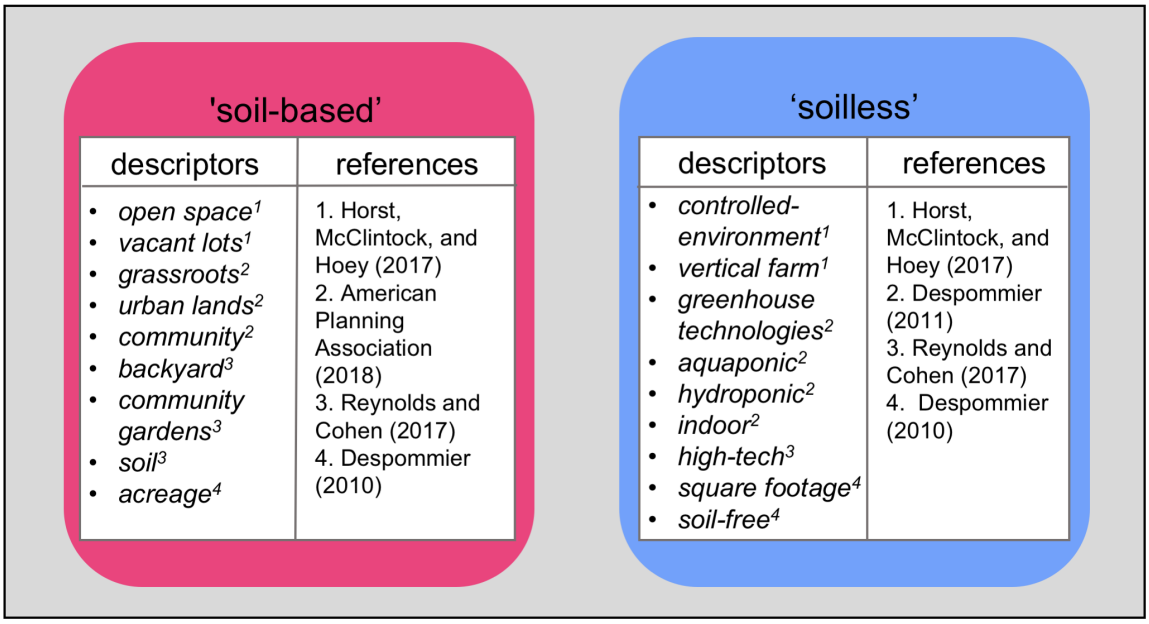

Fig. 1 Descriptors for the physical characteristics of traditional and technologically-advanced urban agriculture and their associated references

Soilless urban agriculture is an emergent feature of the urban agriculture landscape throughout the Global North; however, it is still in an "early innovation phase" (Specht, Siebert, and Thomaier 2016). Little scholarly literature exists on soilless urban agriculture (Thomaier et al. 2015) save for a few examples on stakeholder perceptions (Specht, Siebert, and Thomaier 2016), descriptions of practices and novelties (Thomaier et al. 2015), and assessments of environmental and economic impacts (Sanyé-Mengual et al. 2015a; Sanyé-Mengual et al. 2015b). What research does exist tends to conflate it with entrepreneurialism (Reynolds and Cohen 201; Cohen et al. 2012). Rooftop agriculture is gaining recognition for its community and social justice benefits (Specht, Reynolds, and Sanye-Mengual 2017); however, growing food on rooftops represents only a small aspect of technological innovation in urban agriculture. Urban agriculture is also practiced in greenhouses, warehouses, and shipping containers with or without the use of soil. Further, soil-based rooftop gardens may not carry the same stigmatization as those that use soilless technologies. Recently, researchers have examined the contributions that aquaponics can make to urban food sovereignty in Milwaukee and Melbourne (Laidlaw and Magee 2016); however, this type of research is largely lacking.

Here, we attempt to correct the direction of the current research agenda. Just as the seminal critique by Born and Purcell (2006) challenged the *politics of scale* that privilege local food production as inherently better without critical inquiry into actors' agendas, we challenge the *politics of technology* in urban agriculture that privilege certain production methods as 'inherently better' without examining actors' narratives and practices. Researchers have examined politics of technology in the context of the design of information technology, exploring the construction of ontological differences between "technology" and

"human work" (Berg 1998). Latour (2012) has also grappled with ethical arguments around technology, arguing that it is how we engage with technology that tips the moral scales. We ultimately build on Born and Purcell (2006), arguing that there is nothing inherently superior about any given urban growing process and confusing the means by which food is grown in the urban setting with the ends (or goals) that growing food in cities aims to achieve is fallible. The use of advanced technology in urban agriculture requires a reflexive, critical examination regarding the diversity of participants, narratives, and practices in urban agriculture.

This research is preceded by a growing body of literature that examines the motivations of actors involved in urban agriculture in cities throughout the Global North (McClintock and Simpson 2018, Dwiartama and Piatti 2016, Joassart-Marcelli and Bosco 2014, Block et al. 2011). Recent research on urban agriculture organizations and businesses throughout Canada and the United States provides an interesting national context, identifying a series of motivational frames based on survey responses including Entrepreneurial, Sustainable Development, Educational, Eco-Centric, DIY Secessionist, and Radical frames (McClintock and Simpson 2018). This research reveals some interesting patterns, but unfortunately does not include technologically-advanced forms of growing. This investigation of motivations links productively to an analysis of the topics underlying urban agriculture narratives. Indeed, narratives around health, sustainability, justices, and more, often are driven by and drive motivations; however, as researchers note, examining advertised narratives and stated motivations is not (and should not be) a substitute for examining practices – see discussion of justice by Cadieux and Slocum (2015). To that effect, this research is but a step in the process of understanding urban agriculture in San Diego County.

Our research takes a different approach from its predecessors who have used both qualitative (Dwiartama and Piatti 2016; Block et al. 2011) and mixed method (McClintock and Simpson 2018, Joassart-Marcelli and Bosco 2014) research designs. Inspired by the 'digital turn' in Geography (Ash, Kitchin, and Leszczynski 2016), we identify the narratives underlying urban agriculture using an innovative, computer-mediated quantitative method that combines natural language processing, dimensionality reduction, and data visualization. This approach recognizes that "socio-techno-cultural" artefacts (Ash, Kitchin, and Leszczynski 2016) like website content create digital geographies linked to, but independent from, physical location. Here, Tobler's first law of geography – "everything is related to everything else, but near things are more related than distant things" (1970) – is transposed to the digital world where all content produced by urban agriculture growers and organizations is related, but near things are more related discursively than distant things. We chose this approach for its ability to unveil hidden patterns in advertised content that may go unnoticed in other approaches such as surveys and interviews and avoid the *politics of technology*.

B. Methods

1. Study Site and Population

The San Diego Metropolitan Area, which consists of San Diego County and includes the City of San Diego (the 8th most populous city in the US), 17 other municipalities and unincorporated areas, is an ideal location for this research. Home to 3.3 million people, San Diego is a highly urbanized county. Benefitting from a year-round growing climate, the county has a long legacy of agriculture (Ellsworth and Feenstra 2010). Urban agriculture has flourished in recent years (Bosco and Joassart-Marcelli 2017b), with over 100 community, school, and institutional gardens, urban farms, aquaponic farms, and hydroponic farms

dotting today's urban landscape. Forty-three growing sites – gardens or farms dedicated to producing food for consumption – met our criteria for inclusion in this study: site must be in operation and have a promotional website (not including social media sites like Facebook). These websites differed in the number of webpages. For example, some websites contained a single 'home' webpage with basic information including a mission statement, while others included multiple pages and even blog content. Nonetheless, all contained important content that aided in this analysis.

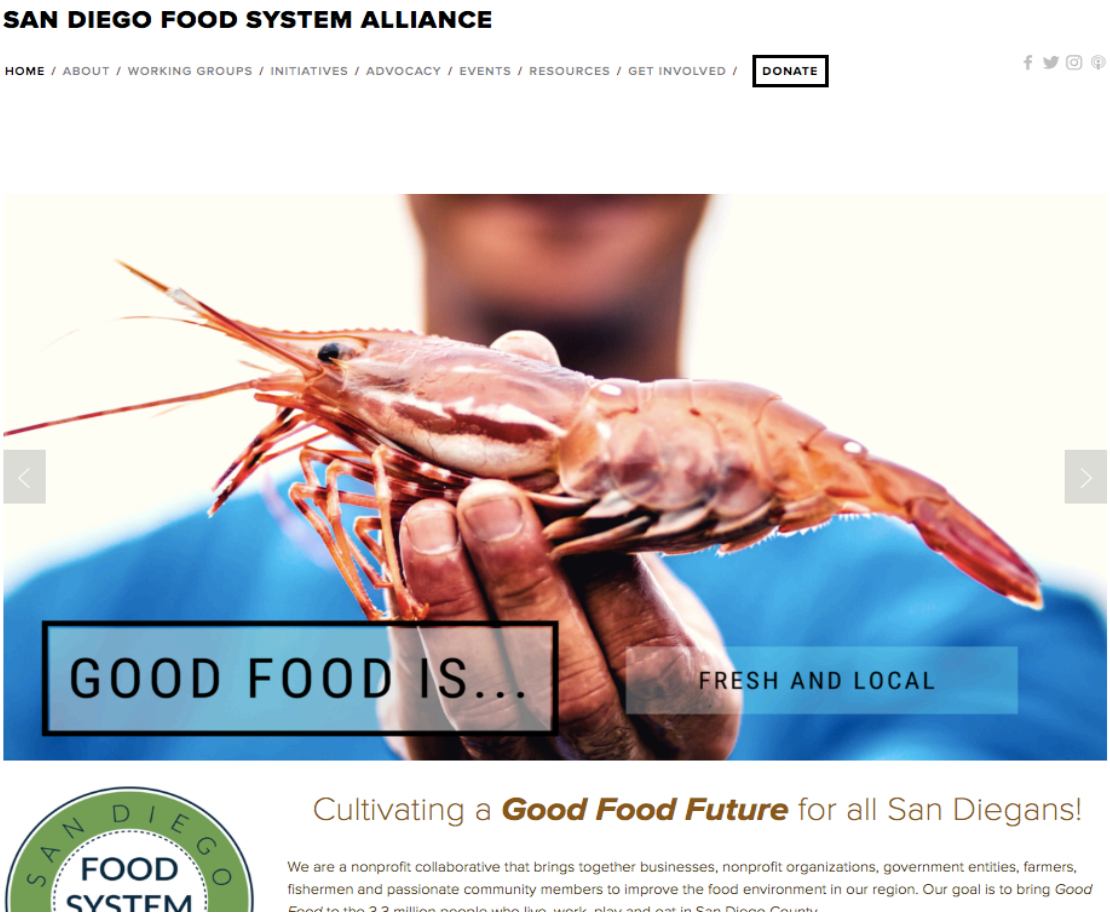

Fig. 2 Screenshot of San Diego Food System Alliance website home page. Source: San Diego Food System Alliance organization website (2019).

Our population includes 11 urban farms, 10 community gardens, 8 educational gardens, 6 church (institution) gardens, 5 school gardens, and 2 garden consortiums (one affiliated with

an assisted-living facility and the other with a school garden) located in urbanized areas and clusters as defined by the Census (2010). The population exhibits how urban agriculture intersects with diverse causes including refugee resettlement, rehabilitation of youth post-incarceration, veteran outreach, and job-training. Seven of our growing sites are technologically-advanced where food is grown in greenhouses and use hydroponic (6) or aquaponic (1) technology. Two of these sites use both soilless and soil-based growing methods. In addition to individual sites, we also include the five regional organizations focused specifically on facilitating urban agriculture. These organizations have proliferated in recent years with *San Diego Food System Alliance* (est. 2012) (Fig 2), *San Diego Community Garden Network* (est. 2010), and *San Diego Roots Sustainable Food Project* (est. 2008) joining *Slow Food San Diego* (est. 1989) and *Slow Food Urban San Diego* (est. 1989). In total, we analyzed 48 growing sites and organizations.

2. Reference Model

The analytical methodology we pursue in this study relies on the delineation of 'canonical knowledge structures' representing common and generally accepted ideas about urban agriculture within the academic literature. To that end, we employed topic modelling, specifically latent Dirichlet allocation (LDA). This method is a popular choice for distilling themes (or topics) from a collection of documents referred to as a corpus (for detailed description see Blei, Ng, and Jordan 2003). A corpus may consist of any group of texts including peer-reviewed literature (Blei 2012), grey literature, blog post (Adams and McKenzie 2013), and social media posts like tweets (Hong and Davison 2010). LDA identifies common word associations among the documents and performs statistical extraction of latent topics (Ghosh and Guha 2013). In addition, a set of topic loadings is

computed for each document (Blei 2012). In effect, a "hidden structure" is thus inferred from the corpus by the algorithm. The granularity of the model, i.e. the number of topics, is a crucial consideration and input parameter, balancing model fit and interpretability (Jacobi, van Atteveldt, and Welbers 2015). The topic model provides the top words and top phrases associated with each topic, which can be used to develop a descriptive label for each topic.

To build our reference model, we first determined a source of "canonical" knowledge on urban agriculture. Suitable, recognized content on urban agriculture exists in many forms including scholarly literature, federal and state program information, planning documents, and nonprofit sector descriptions, among others. We chose to focus specifically on scholarly literature which gains canonical status through the peer-review and editorial process and represents the diversity of discourse around urban agriculture. Articles span diverse fields including ecology, geography, sociology, urban planning, chemistry, and engineering. Using the Web of Science database, we topic-searched journal articles containing noun phrases of 'city' and 'urban' in combination with the nouns 'agriculture' and 'farm*[1]' which returned 1,414 records including the article title, abstract, and keywords. We did not use a geographic criterion for our search. This search was performed on September 11, 2017. Still a relatively new subject in academic inquiry – the oldest item in the corpus dating back to 1959 – literature on urban agriculture has proliferated in recent years. For instance, 75 percent of the articles returned in our Web of Science search were published after 2009 and 18 percent were published in 2017-18. A more recent search of these terms in April of 2018 returns 1622 records revealing a continued growth in literature on urban agriculture. Of these records, journal articles dominate (87 percent). Other records include book reviews, article reviews,

[1] An asterisk is used to have the search engine return any result with farm in its stem. For instance, 'farm*' will return results for farm, farms, farming, farmer, and farmed, etc.

proceedings papers, and meeting abstracts. The main contributing journals included Land Use Policy (2.5 percent), Landscape & Urban Planning (2), Agriculture & Human Values (1.7), Sustainability (1.6), and Local Environment (1.5); however, the sources were quite diverse.

Each record represents a single document and together they form the corpus used to build the reference topic model. Prior to processing, we removed any stop words, punctuation, and URLs. We performed LDA topic modelling using the MALLET (MAchine Learning for LanguagE Toolkit) program (McCallum 2002). We produced various topic models using three granularities (15, 25, and 50 topics), and used the models with the greatest log likelihood (Bao and Datta 2014; Blei, Ng, and Jordan 2003). We then examined their topic composition and removed topics dominated by non-meaning-bearing terms including time and location indicators (i.e. dates, city names) and general publication information (i.e. journal names, publisher information). These topics were identified using the alpha (α) hyperparameter, where relatively high values indicated that the topic was common throughout the corpus and therefore not meaningful for examining differences within our sample. After these adjustments, we determined that the 25-topic model was ideal for analysis using personal expert knowledge on urban agriculture literature.

3. Data Inferencing

The reference topic model was created in order to perform inference on content produced by urban agriculture growing sites and regional organizations in San Diego County – in other words, to interpret the content produced by the key actors identified above (N=48). We created a corpus including all textual content from the websites of agencies in our sample, with content from each of the 48 observations contained in a single document in the corpus.

Textual content included any written descriptions on the website including history, mission and vision statements, program descriptions, excluding locations, contact, and event info. For growing sites associated with larger organizations or institutions, we also collected basic descriptive content (about, mission and vision statement) from the parent website. By applying the reference model to all the documents, each document is characterized in terms of topic composition, allowing comparisons among documents (i.e. growing sites and organizations).

4. Discursive Mapping

The output of the inferencing process is a document-topic distribution matrix, from which we computed a matrix of cosine similarities among documents. In order to visualize these similarities, we used a dimensionality reduction technique known as multidimensional scaling (MDS) (Kruskal and Wish 1978; Torgerson 1952). In the resulting output, each document is described as a *2-D* point in Cartesian coordinates, where proximity relates to similarity. The resulting discursive map displayed the inferenced website corpus, with each point representing a single growing site or organization. The location of each point relates to its particular topic composition. The distance between points is indicative of their discursive similarity – the closer two points are in the discursive map, the more similar their topic composition; the farther apart, the more dissimilar. We investigated this map, but also created a series of variations, altering the symbology of the discursive map to reflect particular features of the sites. This allowed us to examine the connections between characteristics like growing methods and topic composition. We were also interested in discovering clusters among the data points, and so we utilized k-means clustering to identify meaningful groups in our data (MacQueen 1967). K-means is a heuristic algorithm that attempts to partition an

input dataset into *k* groups, allowing researchers to explore clusters within a dataset. Our data seemed to occupy primarily three quadrants in the discursive map, and so we chose to identify three classes. This algorithm was run for 1,000 iterations and the results with the lowest sum of squared errors (SSE) – a metric that explains the difference between each observation and its corresponding k-means centroid – were chosen as representative. This analysis complemented our visual analysis of symbology patterns.

C. Results

1. Reference Topic Model

Table 1 reports the results of the reference topic model. Our reference model consists of 25 topics that act as proxies for narrative themes and run the gamut of scholarly discourse on urban agriculture from the natural and social sciences to land use planning and public health. The model captures certain predictable topics including *climate change, food security, food access*, and *urban greening*. Other topics, while relevant, do not directly apply to urban agriculture in practice (i.e. *spatial analysis*, *land-use modelling*, *disease transmission*, and *microbiology)*. The most prevalent topic ($\alpha = 0.21481$) in the reference corpus was *location* which includes words and phrases like 'urban agriculture', 'city', and 'rural' that closely resemble our search query. This was followed by *food security* (which mainly focused on food security and poverty in Africa), *community gardening*, *water management*, *climate change*, *food production*, *social movements*, and *urban greening*. A color scheme was used to create continuity and clarity among the reference model and inference results. Topics that did not show up in the top three loadings (Fig 3) were not color coded. The more closely related particular topics are (based on a topic dendrogram [or tree diagram]), the more similar their

color. For example, red and orange have more similar topic lineages than red and green. Dark blue and dark red are the most dissimilar.

Table 1 Reference topic model with topic labels, alpha (α) values, and common words associated with each topic. The coloring indicates the relationship between topics. Topics that are more closely related are similar hues. In this color scheme, Topic 1 is most related to Topic 2 and least related to Topic 25.

#	Topic Label	α value	Common words associated with topic
1	Location	0.21481	land peri-urban agricultural urban areas agriculture rural farmers urbanization city
2	Food Security	0.18712	urban food agriculture security farming cities Africa poverty households poor
3	Community Gardening	0.13373	urban gardens community food city agriculture gardening garden gardeners production
4	Social Movements	0.07248	food political social justice alternative movement politics article movements ecology
5	Food Access	0.03023	health farmers market food program markets produce participants access nutrition
6	Pest Management	0.01149	ant nests argentine ants agricultural predation control invasive nest removal
7	Climate Change	0.08486	food energy emissions production agriculture consumption environmental systems urban greenhouse
8	Innovation	0.03628	rooftop plant green farming yield growing growth production roof quality
9	Urban Greening	0.07248	urban green services ecosystem design planning infrastructure cities landscape areas
10	Planning	0.0304	land vacant lots soil residential property nematode island lot nematodes
11	Water Quality	0.04863	water river quality nitrogen concentrations lake phosphorus nitrate groundwater agricultural
12	Land-Use Modelling	0.06294	land cover water model watershed forest change watersheds land-use streams
13	Ecosystem Conservation	0.04392	restoration wetland ecosystems change ecosystem ecological coastal management agricultural wetlands
14	Water Management	0.09043	water management wastewater waste treatment reuse irrigation system resources demand
15	Spatial Analysis	0.03772	data classification images spatial remote vegetation sensing accuracy mapping landsat
16	Ecology	0.05271	species diversity landscape forest habitat plant richness biodiversity urban conservation
17	Disease Transmission	0.01555	malaria anopheles resistance sites gambiae transmission insecticide breeding control habitats
18	Microbiology	0.01648	disease genetic strains isolates molecular species human small virus bacteria
19	Public Health	0.04508	farmers health risk farming infection children Kampala consumers Ghana infections
20	Water Contamination	0.03963	irrigation water wastewater contamination quality irrigated health risk lettuce microbial
21	Food Production	0.08068	vegetable production nutrient systems crop vegetables peri-urban farms farmers west

22	Soil Composition	0.06136	soil organic waste carbon soils compost nitrogen biomass increased content
23	Rural Animal Production	0.03118	milk dairy livestock rural cattle farmers animal peri-urban farms animals
24	Air Quality	0.0213	samples concentrations air pesticides sites concentration agricultural detected pahs levels
25	Soil Contamination	0.06411	soil soils metals heavy metal concentrations lead urban vegetables contamination

2. Inferenced Topic Loadings and Discursive Map

Table 2 illustrates a sample of the topic loadings of each document in the website corpus. Recall that each document represents the website content of a single growing site or regional organization. This table includes the top three topics for each document and a pie chart illustrating their relative proportions (topic loadings).

Table 2 Asserted categorization, top three topics, and topic loadings for a selection of growing sites and organizations featured in results section

Site Name	Category	#1 Topic	#2 Topic	#3 Topic	Loading
Mt. Hope Community Garden	Land	Community Gardening	Food Access	Social Movements	
Second Chance Farms	Land	Food Access	Social Movements	Community Gardening	
New Roots Farm	Land	Food Security	Social Movements	Food Access	
Urban Life Farms	Land	Food Access	Community Gardening	Social Movements	
…	…	…	…	…	…
Archi's Acres	Tech	Location	Climate Change	Food Access	
Solutions Farm	Tech	Innovation	Community Gardening	Water Management	
…	…	…	…	…	…
San Diego Food System Alliance	Org.	Community Gardening	Food Access	Climate Change	
Slow Food San Diego	Org.	Community Gardening	Social Movements	Ecosystem Conservation	

Community gardening was the most prevalent top topic in our website corpus (62.5 percent), followed by *food access* (14.6), *innovation* (12.5), *social movements* (4.2), *location* (4.2), and

food security (2). When compared with the reference model, we see that San Diego's food system diverges from the scholarly literature, featuring topics less prevalent in the reference topic model like *food access*. This departure from the scholarly literature is likely due to the scope of the reference sample, which includes urban agriculture throughout the world. Our sites and organizations are in the Global North where the 'food desert' narrative, an important aspect of food access, dominates discourse on urban agriculture. When pooling the top three topics from each of the sites, *community gardening* was still the most common (29.9 percent), followed by *food access* (22.9), *social movements* (14.6), *climate change* (6.25), and *innovation* (6.25).

Sites/organizations' topic loadings drive their location in the discursive maps (Fig 3). More specifically, the proportion of all the topics present in the documents (not just the top three) determines their location in discursive space. Sites with similar topic loadings tend to be close to one another. For example, Coastal Roots Farm sits in close proximity to five other sites each with similar proportions of the topics of *food access*, *social movements*, and *community gardening*. Second Chance Farms also consists of the same top three topics as Coastal Roots Farm, but it has different proportions of those topics, driving its distant location.

Examining the websites, we see that, in fact, their stated missions are quite different. Coastal Roots Farm describes its mission primarily as building community around the Jewish faith, while Second Chance seems to focus on reducing recidivism using youth training programs. The physical locations of these farms are also notably different. Coastal Roots is located in Encinitas, a primarily white (78.9 percent) and affluent community with a median income of $100,698 and more than 60 percent of the population making above $75,000

annually. Second Chance Farms is located in Southeastern San Diego (zip-code 92114), a more diverse community with a 42.8 percent Hispanic, 24.6 percent Asian, 18.9 percent Black or African American, and 9.4 percent White population, a median income of $58,036, and 37.3 percent of the population making more than $75,000 annually. These data suggest that there may be a relationship between the socio-economic characteristics of the growing sites' physical location and their discursive location. This pattern, however, is not consistent throughout. Mt. Hope Community Garden, another Southeastern San Diego example, and Coastal Roots Farm are extremely close in the discursive map. In fact, they almost fully overlap, indicating a disconnect between discursive and physical location.

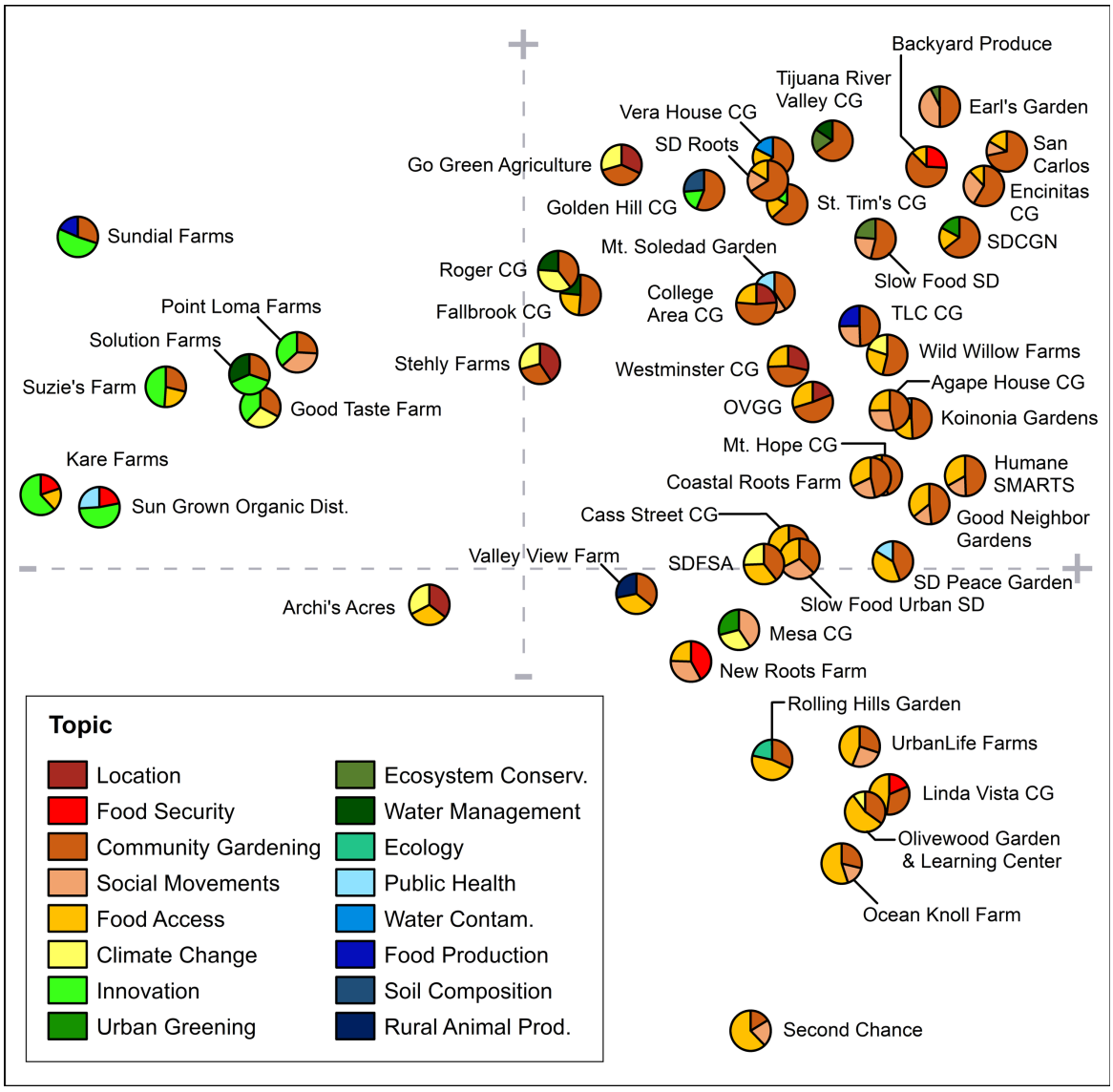

Fig. 3 Discursive map displaying topic loadings of the top three topics for each growing site and organization

3. Attribute Maps

The topic loading results offered insight into the placement of the growing sites and organizations in discursive space. In order to identify broader trends, we altered the symbology of the map to examine the connections between their location in discursive space and other attributes including: (1) top topic, (2) growing method/process, and (3) institutional affiliation.

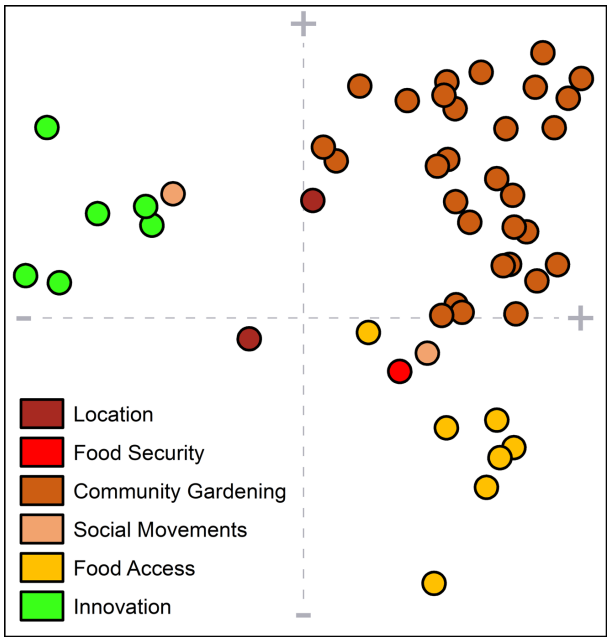

Fig. 4 Discursive map with symbology illustrating the primary topic of the growing sites and organizations

The top topic symbology (Fig 4) allowed us to understand the strength of the top topic in driving the relationships between the sites in discursive space. The result revealed three groups: *community gardening* (the most prevalent topic in the website corpus), *innovation*, and *food access*. This result was corroborated by our k-means cluster analysis, which split the data into similar groups (Fig 8). The remaining top topics (*location*, *food security*, and *social movements*) were located on the periphery of these larger groups closer to the center of the map, signifying that they shared similar topics with their neighbors, but differed in individual topic loadings. As expected, the top topic and its proportion compared to the other topics, was an important driver in discursive location.

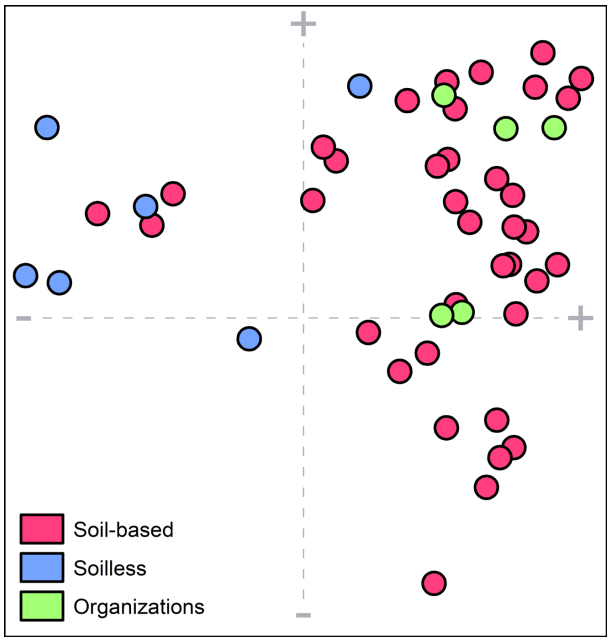

Fig. 5 Discursive map with symbology illustrating growing sites' growing methods (soil-based and soilless) and organizations

The growing methods symbology (Fig 5) illustrating the practices used by growing sites (soil-based versus soilless) revealed a distinct, but blurry pattern between motivation and practice. When analyzing the map using this symbology, a general pattern emerged in which technologically-advanced sites tended to group in the top-left quadrant of the map with two outliers: Go Green Agriculture and Archi's Acres. The absence of *innovation* in these outliers' top-three loadings suggested that other topics precede technology in how these growing sites describe themselves despite their use of advanced technologies. Generally, soil-based sites occupied the right side of the discursive map; however, soil-based *farms* such as Suzie's Farm, Good Taste Farm, and Point Loma Farms were grouped in with the soilless sites.

Growing site and organization descriptions of their processes (found in topics like *innovation* and *community gardening*) did drive their location on the discursive map. For instance, the soilless sites often described the inventive and underrepresented practices they

use to grow produce in the urban environment. However, the content did not end there. Other topics like *social movements, climate change, and food access* were also present among these sites. We saw a similar trend with sites using a community gardening model. When we explored the entire topic loadings of growing sites and organizations, ignoring practice-based topics like *innovation* and *community gardening* topics, we saw that the clusters have far more similarities than differences. Interestingly, these soilless sites are typically affiliated with businesses as opposed to nonprofits which dominate the right side of the map, where most soil-based sites are located (Fig 6). Indeed, we expected that business and nonprofit website content would vary and these results provide evidence to that effect. San Diego Food System Alliance, the leading regional nonprofit organization, is located in the center of the map. This location is not surprising in the context of neoliberal governance in which cities and regional organizations are more focused on building consensus and supporting apolitical agendas, rather than taking on political causes (Brenner and Theodore 2002).

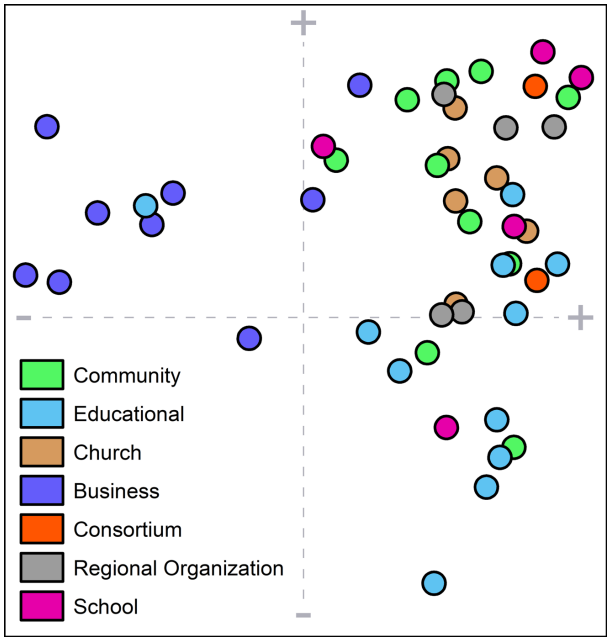

Fig. 6 Discursive map with symbology illustrating the institutional affiliation of growing sites and organizations

The affiliation symbology (Fig 6) illustrating the relationship between institutional affiliation and content was less coherent than the other symbologies displayed in previous figures, but still offered important insights. Growing sites were affiliated with a variety of institutions including schools, churches, organizations hosting training and educational programs, and for-profit businesses. Education sites were located throughout the map suggesting that training and skill-building are not major dividing factors in discourse. In other words, many different types of organizations claim to focus on education. However, church, community, and school gardens tended to concentrate in the top-right section of the map, which is typically associated with soil-based community gardens. The clearest distinction in this figure appeared to be whether the growing sites are for-profit (left side) or nonprofit (right side). However, it cannot be assumed that the for-profit sites lack social mission. For example, Archi's Acres, a for-profit hydroponic farm in Escondido, includes a social enterprise function focusing on training veterans in hydroponic farming. Sundial Farms, a veteran- and immigrant-owned, hydroponic farm in the Innovation cluster, is a direct result of this program. This social function features prominently in its website content:

> "At Archi's, we believe a key aspect of successful business is how it meets its responsibility to the community in which it operates and the customers which make up its marketplace. We do this by integrating into our business model an opportunity to support others including our military service members and veterans." (Archi's Acres 2017)

This broader social mission may explain its topic loadings (*food access*, *location*, and *climate change*) and the absence of innovation as a primary topic. The overall uniqueness of this growing site may explain its peripheral location in the discursive map. Solutions Farms, an aquaponic operation associated with Solutions for Change, was the only nonprofit located in

the for-profit dominated section of the map. The organization aims to alleviate family homelessness in the county through skill development, including training in aquaponic farming. However, *innovation* is the primary topic in their content, influencing their location among other sites whose discourse is focused on *innovation*.

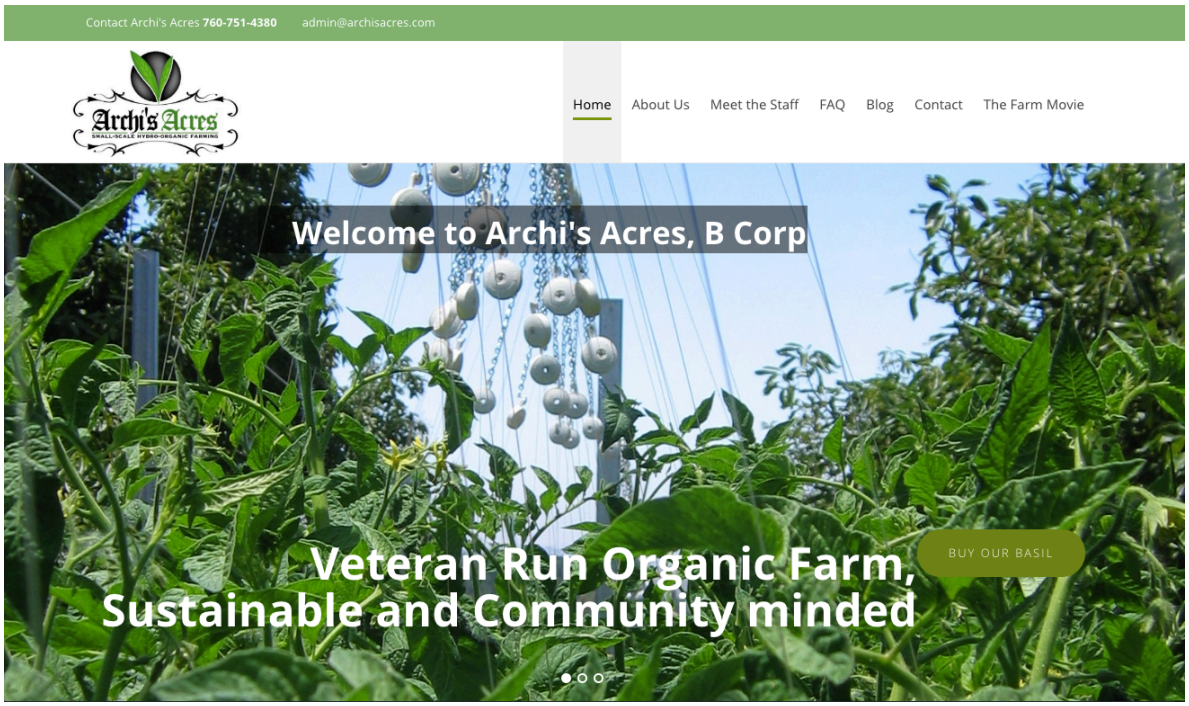

Fig. 7 Screenshot of Archi's Acres website home page. Source: Archi's Acres website (2019).

4. Cluster Analysis

Multivariate clustering was performed on the discursive map to identify clusters in the sites and group them accordingly. Figure 8 contains the k-means results including three classes (SSE = 1.475). Transitional sites were identified by creating a 4-class (category) result (SSE = 1.317). The topic compositions of sites in each cluster were examined and the clusters were given descriptive names reflecting their dominant topics (Fig 3): Innovation, Community, and Access. The transitional sites – those that broke off into their own group in the 4-class result – were signified using an overlaid line pattern. These sites were close to or straddled the center axes of the map.

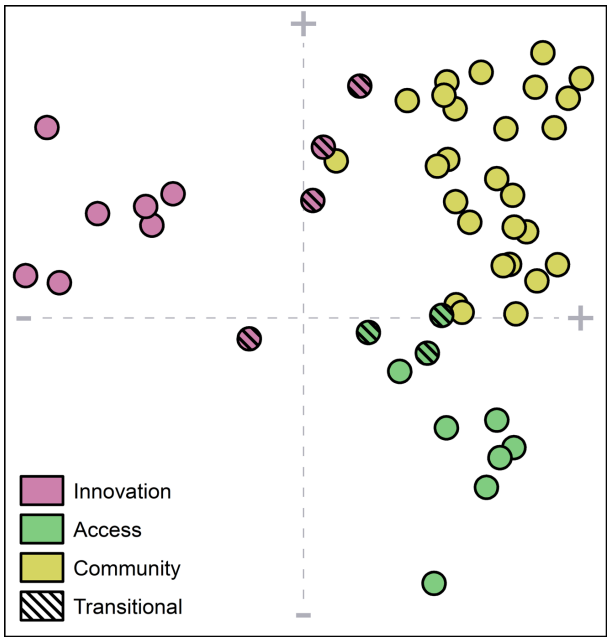

Fig. 8 Discursive map with symbology illustrating k-means clusters

The Innovation cluster was distinct from the other clusters. The predominant topic amongst this group was *innovation*, which includes words and phrases like rooftop farming, zero-acreage farming, soilless, aquaponics, buildings, hydroponic, vertical, greenhouses, indoor, and technology as well as production, yield, growth, and quality. Unsurprisingly, all of the technologically-advanced sites resided in this cluster with the exception of Valley View Farms, which experiments with hydroponics, but focuses primarily on animal farming. Among the topic loadings in this group were *community gardening*, *food access*, *social movements*, *climate change*, *water management*, *food production*, and *food security*. This cluster also consisted primarily of for-profit growing sites with the exception of Roger's Community Garden located on the University of California, San Diego campus. An interesting outlier is Go Green Agriculture, a hydroponic farm, which is located on the border of the Community cluster. This location is likely driven by its top topics, which include

community gardening, *location*, and *climate change*, which are well-represented in both the Innovation and Community cluster.

The Community cluster emphasized connections with local residents, primarily promoting home and community gardening – *community gardening* was the most prevalent topic in this cluster. Although, this cluster overlaped considerably with the Access cluster, there was a clear emphasis on environmental topics including *ecosystem conservation*, *water management*, *location*, *water contamination*, *innovation*, and *climate change*. The *social movement* topic was also prevalent throughout this cluster with many of its sites expressing a dedication to alternative forms of organization. For instance, Encinitas Community Garden whose topic composition was *community gardening, social movements*, and *food access*, states on its website:

> "We value operating and self-governance structures and processes that are guided by transparency, honesty, diversity, mutual respect, openness, on-going evaluation, celebration, and a commitment to community participation… our purpose is to increase sustainable urban food production by teaching people how to grow food, and to create a supportive community where they can share tools, skills and inspiration. When community members have access to local land for the purpose of growing food, social justice, economic security and community political participation are strengthened." (Encinitas Community Garden 2017).

The Access cluster's topics overlapped considerably with the Community cluster, featuring *community gardening*, *food access* (most prevalent), and *social movements*, too, but in proportions favoring the latter topics. For example, Mt. Hope Community Garden featured the same topic loadings as Encinitas Community Garden but weighted more heavily towards

the *social movement* and *food access* topics, influencing their distance on the discursive map. This emphasis was clear in the website content:

> "Project New Village is transforming the political and economic environment using neighborhood-based agricultural cooperatives as strategies of resistance to food insecurity and removing barriers that impede universal access to good food through community/civic engagement and building alternative food ecosystems." (Project New Village 2017).

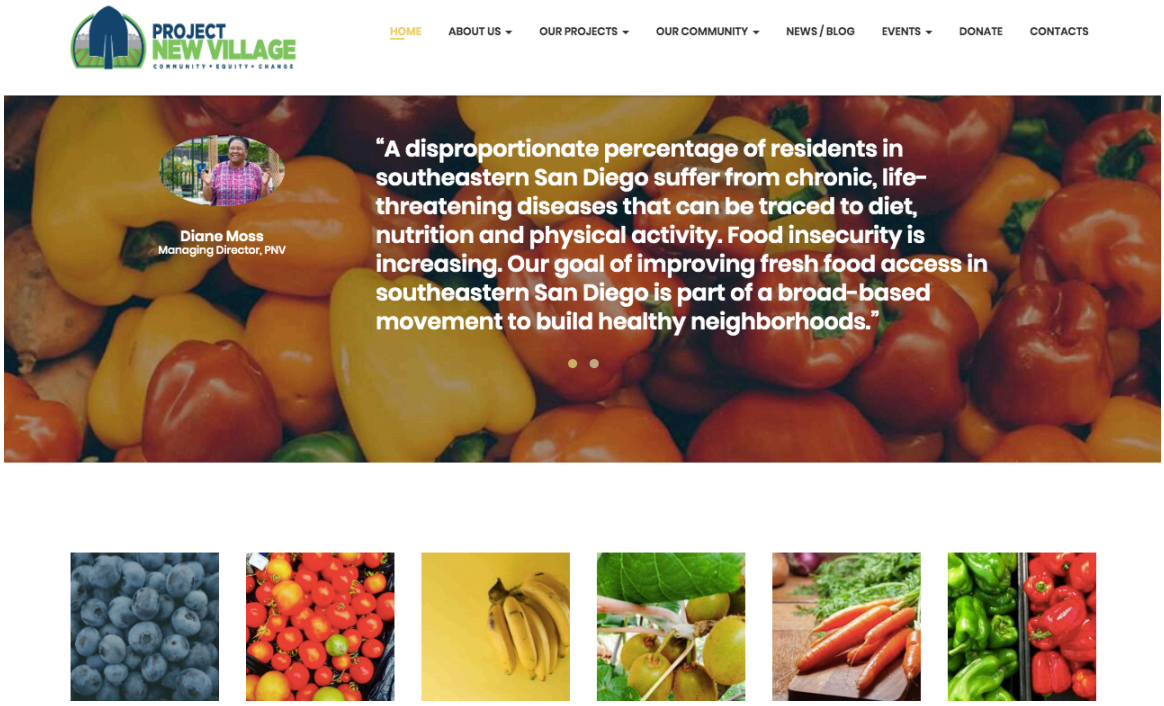

Fig. 10 Screenshot from the website homepage of Mt. Hope Community Garden's parent organization, Project New Village. Source: Project New Village Organization website (2019).

It is also worth noting that the socio-economic characteristics of the two neighborhoods are also quite different. Southeastern San Diego, specifically zip-code 92102 where Mt. Hope Community Garden is located, is a primarily Hispanic (60.7 percent) community, followed by White (20.1), African American (9.7 and the primary community of focus for the garden), and Asian (5.8). The median income is at $42,464 with only 24 percent of the population

exceeding $75,000 annually (American Community Survey 2016). The sites and organizations in this cluster also placed considerably less emphasis on environmental topics in favor of more social topics including *public health*, *food production*, and *urban greening*. Still, topics like *ecology* and *climate change* were present suggesting that environmental and social concerns were not mutually exclusive. The sites in the Access cluster were also predominantly affiliated with educational and training programs. Two particularly interesting examples are UrbanLife Farms and Second Chance Youth Garden. Both growing sites are wings of social justice organizations that offer job training and skills development for youth living in City Heights and Southeastern San Diego – communities that have seen considerable disinvestment and suffer from high unemployment (Joassart-Marcelli and Bosco 2014). Other growing sites like Rolling Hills Grammar School and Literacy Garden and Olivewood Gardens and Learning Center also focus on youth programming. Not all the growing sites in this cluster work with youth. New Roots Farm concentrates on providing resettled refugees with land for farming, small-business training, and nutrition education to help them adjust to a new life away from their home country. This mission guided its topic loading of *food security*, *social movements*, and *food access*.

The five urban agriculture supporting organizations we surveyed spanned the Community and Access clusters. Slow Food San Diego, Slow Food Urban San Diego, San Diego Roots Sustainable Food Project (SD Roots), and San Diego Community Garden Network (SDCGN) are located in the Community cluster. San Diego Food System Alliance (SDFSA) was located at the border between the Community and Access clusters suggesting that *food access* was a more prominent topic for the organization. Further, its central position illustrated the consensus focus of the organization, which caters to a diverse group of actors

including politicians, businesses, and nonprofit organizations. Overall, the placement of the organizations made sense as they are nonprofit facilitators for other sites aimed at broader social goals like increasing food access and building community. Further, their discursive distance from soilless forms of urban agriculture reflected the lack of emphasis that regional supporting organizations and planning initiatives put on these types of growing methods, as they continue to privilege soil-based ways of farming the city.

D. Discussion and Conclusions

This research hints at important connections between the way growing sites and organizations in San Diego County represent themselves, including their growing methods, primary topic of interest, and institutional affiliation. Our analysis suggests that soilless sites, which are largely for-profit, tend to focus their website content on the innovative methods they use to grow food in urban environments. In contrast, soil-based organizations tend to represent themselves as centered on community and food access. These broad patterns provide important insights into urban agriculture trends in the county and partly support common assumptions held about the goals and motivations of urban agriculture. However, closer examination tells a more nuanced story. Our results show that no single characteristic, whether the use of technology, institutional affiliation, or primary topic, predicted the way our growing sites and organizations represented themselves in narratives on their websites. There were some trends, but the relationship between growing method and the narrative presented is tenuous at best.

Overall, two broad conclusions and future research paths can be drawn from the results of this research. First, a politics of technology that creates fixed connections between certain growing methods and values and uses this connection to assume the motivations of urban

agriculture participants is misleading and lacks analytical rigor. If we pay attention to the various ways in which urban agriculture organizations represent themselves, it is clear that this connection between growing methods and values is tenuous. For instance, soilless urban agriculture is often associated with entrepreneurialism (Reynolds and Cohen 2016) and therefore cast aside as profit-driven. While the majority of our soilless sites in our population were for-profit, the link between growing method, for-profit status, and narrative topic was weak. Capital is an underlying reality of all of our sites, especially in the context of neoliberal governance (Guthman 2008b; Pudup 2008) in which even nonprofits are increasingly reliant on private sources of funding (Reynolds and Cohen 2016), including philanthropy and revenue-generating social enterprises. Entrepreneurialism, therefore, transcends the use of advanced technology and is more meaningfully connected to broader processes like neoliberalism (see Pudup 2008). Future research should continue to unravel these simplistic constructions that constrain research findings and ignore potential tools for improving urban food landscapes.

Second, it is important to acknowledge that the genuine motivations and agendas of actors may not match their public narratives and website content. It is therefore critical for researchers to examine the practices that underlie the narratives and self-reported motivations that we have explored and categorized in this chapter. This analysis will require researchers to embed themselves in local urban agriculture networks to observe urban agriculture in practice. Ethnography offers useful tools for this detailed analysis including in-depth interviews and participant observation (Goffman 1974) that allows researchers to examine the relationship between discursive representations and practices of urban agriculture. This

methodology will capture the nuanced, everyday interactions that may be hidden by the narratives presented on websites or even in survey data.

Avoiding a politics of technology that interprets the connection between technology and capital to mean a singular profit-motive is imperative for gaining a better understanding of the urban agriculture movement. Soilless urban agriculture sites and organizations engage a plethora of environmental and social concerns. Simply equating technologically-advanced urban agriculture with entrepreneurialism, ignoring additional narratives, and forgoing additional critical inquiry creates blind spots in sustainable and equitable food movements. Based on the narratives examined here, the two forms of agriculture often share values like improving food access, fostering sustainability, and empowering marginalized groups through education and training. We expect the lines to continue to blur in the future as soil-based urban growing becomes more entrepreneurial and soilless growing becomes more prolific and accessible. Preliminary interviews already suggest that this is the case in San Diego County. For instance, UrbanLife Farms is planning construction of a new rooftop, hydroponic farm and will integrate it into their broader mission of education and providing job-training for youth in marginalized communities. Project New Village has also expressed an interest in pursuing these growing methods to further their mission of building community wealth and social capital in Southeastern San Diego.

This research sought to ‘untangle’ the connections between growing method and narratives. This is an important step in trying to understand some of the common biases against soilless urban agriculture, many of which are rooted in ideological beliefs that are produced and reproduced through popular narratives. However, we recognize that the narratives advertised by urban agriculture sites and organizations on their websites do not

accurately reflect the many values that are embedded in these sites or their practices and advocated by their members. This content analysis can only tell us how urban agriculture sites and organization represent themselves in public forums. Still, this analysis begins the task of unraveling a priori assumptions and examining the narratives that accompany (and even obscure) urban agriculture practices. These narratives are important actants in urban agriculture actor-networks and are used by actors to strengthen support (Snow and Benford 1986) and attract funding. Deconstructing these narratives is an important step to unveiling co-optation (Guthman 2014) and hollow branding strategies (Bosco and Joassart-Marcelli 2017a).

Future research should continue to examine the narratives that growing sites and organizations use to promote themselves and the agendas of their diverse actors involved in growing sites and organizations. Indeed, a whole network of people with different backgrounds, personal experiences, decision-making power, and motivations create and reinforce narratives around urban agriculture, not just the directors who likely inspire the content emphasized in mission statements and websites. Further, researchers should engage more detailed methods like ethnography to examine the practices and hidden power dynamics that underlie these narratives. Although many scholars are already embedding themselves in their local urban agriculture networks, participating and observing, to better understand motivations and power relations (Dwiartama and Piatti 2016; Joassart-Marcelli and Bosco 2014; Block et al. 2011), few have critically explored the role of technology and considered the breadth of networks shaping urban agriculture. These networks extend beyond garden gates and warehouse walls into composting facilities, federal buildings, local media offices, ethnic markets, Whole Foods supermarkets, farm to table restaurants, and

consumers' kitchens. Future work should examine these networks in full, accounting for the multitude of actors, narratives, and practices driving the discursive and material realities of urban agriculture in the Global North.

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III. Thinking and doing justice: urban agriculture in San Diego County

Between 2017 and 2018, two popular books made their way into the alternative food literature: *Kiss the Ground* (2017) and *Ditch the Dirt* (2018). The former, written by documentary filmmaker Josh Tickell, continues on the well-worn path of popular authors Michael Pollan (*Food Rules*) and Anna Lappé (*Diet for a Hot Planet*), espousing the power of regenerative agriculture and informed food choices to "reverse climate change, heal your body, and ultimately save the world" (Tickel 2017). This book – and ethos – stands in stark contrast to *Ditch the Dirt*. While its author, Rob Laing, is also concerned with the environmental and health impacts of conventional agriculture, his solution is different: "windowsill-to-plate," soilless hydroponics. Yet, can these books (on seemingly opposite ends of the 'food growing' spectrum) occupy the same shelf in alternative food thought? Answers to this question revolve around understandings of social justice.

Indeed, disapproval for soilless agriculture can be found in academic literature on the grounds of social justice. For instance, Reynolds and Cohen (2016) admonish "high-tech and other trendy entrepreneurial projects" as incompatible with food justice due to the relatively low proportion of women and people of color represented in this area of urban agriculture (p. 9). However, they acknowledge that many soil-based forms of growing also "give rise to the very inequities that supporters hope to address" (p. 5). This realization does not stymy the flow of popular literature "in praise of technology" (the title of a chapter in Peter Ladner's *The Urban Food Revolution*). Yet, it does add fuel to the prevalent discourse that sees advanced technology as a negative addition to urban agriculture, building on a long intellectual tradition of criticizing so-called "technological fixes" to social problems.

Tensions surrounding the use of advanced technology in urban agriculture are often rooted in competing understandings of social justice grounded in assumptions regarding the role of land, labor, and capital (all of which are used in urban agriculture in various degrees and forms). These different conceptualizations of justice are particularly evident in debates around the benefits of soil-based and soilless urban agriculture. Such debates have recently pitted food scholars and advocates against each other at a variety of professional meetings including the recent Food Tank™ Summit in San Diego, California. In these contexts, where organizers typically seek to present a 'balanced' perspective by including multiple interest groups on panels, discussions of the future of urban agriculture often act as carriers for different yet simplified narratives of food justice, in which the urban food movement is envisioned at a metaphorical fork in the road with the choice of either a high-tech, entrepreneurial or a nature-based, grassroots future. Social justice, specifically food justice, plays an important role in these dichotomous and divisive arguments. Arguably, all forms of urban agriculture, regardless of their relationship to the soil, have the potential to promote or prevent social justice. Therefore, it is necessary to examine how urban agriculture initiatives, with various degrees of technological intensity, define and do justice.

This research seeks to evaluate the justice narratives and practices that shape three urban agriculture spaces with social missions in San Diego County. Urban agriculture thrives in this county and is increasingly diverse including soil-based and soilless growers – both of which are represented in our study sites. I compare these three spaces by focusing on land, labor, and capital and their relationship to distribution, participation, and recognition – three key aspects of justice. Specifically, I assess the outcomes and opportunities generated at each site that produce benefits for marginalized groups such as increased food access, improved self-

sufficiency, job training, community engagement, participation in local food system planning and decision-making, and ownership of resources. At the same time, I examine the socio-spatial contexts– geography, regional economies, demographics, and institutional environments – that contribute to (or limit) sites' ability to produce benefits for marginalized communities.

I begin by reviewing relevant literature on justice and then examine the regional geography of urban agriculture in San Diego County. I then turn to three urban agriculture spaces and provide a comparative analysis. The case studies illustrate the complex, imperfect, and situated nature of justice that transcends distinctions like growing method.

A. Theorizing Justice in Urban Agriculture

Justice is a central concept in urban agriculture with 'social justice' often cited as a goal of urban food projects in the United States. In general, food justice is concerned with addressing exploitation, racism, and oppression within the food system. It is expressed to varying degrees under monikers such as food security, food justice, and food sovereignty – all of which rely on particular understandings of justice (Joassart-Marcelli and Bosco 2018). Food security is undoubtedly the least radical of the three. It is a reformist strategy (Holt-Giménez 2011) that focuses on market-based interventions – like increasing access to food retailers – and regulatory reform to ensure that individuals have access to food (Born and Purcell 2006). Programs such as SNAP (formerly Food Stamps), food banking, and initiatives to increase access to supermarkets all fall under the purview of food security.

The *food movement*, which seeks more transformational approaches to food systems, is often concerned with strategies like food justice and food sovereignty (Holt-Giménez 2011) that address inequities beyond access to food and tend to focus on communities rather than

individuals (Alkon and Mares 2012). Food justice is broadly defined as the idea that every person has the right to access affordable, healthful, and culturally appropriate food produced in an ethical and environmentally sound way (Just Food 2010). It is a progressive strategy (Holt-Giménez 2011) that focuses on removing the disparities, especially those based on race, class, and gender, that underlie food system inequities (Gottlieb and Joshi 2010, Alkon and Agyeman 2011, Guthman 2011). As such, food justice looks beyond food itself and begins to address the multiple ways in which cultural, social, economic and political inequality shapes our food system, including the production, distribution, and consumption of food. The localization of food production, which allows for greater connections and accountability, has been a common approach to reduce these disparities.

Food sovereignty, arguably the most radical of the three (Holt-Giménez 2011), is defined as "the right of peoples and governments to choose the way food is produced and consumed in order to respect our livelihoods, as well as the policies that support this choice" (La Via Campesina in Cadieux and Slocum 2015, p. 3). Here, the distribution of power, particularly power in planning and managing food systems, is key (Alkon and Agyeman 2011). This perspective, which has been embraced in the Global South, typically implies a rejection of capitalism and neoliberalism that are viewed as causing inequality and preventing communities from being in control of their own foodways. Often, this perspective translates into building alternative and self-sufficient food systems, including supporting community-oriented projects and indigenous practices.

Geographer David Harvey argues that "different socio-ecological circumstances imply quite different approaches to the question of what is just or not" (1996, p. 6). In the United States, the dominant perspective is distributive justice – the idea that outcomes such as jobs,

health, and income must be fairly distributed among citizens (Walker 2009). This approach to justice underlies concepts like food security, as well as food justice (Loo 2014), although the two differ in their approach to fairness – the prior typically stressing equality and the latter emphasizing equity (Alkon and Agyeman 2011). Equality is a prolific theme in food access research (Shannon 2016, Eckert and Shetty 2011, Walker, Keane, and Burke 2010, McKentee and Agyeman 2010) where the argument is made that all people should have equal access or the right to food. However, focusing on equality of outcomes (such as having enough food to feed one's family) has been widely critiqued for its failure to account for the broader social contexts that produce injustice (Walker 2009) such as patterns of suburbanization (Zhang and Ghosh 2016, Friedberg 2009), racial and economic segregation (Bower et al. 2014, Kwate 2008), white privilege (Pulido 2000), and individual mobility (Shannon 2016, Widener and Shannon 2014).

Equity-based distributive justice is still concerned with outcomes; however, it provides more insights into the social context of injustice and considers the "historical antecedents of inequality" (Cook and Hegtvedt 1983, p. 221) including "slavery, exploitation, and dispossession of the land, labor, and products of women, the poor, and people of color" (Holt-Gimémez 2018, 1). Opportunities such as access to resources like land and capital also become important in equity-based distribution. Food justice research is undoubtedly concerned with equity (Green et al. 2011, Norgaard et al. 2011, Minkoff-Zern et al. 2011, Alkon and Norgaard 2009, McClintock 2008). Considering the social factors that shape access to opportunities brings up notions of spatial justice and the idea that rights and opportunities are not evenly distributed. Spatial justice would require space to be reorganized and reconceptualized "to promote equal access to opportunities, foster participation in

decision-making, and encourage different ways of being in space" (Joassart-Marcelli and Bosco 2018, p. 24). To paraphrase a popular expression, the growing field is not levelled. Geographers are particularly well-positioned to examine the spatial barriers that prevent people from accessing and growing food.

As several observers have noted, distributive 'food justice' activities like community gardens and farmer's markets often take a top-down approach in which decision-making power is relegated to a few leaders such as nonprofit directors and/or managers (Alkon and Mares 2011) that may reinforce existing power inequities (Reynolds and Cohen 2016). Procedural justice, a more radical approach to justice, rejects top-down strategies, instead advocating for participatory, grassroots action. In place of fairness in outcomes, procedural justice promotes fairness in procedures such as participation in regulatory and organizational processes and decision-making (Walker 2009, Loo 2014). This form of justice is less common and primarily associated with food sovereignty (Alkon and Agyeman 2011, Holt-Giménez and Wang 2011, Holt-Giménez 2011). It is also informing progressive visions of the food movement and many food justice initiatives (Alkon and Agyeman 2011). Herman and Goodman (2018) urge us to cultivate a participatory understanding of food justice to "move beyond the local, distributive issues in which it often becomes mired" and focus our efforts instead on building a movement that is itself inclusive and just.

Procedural and distributive forms of justice are not mutually exclusive – in many ways, they inform one another. For example, the distribution of land and capital undoubtedly influences the power people possess to participate in and make decisions around food provisioning. In fact, researchers argue that the most effective concepts of justice are actually 'trivalent' – they combine distribution and participation and include recognition of

disenfranchised groups (Walker 2009, Schlosberg 2007, 2004, Young 1990). This approach, they argue, is critical, pluralist, unified, and accounts for the particular and everyday experiences of injustice that vary with social context (Schlosberg 2004). Some, however, argue that this perspective of justice that is contingent upon time and space, fails to produce a universal notion of justice that might combat global forms of injustice (Walker 2009). Indeed, Cadieux and Slocum (2015) warn, "If food justice means *anything*, it may stand for nothing—or, worse, serve to undermine the credibility and rigor of substantive food justice practices," which, in turn, may make it vulnerable to co-optation (p. 15). Indeed, researchers must examine not only how actors define food justice, but also how they do food justice (Cadieux and Slocum 2015). Yet, singular, standardized, and universalist ideals may reinforce insider/outsider mentalities that devalue particular justice practices that do not fit this view (Goodman, Dupuis, and Goodman 2014). In the face of the dynamic nature of justice, Goodman, Dupuis, and Goodman (2014) recommend a reflexive theory of justice that moves away from "the perfect and privileged politics of standard setting" (p. 32). This approach sees justice as "a process by which people pursue goals while acknowledging the imperfection in their actions" (p. 30). This concept of justice is situated (per Haraway 1991), admits conflicts, responds to changing circumstances, and recognizes the nuance of everyday.

I embrace the reflexive theory of justice in this research as it moves away from a "politics of perfection" that sees a single scale (like the local) or, in our case, a single growing method (like soil-based) as the locus of justice (Goodman, Dupuis, and Goodman 2014). It avoids the sort of ossification that normalizes the way food justice is done within particular spaces and thereby "acts to exclude particular others and preclude alternative formulations, discouraging

people and communities from *thinking* about and *doing* food differently" (Herman, Goodman, and Sage 2018, italic in original). In addition to considering the potential ways in which people engage with food justice, I argue that we need to pay attention to contexts such as neoliberal governance, regional economies, institutional environments, ecological constraints, neighborhood histories, and local demographics that shape participation and possibilities of social justice. This requires that we approach space and place carefully and consider the socio-spatial relations embodied within them. Such notions intersect nicely with spatial justice approaches (Lefebvre 1972, Soja 2009, Harvey 1973) that draw attention to "who is included, who belongs, who has access to resources, and who benefits from these opportunities" in particular food spaces (Joassart-Marcelli and Bosco 2018, p. 24). It also supports a progressive sense of place (Massey 2005) that is "open and receptive to diversity and plurality, rather than assuming that certain conventions of justice and spatiality will always be present or dominant" (Cadieux and Slocum 2015).

As Sbicca (2018, p. 1098) puts it, "our analysis and activism need to account for different contexts and experiences, while still universalizing the struggle for food justice." To this end, I concede to Cadieux and Slocum's (2015) call for concrete benchmarks, opting for a 'trivalent' assessment of justice that incorporates distribution, participation, and recognition (Schlosberg 2004). I structure my analysis by focusing on labor, land and capital – three factors of production used in various combination in urban agriculture and rewarded differently based on their market value and relative power. As classical political economist David Ricardo (1817) famously argued more than 200 years ago, income distribution can be understood by considering the relationships between land, labor and capital; while landowners receive rent, workers earn wages, and capitalists accumulate profits. The scarcity

of land, especially in the face of growing population in the early 19th century, meant that landlords were going to capture ever larger shares of income while workers' wages would be increasingly squeezed. Marx built upon this theory illustrating that, under capitalism, capital owners had most of the power and would be able to earn higher profits by exploiting workers (Harvey 1989). In the context of urban agriculture, land is typically seen as a very important factor of production. Numerous studies emphasize the struggles of accessing fertile and uncontaminated land, particularly in low-income communities of color (McClintock 2012, Gottlieb 2009). Labor is also essential in small-scale farming. However, there is evidence that urban growers often struggle to earn a decent income through their farming activities and that many organizations rely on volunteers to stay afloat (Biewener 2016, Angotti 2015, McClintock 2014, Alkon and Agyeman 2011, Gottlieb and Joshi 2010). Although capital has not traditionally been an important factor of production in urban agriculture, which tends to be more labor-intensive, the rise of hydroponics, aquaponics and other technologically-driven forms of farming have increased its significance, raising questions about distribution and justice.

B. Urban Agriculture in San Diego County

San Diego County is a growing, diverse metropolitan region of over 3 million people. Its 4,526 square miles are comprised of distinct landscapes including densely populated urban neighborhoods, sprawling suburbs, and open spaces. Urban agriculture thrives in this county with the help of a year-round growing climate and generally supportive regulatory environment. Traditional soil-based models have flourished in this atmosphere and over 90 urban farms and community gardens currently operate in the county. The city's approval of the Urban Agriculture Incentive Zones Act (AB551) – a 2014 California bill that provides tax

incentives to private landowners who allow urban agriculture on their vacant parcels in urban areas –suggests the trend will continue. Soilless models, specifically hydroponic and aquaponic greenhouses, are also on the rise in the county, particularly in the North County area.

The availability of natural resources, specifically water and affordable land, drive urban agriculture locations and practices in the county. Water is increasingly scarce and expensive in southern California and land prices continue to rise throughout the county. Further, less than 1% of the county's inhabitants are employed in agriculture. However, interest in urban agriculture is growing – a list of 40 urban growers seeking land for urban agriculture through AB551 in San Diego is available on a website created in support of the bill. The availability of environmental resources is complicated by disproportional access to the economic and social resources required to support these activities including funding, skills, and institutional capacity. Indeed, research indicates that urban agriculture is more often realized as a cultural amenity among white, educated and affluent consumers, who tend to have greater access to these resources (Joassart-Marcelli and Bosco 2014, Alkon 2012, 2008, Guthman 2008a). People of color, who disproportionately suffer from hunger, are less likely to have similar access to environmental, economic, and social resources.

The region's socio-spatial landscape supports the thesis of disproportional access to resources. The county itself is highly segregated and race and socio-economic status differences can be read in the landscape. For example, poverty is concentrated in certain areas, specifically in older urban neighborhoods around Downtown San Diego (i.e., Barrio Logan, Southeastern San Diego, City Heights), the South Bay, Oceanside, Vista, and Escondido, as well as a few sparsely populated rural areas. Racial segregation is even more

concentrated, following a similar pattern, with most non-white and non-white Latino residents living around downtown and in the South Bay. These spatial patterns are not accidental, but instead reflect racially-biased political and economic decisions, such as mortgage policies, zoning regulations, municipal funding, transportation planning, and real estate practices, as well as histories of suburbanization, and more recently, gentrification. In cities, neoliberal economic development shifts state responsibilities onto the private and nonprofit sector and creates competition among neighborhoods for resources while also supporting do-it-yourself approaches to urban issues such as urban agriculture (Bosco and Joassart-Marcelli 2017). US Census data also unveils gross inequities in median incomes (Fig. 10). For example, according to American Community Survey data for 2013-2017, the median household income in the county for that period was $70,588. The top 20 percent of households earned 50 percent of the total income; the bottom 20 percent earned just 3 percent. Income varied considerably among racial groups. The non-Latino white median household income reached $86,790; however, it was much lower for Latinos ($52,622) and African Americans ($51,602). This disparity explains the high rate of poverty among these groups – 16% for Latinos and 21% for African Americans compared to 8.3% for non-Latino whites.

The county's social landscape suggests disparate access to the resources needed to support urban agriculture activities. Land is expensive and scare and capital is unevenly distributed since it likely follows income distribution. Nonetheless, soil-based and soilless urban agriculture are popping up throughout the county, and often with a mission to promote social justice. However, what these organizations mean by 'justice' and how they practice it, as well as the shared and unique contexts that support and constrain it, remain unknown. To

unpack the complexities of justice in the county, I examine three urban growing spaces, two soil-based and one soilless, that prioritize a social mission, but whose contexts produce differential access to the resources to support it. I analyze these growing spaces using a qualitative research design described in the next section.

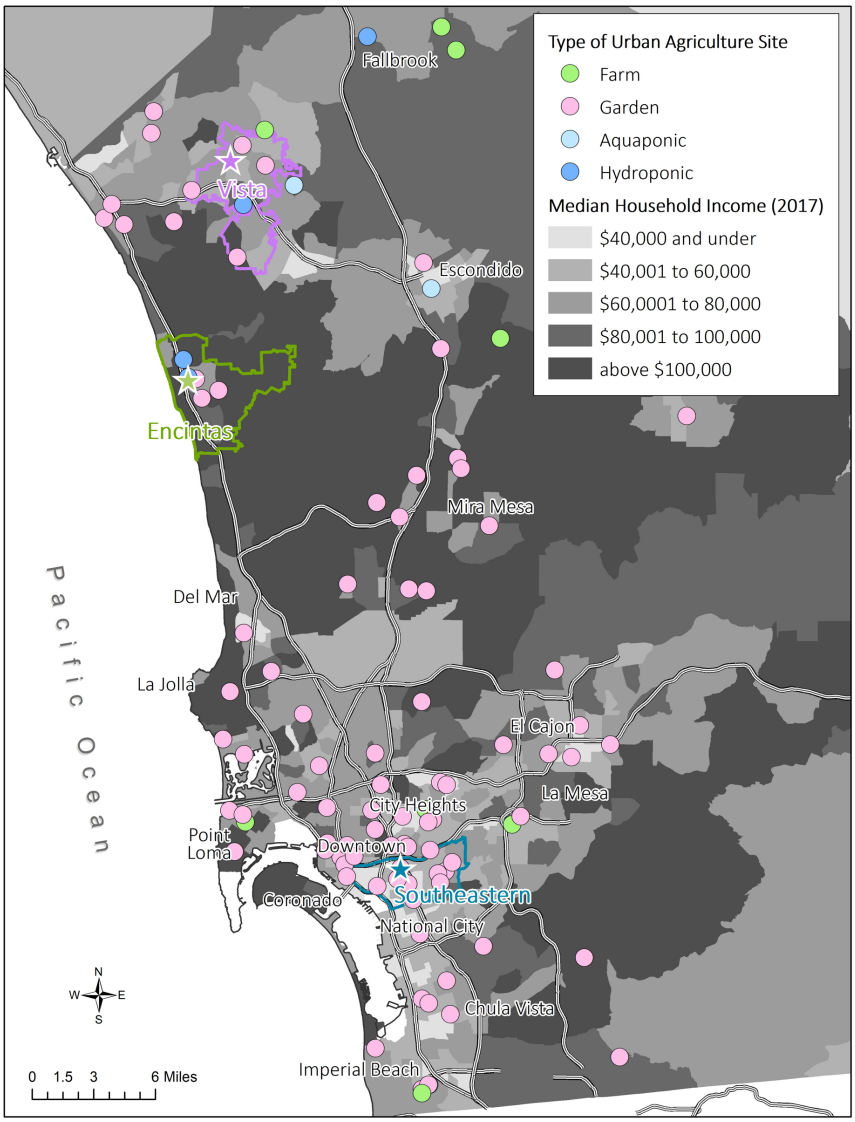

Fig. 10 Map of Urban Agriculture in San Diego County by Type Displayed over Map of Median Household Income (MHI). Data Source: Author's data and US Census (2019) American Community Survey 5-Year Estimates, 2013-2017.

C. Methods

The data I present is the result of 2 years of extensive participant observation between 2016 and 2018 at three sites: Coastal Roots Farm, Solutions Farm, and Project New Village where I participated in meetings and events, visited the facilities, and volunteered to help with farming activities on several occasions. These sites were not the only examples of growing sites using urban agriculture to accomplish justice-oriented goals in the county. However, their unique growing methods, discursive features, and socio-spatial settings set them apart and made them attractive for further inquiry and comparison. Mt. Hope Community Garden and Coastal Roots Farm, which uses soil-based growing methods, were chosen because they are discursively similar (see Chapter 2), but have incredibly different socio-spatial settings (which will be unpacked in the coming discussion). Solutions Farms was chosen because it uses soilless growing methods, specifically aquaponics, and was identified in the previous chapter as discursively and geographically distant from the other two case sites.

In addition to observing activities at locations related to these three farms' commodity circuits, I attended numerous meetings of regional food organizations like San Diego Food System Alliance, Seedstock, and Food Tank that brought together many local urban agriculture stakeholders. I took detailed notes during (if possible) and after all participant observation events. In addition, I conducted 34 semi-structured interviews with participants at these sites as well as in their broader networks including growers, farm managers, scientists, customers, funders, researchers, nonprofit organizers and staff members, and neighborhood residents. The interviews focused on actors' personal motivations for participating in urban agriculture, how they participate in urban agriculture, their perceptions

of the local food environment, and the struggles and barriers they perceive to urban agriculture. I chose not to specifically ask about justice to avoid biasing answers. Instead, themes associated with various conceptions of justice (such as income, poverty, race, gender, access to resources, etc.) were allowed to emerge (or not) naturally. For this paper, I use a subset of 19 interviews that specifically relate to the three specific case sites. I recorded and transcribed the interviews, which were approximately 1 hour in length on average. I also include secondary sources such as US Census data and media content from the three organizations' websites as well as newspaper and magazine articles on their activities.

For analysis, I coded all of the qualitative data – notes, transcriptions, and media sources – using the secure, online coding software, Dedoose. I chose an a priori coding scheme grounded in the literature on justice. Responses relating to 'Justice' were coded into three sub-categories: distribution, participation, and recognition. This code related to how justice is defined and practiced by actors at the three case sites. 'Socio-Spatial Contexts' to urban agriculture were also coded into three sub-categories including labor, land, and capital. These codes were used to examine how actors *think* about and *do* food justice and the social, economic, and political contexts that influence their justice-based missions.

D. Thinking and Doing Justice: Three Urban Agriculture Spaces

The three urban agriculture spaces chosen for my analysis of justice in San Diego County are Coastal Roots Farm in Encinitas, Solutions Farms in Vista, and Mt. Hope Community Garden in Southeastern San Diego (Fig. 11).

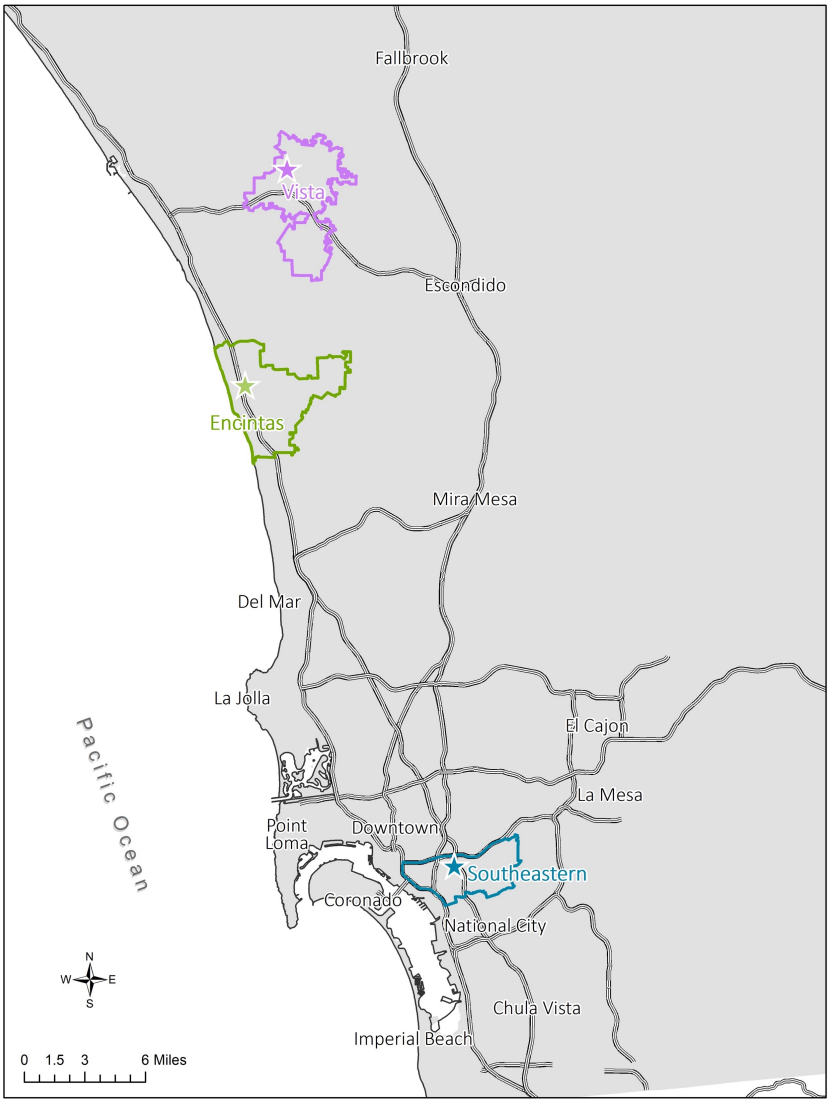

Fig. 11 Map of the three urban agriculture case sites with neighborhood or municipal boundaries.

The neighborhood settings of these urban agriculture enterprises are quite different (Table 3). Encinitas and Southeastern San Diego represent two ends of the spectrum; their socio-economic landscapes tell two quite different stories. In Encinitas, the median household income is high and poverty and unemployment rates are low. Residents tend to be non-Latino white and many have college degrees. Housing is predominately owner-occupied and the median property values are high (upwards of $850,000).

In Southeastern San Diego, the population is denser and more diverse – mainly Latino, but with relatively sizable non-Latino Black and Asian inhabitants. In fact, in the 1950s and 60s, the black population was much larger because Southeastern San Diego was one of the few places in San Diego where African Americans were not restricted by legal covenants to own or rent properties (Joassart-Marcelli 2018). Today, despite demographic changes, this remains an important element of the neighborhood's identity. The median household income is significantly lower than in Encinitas. Unsurprisingly, poverty and unemployment rates are higher here, as well. There are fewer people with college degrees and the home-ownership rate (40%) and median property value ($330,187 dollars) are considerably lower than in the rest of the county.

Vista lies somewhere in the middle on economic characteristics such as median income, poverty and unemployment. The city is less dominated by a single race or ethnicity, with almost the same proportion of non-Latino White and Latino residents. However, it has one of the highest percentages of homelessness in the county (San Diego Union-Tribune 2012), which drives local nonprofit organizing. These neighborhood characteristics contribute to the way the local organizations define and do justice and provide the socio-spatial setting that creates barriers and opportunities for their work.

Table 3. Selected Characteristics for the Neighborhoods for the Three Urban Agriculture Spaces

	Encinitas	**Vista**	**Southeastern SD**
Population	62595	99496	108605
Economic Characteristics			
Median Household Income	$103,842	$59,833	$42,497
Unemployment rate	3.2%	3.3%	11.9%
Percent population employed in agriculture	1.1%	2.5%	N.A.

Poverty Rate	7.6%	15.4%	27.9%
Percent adults 25 and over with college degree	60.6%	21.4%	10.3%
Race, Ethnicity & Immigration (percent)			
Foreign-born	13.2%	25.0%	36.6%
Latino	13.3%	45.6%	69.7%
Non-Latino White	78.9%	40.4%	5.9%
Non-Latino Black	0.6%	2.8%	13.2%
Asian	4.1%	4.7%	9.2%
Housing			
Owner occupied	63.8%%	49.20%	40.17%
Median Property Value	$862,300	$423,500	$330,187
Businesses	10307	8070	N.A.

Source: US Census Bureau (2019) 2013-2017 American Community Survey 5-Year Estimates.

Coastal Roots Farm was established in 2014 as a Jewish community farm to "provide dignified access to fresh food for those who need it most" (Coastal Roots Farm 2019). The 20-acre, organic farm names food justice, as well as sustainable agriculture and ancient Jewish wisdom, as its founding principles. "What we mean by food justice is that everyone deserves a right to this wonderful food," says Sharon Goodson, the farm's Director of Philanthropy in 2016. The farm uses soil-based methods to grow produce that it sells through its Community Supported Agriculture (CSA) programs; however, the majority of the harvest (over 70 percent) is donated to local organizations aimed at hunger relief in Encinitas, as well as local Holocaust survivors and their families. The farm hosts monthly 'pop-up' farm stands in Vista and at Camp Pendleton – areas with high poverty rates. It also hosts educational events and Jewish farming festivals for the local community. Community members can participate in volunteering activities; however, there are no personal plots for resident use. The farm's staff tend to have considerable experience in farming and are recruited nationally– for example, the current Farm Manager has over 17 years of experience in

farming throughout the Pacific Northwest – as well as nonprofit management. Ellie Honan, the Farm Production Assistant Manager, was drawn to the farm from Minnesota by an apprenticeship. Leadership and management positions are also staffed by applicants with previous nonprofit experience. The farm's funding comes from Leichtag Foundation, a private foundation dedicated to Jewish life and social entrepreneurship in San Diego County and Jerusalem (Leichtag 2018).

Solutions Farms opened in 2012 to serve as a social enterprise for the Solutions for Change family homelessness program. It is a 2-acre, organic, soilless farm that uses commercial aquaponic production to provide workforce training to previously homeless adults who have overcome addiction and may have few of the appropriate skills to build a career to support their families. The farm operates as an LLC and participants are formal employees that receive income, in addition to transformational housing, to support career development and self-sufficiency. Participants on average triple their annual income after their first year in the program to upwards of $20,000, which in turn decreases their dependence on cash aid and food stamps (Solutions for Change 2017). The program pays specific attention to financial literacy – for instance, program graduates are required to have $3,000 in a personal savings account when they graduate. The structure of the program is top-down, although there are some opportunities for graduates to join the organization as staff if positions are available. Solutions Farm's current co-manager is a graduate of the program. The farm primarily grows lettuces that are sold to local restaurants, juice bars, and farmers' markets in North County. Previously, the farm had a contract with Vista Unified School District; however, the bid was not renewed. The enterprise does not mention 'justice' in its promotional material, but the website notes that the farm's workforce development

program has a “worthwhile social purpose” (Solutions Farm 2013). Funding for the Solutions for Change program comes from governmental support such as affordable housing funds, private foundation grants, and donations.

Mt. Hope Community Garden, overseen by the local nonprofit Project New Village, broke ground in 2011. The garden is 1/3 of an acre and has 40 garden beds specifically for local residents to grow food and flowers for personal use and/or sale. Project New Village also has beds in the garden where it cultivates food for sale at its two neighborhood farmers’ markets, People’s Produce Market in Southeastern San Diego and Lemon Grove Farmers’ Market. The farmers’ markets are meant as an economic opportunity for growers; however, few are certified producers and the garden, especially initially, has had trouble attracting growers. The garden and farmers’ markets are the nonprofit’s “primary tools to improve food access, food security, and environmental wellness” (Project New Village 2019). Cooperative efforts and community cohesion are central components of this mission. The nonprofit emphasizes the local African American community in the neighborhood, which drives leadership and participation in the garden. Neighborhood residents are incorporated in leadership through Resident Leadership Academies – multi-week programs that “empowers people with the knowledge, tools, strategies and commitment to make positive changes at the neighborhood level” (CHIP 2019) – and participation in management and decision-making. However, other skills like grant-writing, business planning, and financial advising require additional support from outside the community. Nonetheless, residents get the final ‘okay’ on any changes in the direction of the nonprofit.

Histories of oppression and structural racism also factor heavily into Project New Village’s mission to solve disparities in the food landscape including access, growing, and

selling food. For example, a definition of food justice on a dedicated page on their website says, "Food justice… recognizes the food system as a racial project and problematizes the influence of race and class on the production, distribution and consumption of food. This encompasses farm labor work, land disputes, issues of status and class, environmental justice, public politics and advocacy" (Project New Village 2019). Interestingly, this focus of food justice, community, and food insecurity creates a close discursive connection between Project New Village and Coastal Roots Farms above, despite their stark geographic differences and approaches to justice (see Chapter 2).

Indeed, all three gardens take quite different approaches to justice. Relying on Schlosberg's (2004, 2007) trivalent approach to justice, which includes distribution, participation, and recognition, we can begin to unpack the multiple shades of justice that color these different operations. Coastal Roots Farm's justice practices and definitions center around distribution, specifically the outcome of improving food access. Pop-up farm stands in less fortunate areas, donations, and "pay-what-you-can" farm stands that allow buyers to pay whatever they can afford aim to increase access to organic produce. However, one farm staff member noted that at their own farm stand, they have had trouble reaching "less fortunate people" because the neighborhood is generally wealthy. The organizational structure of the farm provides few opportunities for participation of local communities, especially marginalized communities – positions are typically staffed by professionals and all growing is done by farm staff. Decision-making and farm management are also part of a hierarchal structure connected to the large foundation that finances most of the farm's activities. These practices are inconsistent with many definitions of food justice that go beyond food access and charitable donations to include the participation of marginalized

groups in challenging exploitative and unjust configurations of the food systems. Further, recognition of the underlying socio-economic conditions of uneven food access are not mentioned on the farm's website or during interviews.

Solutions Farms does not make claims to promote justice; however, their practices produce distributive justice by providing income and workforce training to a marginalized group, namely homeless adults with children who are concentrated in Vista. This produces enhanced food security among the participants who reduce their dependency on government aid to meet basic needs. However, decision-making is top-down and recognition of the structural factors underlying homelessness are not mentioned.

Mt. Hope Community Garden appears to stand on all three legs of trivalent justice, but especially on participation. The garden focuses on improving local food access by creating growing opportunities and local 'good food' distribution channels (distribution), it places a clear emphasis on empowering the local, marginalized communities it hopes to serve by including them in its management and decision-making processes (participation), and it recognizes the racially-based injustice and oppression that has created the need for grassroots intervention in the neighborhood (recognition). Yet, there are still nuances. Bosco and Joassart-Marcelli (2017) note that while focusing on the non-Latino Black community is a worthy goal – indeed, African American growers make up less than 1% of the county's farmers and have historically been disadvantaged (Green et al. 2011) – it may unwillingly exclude other groups that call Southeastern home and may not have nonprofit representation. And while the highly participatory structure promotes a sense of community and sovereignty over decision-making around local food systems, in some cases, it prevents time-effective decision-making.

The ways that these urban agriculture organizations describe and practice justice is influenced by local socio-spatial contexts including neighborhood dynamics, regional economies, historical land use policies, access to financial capital and appropriate knowledge and skills. The next section examines how these factors influence how justice is practiced in these spaces.

E. The Local, Socio-Spatial Settings of Justice

As the quote from Harvey (1996) in the theoretical section above suggests, justice is heavily dependent on its socio-spatial setting. For instance, distributive justice, which supports the generation of tangible outcomes like improved food access and workforce development, compliments neoliberal corporate capitalism. This form of governance favors the "expansion of community-based sectors and private approaches to social service provision" like Coastal Roots Farm and "implementation of work-readiness programs aimed at the conscription of workers into low-wage jobs" like Solutions Farms (Brenner and Theodore 2002, p. 369-70). Procedural forms of justice that stress participation and community cohesion like the justice practices at Project New Village are less common. This section examines the local socio-spatial settings that direct justice in these three unique urban agriculture spaces, specifically as they relate to land, labor and capital. I turn first to capital as it drives unequal access to land and shapes labor relations.

1. Capital

The three urban agriculture spaces I have examined have markedly different relationships to capital. The organizations' tax returns on publicly available IRS form 990 (ProPublica 2019) illustrate vast disparities in access to capital (Table 4). Project New Village has significantly less access to financial resources – in 2014, its net assets were in deficit by over

$17,000 dollars. The majority of their revenue is program service revenue, which includes government contracts, with some contributions from grants, gifts, and donations. Project New Village, specifically the garden, admittedly has struggled to find appropriate funding sources that match the mission of Project New Village and Mt. Hope. Available grants are highly competitive and may be less likely to go to organizations that emphasize participation and recognition– outcomes that are hard to measure – and struggle to demonstrate how they can "scale up" their activities. Alliance Healthcare Foundation, a major grantor in San Diego County focused on improving "health and wellness outcomes for the poor and most vulnerable," is attempting to remedy the issue. Dan, their Research and Impact Analyst explains, "We're trying to build frameworks and methodologies and best practices for the industry really, because no one seems to want to take on the challenge" – an admittedly hard task. Recently, they awarded Project New Village a Mission Support grant, which usually range from $25,000 to 100,000 dollars. The organization has also been able to secure other small grants to support collaborative efforts on social equity. As the nonprofit literature shows, small anti-poverty organizations in low-income neighborhoods often struggle to acquire the capital needed to carry on their mission (Joassart-Marcelli 2014). As a result, they are often forced to depoliticize or adjust their activities in order to secure funding. The lack of capital in Southeastern San Diego, as well as other low-income communities of color, is the result of past policies that have limited lending, prevented home ownerships, and deprived communities of equity building opportunities (Shapiro et al. 2013, Engel and McCoy 2008, Massey and Denton 1993), conditions which also make these communities prone to gentrification (Joassart-Marcelli 2018, Lees, Slater & Wyly 2013).

Solutions for Change and Coastal Roots Farm have been much more successful at attracting funding and generating revenue. Indeed, both organizations report net profits in recent years. Higher revenues and fewer expenses like rent (see *Land* section below) give the organizations critical resources to support their programs and justice practices. In the case of Solutions Farms, access to capital has been critical for investing in expensive aquaponic technology and supporting infrastructure like a $20,000 generator that restores power in the event of an outage. Grants, such as the Alliance Healthcare i2 Innovation Grant, help the nonprofit manage these costs. Dan explains why the foundation chose to give Solutions Farms its $1 million-dollar grant in 2014: "We saw a great potential because it's going to have the benefit of giving the homeless folks employment training and helping them learn how to operate in a hierarchical organized structure, and then it generates some revenue because they're selling this food… we saw a third benefit of getting healthy food into the local schools. Then there's hundreds of other benefits that are less ... that aren't really aligned with our mission but great; uses a lot less water and it's just way more space efficient. And it's really cool. That's worth something." This quote illustrates the currency of neoliberal strategies like "workfare" and "market-oriented economic growth" in achieving funding. As an LLC, Solutions Farms is indeed capital-focused – in 2016, the enterprise reported $1,404,593 in assets with $522,851 in income.

The economic characteristics of the neighborhoods in which these three organizations operate also contribute to their financial success. Daron Joffe, Founding Director of Coastal Roots Farm, admits the local wealth of Encinitas residents helps the farm: "Our disadvantage is we're not near the market that we really want to serve, but our advantage is, we're near the market of people who care and can help subsidize the market that we want to serve, right?"

Indeed, at a community festival I attended at the farm in 2016, the Director of Philanthropy, told the crowd, "I know many of you have been extremely generous with what you've given at our different events and our year end online campaign, but we welcome additional support. It helps us to be able to do what we're doing and to do it better and bigger." In Southeastern San Diego, low median income and high unemployment create fewer opportunities for community donations to support the garden. Vista residents similarly lack capacity to support Solutions Farms operations. Instead, the LLC depends on profits from selling its lettuce to local restaurants to offset its costs, which has been successful in recent years – in 2016, it generated over $500,000 in income. It is also heavily reliant on government service contracts and rental revenues from properties it makes available to formerly homeless people through its programs.

Table 4. Tax Revenue 990 for the organizations (and parent organizations) in this research

	Project New Village	**Solutions for Change**	**Coastal Roots Farm**
	2014	**2014**	**2015**
Revenue ($)	**67, 967**	**3,395,990**	**966,469**
Contributions, gifts, grants, etc.	12,754	2,144,741	903,212
Program service revenue	51,762	1,424,585	63,257
Investments	N/A	2,620	N/A
Other revenue	3450	-175,956	N/A
Expenses ($)	**73,729**	**3,665,913**	**837,631**
Salaries, benefits, etc.	11,880	1,540,702	504,657
Professional fees and payments	5,350	N/A	N/A
Occupancy, rent, utilities, etc.	27,630	N/A	N/A
Printing, shipping, etc.	192	N/A	N/A
	27,677	2,125,211	332,974
Net Assets ($)	**-17,276**	940,851	**128,838**
Excess or deficit for the year	-5762	N/A	N/A

Year beginning balance	-11,514	N/A	N/A

Source: ProPublica, Inc (2019) Nonprofit Explorer.

For political economists, capital is about equipment, machinery, buildings, and other human-made inputs (which are undoubtedly dependent on access to money). Ownership of the "means of production" like tools, seeds, compost, power generators, irrigation systems, greenhouses, and other inputs reflects and in turn reproduces illustrates power relations. Indeed, the owner of inputs is able to exert control over the workforce and profit. In the case of Solutions Farms, for example, the company owns the machinery and tools that make the aquaponic operation hum and the workers trade their labor for a wage, housing, and job training in a production facility. However, low-wage job skills and subsidized housing may not be enough to lift adults out of poverty in the long-run and the company will ultimately reap the benefits of the increased productive capacities of the aquaponics technologies, reinforcing the inequality. Solutions Farms, nonetheless, funnels its profits back into the Solutions for Change program: "All revenue generated by our social enterprise is invested into programs that are transforming lives and communities" of homeless families (Solutions for Change 2019). Still, workers are unable to realize the full value of their production. Mt. Hope Community Garden practices communal ownership of garden inputs which removes top-down power dynamics and is consistent with their participatory model. Yet, perhaps because of the collective nature of ownership, the amount of capital shared is limited to a few tools and minimal garden infrastructure.

2. Land

Land is an undoubtedly important aspect of urban farming; however, it is increasingly expensive in urban areas, making access to land one of the most significant barriers to urban

agriculture. Since the 2008 housing crisis, housing prices in San Diego County have steadily increased, with the median prices of single detached homes going from a low of $326,832 in March 2009 to almost $650,000 ten years later (California Association of Realtors 2019). This incredible rise in property values creates vulnerability for neighborhoods like Southeastern San Diego and projects like Mt. Hope Community Garden. Pascale Joassart-Marcelli, Co-Chair of the Urban Studies program at San Diego State University and Project New Village collaborator, explains, "As long as the neighborhood is not really highly valued by real estate standards, then yes, the land is going to be available … [to] be used by a community organization… but the minute that there's a more valuable use for that piece of land, whether it's owned by the city or owned by a private owner, the incentives change … and they might want to do something else with it." Indeed, it is common for governments to allow urban gardening on city properties since it is often preferable to a vacant lot; however, as property values rise, the highest and best use based on exchange value almost always wins (Smith 2005) and community gardens are displaced because they cannot pay market value (Eizenberg 2012, Schmelzkopf 1995). This process was poignantly illustrated by the experience of the South-Central farm in Los Angeles, whose eviction process has been depicted in the films The Garden (2008) and Save the Farm (2011).

This trend is slowly infiltrating Southeastern San Diego. Mt. Hope Community Garden recently found out its property was being sold when a for-sale sign showed up on their fence. Elizabeth Studebaker, Neighborhood Investment Manager at the City of San Diego notes that the property "historically had been dedicated for an intended future use of development for affordable housing." Mt. Hope Community Garden, which has been growing on the property for eight years with rent of only $1 per month, has always been temporary from the

perspective of the city. Now, Project New Village will have to buy the property or move the garden elsewhere and pay rent. In search of an alternative location, Diane contacted the owner of a vacant lot down the street; he is asking $3,000 dollars per month for rent. She will have to secure a reliable revenue stream in an increasingly competitive landscape to maintain the garden (Bosco and Joassart-Marcelli 2017). As renters, community organizations are extremely vulnerable to development pressures, unless they are able to own the land. Coastal Roots Farm and Solutions Farm do not share these struggles – each of their properties are owned by their parent organization.

The struggle of Mt. Hope Community Garden to find permanency in Southeastern San Diego is tied to its struggles to attract capital. Indeed, capital and land are intimately connected – land is considered a good financial investment that can accrue wealth, but requires capital input upfront to acquire it and also in the long-run to cultivate it productively and generate revenue. In this way, capital drives the entire process. Capital also drives the pools of talent that are available to manage and transform urban agriculture spaces. The next section considers issues around labor highlighting the role that capital plays in determining access to relevant knowledge and skills.

3. Labor

Labor and its outcomes are central components of justice and urban agriculture. This factor of production has perhaps received the most attention in the food justice literature, which often emphasizes economic opportunities for growers, including jobs, income, and food security (Reynolds and Cohen 2016, Alkon and Agyeman 2011, Gottlieb and Joshi 2010). Food sovereignty and food justice movements critique the exploitative race-, class- and gender-based labor relations that undergird the corporate food regime (Holt-Giménez

and Wang 2011, Alkon and Agyeman 2011, Gottlieb and Joshi 2010) and often call for "redistributive reforms of basic entitlements" including property and capital to give farmers more control (Holt-Giménez and Wang 2011, 94).

The labor of women and communities of color is typically undervalued in alternative food systems (Reynolds and Cohen 2016) and communities of color remain underrepresented in urban agriculture (Joassart-Marcelli and Bosco 2014, Alkon 2012, 2008, Guthman 2008a). Growing food in urban environments is hard work and often not lucrative. It requires people with skills that range from a green thumb to a science degree (depending on the growing method), as well as people with skills in leadership, fund-raising, and management. These skills vary among communities. For example, in Southeastern San Diego, college degrees are few, and even if gardening skills are present, its low-income residents often lack the time and energy necessary to tend a garden. In addition, there is often a reluctance to grow food among people of color for whom farming is personally connected to histories of oppression (Guthman 2008). Mary, a retired, local resident and certified producer at the garden, understands the struggle: "People have jobs… I have to leave my house and come over here and check on my harvest. They don't wanna do that. If you're working, they don't wanna be bothered with that." Mary grows food for Project New Village's markets and farm stands as a volunteer; however, the profits are too small for her to take a percentage for herself: "If we can make $100 [per week], that would be great. That would be something that I wouldn't mind taking a percentage of that. Right now, we're not making that much." She instead takes odd jobs to support her retirement.

The absence of commonly recognized leadership and management skills also presents challenges. Mt. Hope Community Garden benefits from the dedicated leadership of Diane

Moss at Project New Village, who often goes without pay, and her incredible success at building relationships with powerful stakeholders in the region such as the San Diego Food System Alliance – a regional nonprofit that focuses on food system advocacy in San Diego County. However, Diane must continually engage and maintain this network while acting as the intermediary between the outsider stakeholders and residents. Residents make final decisions on any new direction for the organization, which builds a strong sense of place and community, but complicates governance.

The other two urban agriculture spaces take top-down governance approaches which do not require community input, and therefore, limit procedural justice. They also benefit from substantial access to capital which allows them to recruit high-talent leadership directly into their network. They also are able to hire consultants. For example, Solutions Farms flies in consultants and scientists to optimize its aquaponics systems. As an enterprise, Solutions Farms is also able to employ and compensate its target population, although the workforce skills it provides are production line skills, reinforcing divisions between "knowledge work" and manual labor (Dyer-Witheford 1999). Through its workforce development model, in which work is often tied to housing assistance, Solutions Farm reflects the neoliberal model of workfare that has become common since the 1996 Welfare Reform. It also illustrates the trend of shrinking the welfare state by shifting state responsibilities onto the nonprofit or private sector and encouraging market-based solutions (Brenner and Theodore 2002, Peck 2010). While such employment opportunities may provide a platform to better jobs, they are relatively poorly paid. Still, the Solutions for Change program is life-changing for many of its participants. "Solutions for Change was my only hope and I'm so glad that I came here. It's really a great blessing and there's so many resources and so much knowledge to gain and

tools to gain from this program and this is one of the best decisions I've ever made," says participant, Victoria, mother of three.

Coastal Roots Farms relies heavily on volunteers, many of whom are affluent and white residents living in the areas surrounding the farm. Indeed, at a Sunday volunteer orientation I attended during field work, the majority of participants were white, ranging in age from high school students to retirees, hoping to "give back to the community" by volunteering at the farm. This reproduces the form of white privilege discussed by Guthman (2008a,b), Slocum (2007), Alkon (2008) and others (Anguelovski 2015, Joassart-Marcelli and Bosco 2014, Alkon and McCullen 2011) that is pervasive in the food movement. While upper- and middle-class people may benefit from volunteering in the form of social capital, exposure to nature, physical activity, and social distinction, others may not be able to enjoy these rewards.

F. Conclusion

The three urban agriculture spaces I study illustrate the situated, particular nature of justice (Goodman, Dupuis, and Goodman 2014), especially the impact of local, socio-spatial settings on justice narratives and practices. At Coastal Roots Farm in Encinitas – a majority white, affluent neighborhood – a narrative of charitable giving to "the less fortunate" drives its distribution-centered justice practices, which are underwritten by access to capital, land and labor. These operations are supported by a philanthropic model that is not motivated by profit, but by its social mission. Because it leaves little room for the participation of marginalized people and the recognition of structural inequities underlying food injustices, this model, however, tends to reproduce the status quo.

In the diverse, low-income neighborhood of Southeastern San Diego, histories of oppression and racism inform a justice narrative around community cohesion and participation which in turn promotes justice practices that emphasize participation at Mt. Hope Community Garden. Nonetheless, the lack of resources prevents it from hiring staff hiring staff and investing in land and capital that would increase the income-generating activities of the garden and its potential to address community food insecurity and poverty. This creates a vicious cycle in which the lack of revenue makes it difficult to generate additional resources. Without significant philanthropic support, in a capitalist setting, Project New Village must contend with the imperative of earning revenue or continuously raising funds in order to support its community-oriented mission, including buying seeds, paying for water, maintaining the beds, and providing basic composting infrastructure. Difficulties in "scaling up" their communal, participatory model may limit the garden's success in attracting this necessary funding, particularly from national organizations more interested in specific 'deliverables' than in building capacity and supporting a process. This observation reflects wider questions in the food movement on how to bring about systemic change through grassroots, communal models.

In Vista where homelessness is a growing issue, Solutions Farms serves as an enterprise with a "social purpose" to solve family homelessness. The farm's approach to distributive justice is to provide marketable skills and income to its participants – homeless adults with children. It takes a market-based approach that reflects trends in neoliberal governance. Further, its top-down organization structure concentrates ownership of capital and the means of production in company and nonprofit organization owners. This top-down approach fails

to achieve more participatory forms of justice. Still, its mission and innovative approach attracts capital and investment.

Each of the sites contribute to justice in some form through production of outcomes and/or opportunities, but fail to achieve broader 'trivalent' visions due to limitations. Coastal Roots Farms donates food to alleviate poverty, but fails to address the issues underlying economic inequality. Solutions Farms provides jobs for homeless adults with families, but does not produce the skills or opportunities for workers that will lift them out of poverty in the long-run. Project New Village builds community cohesion and creates participatory environments, but lacks resources and well-defined outcomes. Clearly, justice is more complicated than a singular, perfect concept; it is (and arguably must be) a "placed" practice that responds to global and local circumstances and is malleable to the histories and struggles of its participants. Still, the three sites corroborate the thesis that "already well resourced groups receive a disproportionate amount of support" (Reynolds and Cohen 2016).

Questions of ownership underlie the disparate experiences of these three organizations and their relative abilities to achieve justice. Project New Village struggles, in comparison to the other two sites, to expand its distributive justice practices due to its lack of land ownership and failure to obtain funding; however, the means of agricultural production are owned collectively and power is distributed among community members producing procedural justice. Communal ownership and participatory structure are central elements of food sovereignty (Alkon and Mares 2012), but also produce obstacles to attracting funding in a neoliberal model of social service provision that favors market-based approaches and distributive outcomes. Solutions Farms and Coastal Roots Farms, which benefit from parent organizations that own capital and land, possess more control over labor and resources and

are better able to measure their outcomes and attract funding. I attribute this power to their compatibility with neoliberalism, which advocates "workfare" models and decentralizes poverty relief and welfare responsibilities.

Ultimately, this research illustrates the nuances of justice. Justice is not about whether an urban agriculture space is soil-based or soilless – it is about engagement, participation, control, power, resources, and above all, ownership. Aquaponic and hydroponic facilities undoubtedly require substantial capital inputs and attract funders who see them as innovative and "cool." However, these growing methods do not *require* top-down ownership and management – they may also be used to challenge the power differentials that are manifest in capitalist relations of production through communal ownership practices. Policies should focus on enhancing grassroots organizations' capacity by investing resources in their neighborhoods and creating opportunities for local, nonprofit organizations to own land in their communities. Ultimately, justice is about practices – distribution, participation, and recognition. By showing how these organizations *think* and *do* food justice differently, we can better understand and acknowledge the imperfections of each approach and open up new possibilities for food justice.

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IV. Connecting the Dots: Local Urban Agriculture Commodity Circuits

It has been fifteen years since Ian Cook's seminal article, "Follow the Thing: Papaya" (2004), introduced the geography community to the complex social relationships that shape the papaya global commodity chain. Using multi-locale ethnographic analysis, he juxtaposed vignettes of people, places, things and forces that influence and transform the papaya as it makes its way from Jamaica to the United Kingdom, introducing readers to the complexities and nuances that lie beneath the taken-for-granted global commodities that enrich some people's lives while devaluing others. Like other work on global commodity chains and circuits (Challies 2008, Castree 2001, Gereffi 1999, Leslie and Reimer 1999, Mansfelt 2005, Raynolds 2002), Cook's article epitomizes the social concerns that have led to the rise in ethical consumerism and fair-trade standards seeking to lessen global inequalities (Evans and Joassart-Marcelli 2017, Goodman 2004, Wright 2009).

Despite the extensive and growing literature on local and alternative food networks (Goodman et al. 2012, Jackson, Ward and Russel 2006, Jarosz 2000, Marsden 2000, Morris and Kirwan 2010, Selfa and Qasi 2005, Sage 2003, Whatmore et al. 1997), this form of inquiry, which consists of "following the thing," has not been extended to *local* commodities, including those produced through urban agriculture. Unlike global commodities, the products of urban agriculture are often equated with accountability and transparency (Tornaghi 2014, Horst et al. 2017) and do not receive the same kind of critical scrutiny. We challenge this notion which conflates local with ethical (Born and Purcell 2006, Joassart-Marcelli and Bosco 2014) by arguing that local food products, like global commodities, have complex symbolic and material lives that mask social relations. Their commodity circuits are shaped

by socio-natural relationships involving people, places, things and forces that produce value both discursively and materially. This research builds on the commodity chain concept by implementing the sort of multi-locale ethnography employed by Cook (2004) to examine the local commodity circuits and micro-geographies of urban agriculture in San Diego County.

In recent years, urban agriculture has seen a surge of interest in cities throughout the United States. This growing curiosity has been accompanied by increasing diversity in the networks of human and non-human actors enrolled in urban agriculture. For instance, the introduction of new production methods – namely, soilless hydroponic, aquaponic, and aeroponic growing – has increased the heterogeneity of urban agriculture networks in cities. This type of diversification, in particular, is the focus of this paper. Soilless and soil-based urban agriculture networks embody different, although sometimes overlapping, urban *political economies* (governing political and economic structures) and *political ecologies* (socio-environmental relations). Further, the food commodities they produce are entangled in unique, locally articulated networks of human and non-human actors that materially and discursively shape the way food is planted, grown, harvested, marketed, desired, and consumed in the city. Inspired by Cook (2004) and Actor-Network Theory (Latour 1993, Murdoch, Marsden, and Banks 2000, Whatmore et al. 1997), we juxtapose vignettes from various nodes in the commodity circuits of soil-based and soilless urban agriculture products to better understand the place-based, socio-natural relationships that scaffold different urban agriculture commodities in San Diego County.

Our contribution lies primarily in the comparative approach we adopt to study the networks underlying and shaping the activities of three urban growing sites in San Diego:

Coastal Roots Farm, Solutions Farm, and Mount Hope Community Garden, chosen based on their growing practices, discursive similarities and dissimilarities, and unique socio-spatial settings (see Chapters 2 and 3). Rather than focusing on a single food item, such as a papaya, we consider the output of urban agriculture more broadly – whether it is a head of hydroponic lettuce or a radish pulled from the soil. Vignettes related to these three enterprises are the result of mixed method research that combines interview, media, US Census (2013-2017 American Community Survey 5-Year Estimates for population, economic characteristics, race/ethnicity, immigration, housing, and business information), and participant observation data. Thirty-four semi-structured interviews and participant observation were conducted between 2016 and 2018 at multiple sites in the local urban agriculture networks of the three case sites. The interviews were approximately an hour in length and covered institutional histories, actors' personal motivations for participating in urban agriculture, their growing practices, their perceptions of the local food environment, and the struggles and barriers they perceive to urban agriculture.

These data were analyzed using exploratory spatial data analysis (Goodchild et al. 2000, Anselin 1999), which allowed us to examine the socio-economic landscapes that are the setting for these actor-networks, and multi-locale ethnographic analysis, which included emergent coding in Dedoose online coding software (see Chapter 2 for additional information). When coding the interviews, we paid particular attention to the race-, class-, and gender-based power dynamics that accompany different urban agriculture commodities as they travel from place to place gaining meaning and value. Combining and analyzing this data was necessary for examining the "people, connections, associations, and relationships across space" (Falzon 2016, p. 1) that influence justice narratives and practices. The

comparative focus we take is a response to popular claims that soilless growing is incompatible with justice and calls for more reflexive, nuanced understandings of justice (Goodman, Dupuis and Goodman 2014). The concept of local commodity circuits provides an innovative approach to analyze the power relations underlying various forms of urban agriculture and shaping their capacity to promote food justice.

Finally, this research illustrates the practicality of a *post-capitalist* approach to justice (Gibson-Graham 2006) that acknowledges incremental, but still important, steps towards building more just food systems in the absence of structural change. This theory builds on from the authors' concept of "diverse economies" which recognizes "each individual economic transaction and practice as a possible site of struggle and ethical decision-making" and rejects a priori judgments that classify certain economic practices as "good or bad" (Gibson-Graham 2013, p. 10). This position, we argue, provides a fruitful avenue for examining the *placed*, context-dependent justice practices that unfold in the "here and now" (Holland and Correal 2013). Especially important is its ability to recognize everyday actions that can "support conditions for positive social and economic transformation" (Holland and Correal 2013, p. 132-133). This weaves productively with the everyday, nuanced justice advocated by Goodman, Dupuis and Goodman (2014) in their reflexive theory of justice. Indeed, Chatterton and Pickerill (2010) note the need for "detailed empirical accounts of the messy, gritty and real everyday rhythms as activists envision, negotiate, build and enact life beyond the capitalist status quo in the everyday" (p. 481). This research seeks to answer this call by examining the multiple openings for justice found throughout local urban agriculture commodity circuits.

A. The Idea: Review of Relevant Literature

Commodity circuits are scaffolded by 'geographical knowledges'– peoples' understandings of specific places (Cook and Crang 1996, Evans and Joassart-Marcelli 2017). These knowledges and/or imaginaries include the settings, biographies, and origins and are "fragmentary, multiple, contradictory, inconsistent and, often, downright hypocritical" (Cook and Crang 1996, p. 41). The concept of geographical imaginations builds on Marxism's commodity fetishism, which recognizes commodities as more than physical – "they are both things and relations" (Castree 2001, p. 1522) that have social and geographic lives and trajectories that are hidden behind their exchange value (Cook 2006). Poststructural theories like Actor-Network Theory move beyond the material to include the symbolic lives of commodities (Benson and Fischer 2006, Cook 2004, Friedberg 2003, Barndt 2002, Long and Villareal 1998). Here, commodities are hybrid actants, as much social as they are natural, that exist in networks held together by their relations (Latour 2005, Whatmore 2002, Murdoch, Marsden and Banks 2000).

The idea of 'actants' is unique to Actor-Network Theory. Latour (1993) notes, "An actant can literally be anything provided it is granted to be the source of action" (373), recognizing the importance of things, which lack the motivations typically associated with human actors, in driving action (Latour 2005, Ginn and Demeritt 2009, Bosco 2015). Agency, as result, is less about intentional actions, and more about associations or *network* (Buegger and Stockbruegger 2016, Bosco 2015). In this research, we focus on stakeholders and organizations and refer to them as 'actors' because they have motivations and particular agendas that drive their action. We do not intend to simplify or ignore the role of actants such as narratives, growing materials, permits, and more that "authorize, allow, afford, encourage,

permit, suggest, influence, block, render possible, forbid, and so on" action (Latour 2005, p. 72). Agency is a "distributed effect" of the associations between these things and actors in Actor-Network Theory (Bosco 2015, p. 152). Examining these associations "allows us to explain the mechanism of power and organization in society and to understand how different things … come to be, how they endure over time, or how they fail" (Bosco 2015, p. 152). However, critics of Actor-Network Theory note that agency is not evenly distributed and that this question of power differentials is missing from the theory. In fact, "some actants 'marshall' the power of others and, in doing so, limit the latter's agency" (Castree and MacMillan 2001, p. 222). This gap, we argue, is remedied by intersecting Actor-Network Theory with commodity circuit analysis in which power relations are a central characteristic of networks.

Geographies of food undoubtedly lend themselves to the use of Actor-Network Theory (Winter 2005, Cook 2004, Whatmore and Thorne 1997, FitzSimmons and Goodman 1998, Busch and Juska 1997), although researchers have questioned the transformative potential of research that describing lived experiences and associations (Goss 2004, Crewe 2001, Hartwick 2000, Cook et al., 1998, Barnett et al., 2005) without explicitly engaging larger structures such as the political economy. Goss (2004) argues that this 'cultural turn' "risk[s] throwing out the babies with the bathwater: rejecting a caricature of commodity fetishism they lose a concept that provides insight into the relationship between the material and symbolic" (p. 376). However, in response, Cook (2006) argues that the theory exists "between the lines" and exploring the everyday associations that underlie commodities does inspires empathy and political transformation (p. 661). Despite their disagreement, the two vantage points have much to offer one another. We agree that if we, as researchers, are to be

agents of change and inspire effective, political action, we must engage and embed audiences in the lives of 'others' to inspire empathy and challenge faulty geographical imaginaries. However, we must be more than story-tellers hoping that the pieces come together in the minds of our readers – we must use theory to articulate the connections that we hope audiences would find 'between the lines'. This research seeks to do just that in its examination of local, urban agriculture commodity circuits.

This research uses Actor-Network Theory to unravel the geographical imaginations that structure the people, places, things, and forces – the "dots" –in our networks. Seeing the dots as relational, hybrid, and situated (Whatmore and Thorne 1997) allows us to untie anterior narratives around the socialness and/or naturalness of actants in our networks and focus instead on relations and connections as they relate to food justice. We do attempt to make sense of the connections for readers; however, we do not see this as creating a 'critical knowledge' for consumption as Cook and Crang (1996) have described it. Instead, we see it as handing our readers a map of the theoretical trails we have identified that they may follow or stray from as they examine and build their own understandings of these networks. This theoretical map is built from a series of vignettes presented side by side that allow readers to make connections and develop their own critical understandings as they "follow the thing" (Cook and Crang 1996, Cook 2004) before we input our own critical understandings. This research does not end with these pages, but is a continuing collaborative effort between the actors and actants outlined in its vignettes, its readers, and ourselves.

B. The Following

1. The Greenhouse

Cool, humid, bright. The greenhouse at Solutions Farms vibrates with slow, continuous activity. Dave, a retired marine whose curiosity for the science of aquaponics led him to Solutions, reminds me not to take photographs of the workers – men and women from seemingly all walks of life – as they tend numerous rows of white, plastic trays overflowing with green and purple lettuces. The workers are participants in Solutions for Change's program which seeks to break the cycle of homelessness in families throughout San Diego County. The program focuses on combining skills, knowledge, and resources to participants including "transformational" housing, health services, counseling, life skills like financial literacy, and job training. *Get up, suit up, show up.* The unofficial motto of the program stated by each team member I interview at Solutions Farms.

Dots of red embellish the lettuces' soft leaves like ornaments. Step closer and the dots come to life. Lady bugs crawling slowly across the leaves in search of aphids – small, pesky insects that feed on the lettuces' sap and, ultimately, the farm's profits. The fish – all male tilapia – live in 2,000-liter tanks in the aquaculture room next door. Warm, humid, dark. Dave conducts this orchestra of people, plants, fish, insects, fungus, bacteria, minerals, nutrients, moisture, and machinery. *There's more chemistry and biology and physics and engineering than you can shake a stick at*[2]. He was a volunteer at the farm until their systems specialist put in his two weeks. Now he co-manages the operation. At maximum production,

[2] In this paper, italics are used to denote direct quotes from primary sources including interviews and participant observation; quote marks are used for quotes data taken from secondary data sources like previously published articles on participants

2,500 heads of lettuce leave the greenhouse every week – barring any issues. Diseases, fungus, pests, human error, loss of electricity.

Electricity. The humming undercurrent of the entire operation. It powers the fans that maintain the optimal environment for the plants and the machines that oxygenate the fish tanks. *If the air goes off, you got a problem. The electricity goes off, within an hour my fish are dead; all of them.* As if planned, the electricity does go off halfway through the interview. *The generator just kicked on. You hear it? Gug-gug, gug-gug, gug-gug.* It's 80 degrees in Vista, California. More air conditioners are running, overwhelming the power grid and triggering an outage. The generator was enrolled in Solution's network after its first power outage. It cost the nonprofit $20,000. *That powers everything here… if we didn't have one [right now], then we'd be in the fish room with giant straws blowing bubbles,* an ultimately futile attempt to save the $12,000 worth of tilapia swimming in the tanks. The heads of lettuce would also be in trouble. *By tonight, we would start losing. By tomorrow, they'd all be gone*.

Risk is part of the aquaponic model, but it does not outweigh the benefits of a greenhouse setting for the social enterprise, contends Paul Webster, Director of Strategic Advancement at Solutions for Change. *We can teach and help people experience... what it means to be in a production facility, because our farm really is a production facility. We know how many seeds we're planting, we know what the germinations rates are, we know what the grow-out is from high density to our grow-out, we know what our harvest is, we know what our loss is. And we know how to fill orders. So, we can do all that in a pretty tight little area, and everybody gets a hand in doing that. And another thing about aquaponics, it doesn't require a lot of physical strength… pretty much all of our grow tables are at about*

waist or chest height, so that makes it nice. So, people who may not be able to bend over as well, or may have challenges from repetitive bending over and stuff like difficult in soil farm work, we have an advantage over that, as well. And then, I think the other advantage is, because we're kind of in this closed greenhouse environment, if challenges come up because, you know one of our main issues is we want to be able to teach and reinforce positive soft skills so that people can be hired full time and maintain their employment. These social benefits attract funders. In 2014, Solutions Farms received a $1 million-dollar Alliance Healthcare Foundation i2 Innovation Initiative grant. Alliance calls the award venture philanthropy, "based on the thesis that innovation capital (often high risk, high reward) is needed to transform the current paradigm (high cost and poor outcomes) and improve quality, increase capacity and reduce costs*"* (Alliance Healthcare Foundation 2019). *It's about hacking the paradigm,* says Dan Hall, Research and Impact Analyst at Alliance. *We're trying to find programs that have potential to be self-sustaining, meaning they don't need continued grant funding and then also quite likely scalable as a result and that kind of produce a major shift in the state of well-being for that target population… We saw a great potential because it [Solution Farms] is going to have the benefit of giving the homeless folks employment training and helping them learn how to operate in a hierarchical organized structure. And then it generates some revenue because they're selling this food. And also, we saw a third benefit of getting healthy food into the local schools.* The nonprofit no longer has a contract with Vista Unified School District. *Then there's hundreds of other benefits that are less ... that aren't really aligned with our mission but great; uses a lot less water and it's just way more space efficient. And it's really cool. That's worth something.* Self-sustaining, scalable, productive, socially beneficial, cool: funded.

2. The Farm Manager

I was not interested in aquaponics. Not even a little bit. In fact, I don't even think I'd ever even heard of it before. Jennifer is a farm manager at Solutions Farms, along with Dave, and a graduate of the Solutions University – a 1,000-day residential leadership and training program sponsored by Solutions for Change, a nonprofit aimed at solving family homelessness. If proof that the program works is in the metaphorical pudding, Jennifer is it. Before the program, she was homeless, trapped in the grips of drug addiction, and lacking any job skills. She found sobriety and then she found Solutions for Change. *Get up, suit up, show up.* Media reports (Voice of San Diego) often refer to her as a "success story." *Define success. I'm successfully clean and sober. I am a really good mom, which I think is the most important thing of all because that's the whole reason why I even considered any change at all… I was tired of paying the consequences [of being an addict]. I was tired of my kids paying the consequences.* Her oldest daughter left for college the day before our interview; she calls Jennifer just as we are wrapping up our conversation, frantic about her class schedule. They talk every day. Success. After graduating from Solutions University, Jennifer worked as a resident assistant in program housing until she was brought on to assist in the construction and management of Solution Farms. She currently manages day-to-day operations. Her time is often consumed with the record keeping required to maintain their organic certification. It's a headache, but she recognizes its importance, especially in the face of climate change. She also runs the greenhouse. *The farming, it's not a, I'm kind of a girly-girl, I'd rather be in a cute outfit with a lot of makeup on- well, not a lot of makeup, but- it's not my forte. I like working. I like labor intensive stuff, but like it [farming] wouldn't be my choice of careers... I always have dirty nails.* Working directly with the program participants

– sometimes addicts like her, other times desperate families that have fallen on hard times – is what brings Jennifer the most joy. *In recovery, there's a saying… one addict helping another is without parallel... This person who has been through what you're going through is easier to identify with and easier to draw strength from… I mean, I didn't work at the farm while a program participant, but knowing that addressing the causative factors of why I screwed my life up for so long, and addressing those and fixing those, I think it helps the other people coming in.* Aquaponics is a tool for making these connections. Building the skills. Changing lives – 900 families and 2,300 children to date. Why don't we see more models like this one? *It's definitely fear-based. When we don't understand something and it doesn't make sense to us and it's not what we would choose, we usually disregard it off the bat. Just because one flower is beautiful doesn't make another flower any less beautiful. It's just a different flower.* One of Dave's comment from our interview re-enters my mind. *There is a parallel between growing things and what they [the program participants] are going through. Planting a seed, watching it grow, get transplanted, moved on, you know.* Different lettuces. Different people. Met with understanding. Planted. Cultivated. Transformed.

3. The Farm

It is a sunny January morning in Encinitas. I am at Coastal Roots Farm – a 20-acre farm including a food forest, vineyard, vegetable gardens, chicken pasture, and more – for the Tu B'Shavat Food Forest Festival. Tu B'Shavat is the Jewish Holiday of Trees, celebrated every year during the Lunar Hebrew month of Sh'vat – a fitting celebration for a community farm "inspired by ancient Jewish traditions that connect people, food, the land, and social justice" (Coastal Roots Farm 2019). When I toured the farm three years prior, the food forest was no more than a concept and a vast swath of terraced dirt overlooking the adjacent coastline.

Today, it is bursting with life. Children and parents gather to plant fruit-bearing trees in the humble, but growing grove. Farm staff and volunteers hurriedly organize, direct, and assist them through the scheduled events. Birds and bees go about their usual routine. A four-piece folk band meanders through all the activity, harmonizing over an acoustic guitar. Tree planting gives way to a series of glowing speeches.

The Mayor of Encinitas, Catherine Blakespear, ecstatically appeals to the crowd, diverse in age and gender, but seemingly not much else. *I feel such a great sense of bounty and of peace and of things being right with the world when I go out and pick ripe fruit from fruit trees. And that's something I think that a lot of people don't identify as value, but all of you who are here today do.* Shared values. Coastal Roots Farm (2019) lists nine of them on their website. "We believe in cultivating a healthy, just and connected community… We welcome and nourish people of all backgrounds… We steward human and natural resources… We balance ancient wisdom with modern innovation" The list continues, but three central elements rise to the surface: Judaism, sustainable (namely, organic) agriculture, and food justice.

Food justice is featured heavily in the next speech by the farm's Director of Philanthropy, Sharon Goodson. The term itself is complicated and multifarious, incorporating some combination of accessibility, affordability, cultural appropriateness, health, animal ethics, and/or sustainability. Sharon puts it simply. *What we mean by food justice is that everybody deserves a right to this wonderful food.* Everybody. The local families at the festival today and others that partake in their 'donation suggested' events. The *less fortunate people* throughout the North County coast. The Holocaust survivors who receive weekly donations. The charitable organizations – churches, community centers, and food kitchens – that also

receive donations. The customers at their 'pay-what-you-can' farm stand. The farm's rich tradition in giving is inspired by ancient Jewish practices like *ma'aser* which requires that at least one-tenth of the farm's bounty be reserved for the poor. The guava tree I am planting today will become part of this mission.

But, as the saying goes, money does not grow on trees, begging the question, how does the farm support itself? The answer is the Leichtag Foundation – a nonprofit organization that "incubates" the farm on its 67.5-acre property, Leichtag Commons. This foundation financially supports and oversees the farm and "The Hive" – a co-working space for nonprofits – and rents space to tenants like a butterfly conservancy, a gene-editing company, and commercial flower growers. Among those tenants is Go Green Agriculture, a commercial hydroponic farm that operates the large greenhouse directly abutting the food forest. I can faintly hear its fans blowing cool air on rows of organic butter lettuce and watercress as I plant my tree. A symbiotic relationship exists between the farm and the greenhouse. When Go Green has extra lettuce that does not meet tight commercial standards, they give it to Coastal Roots Farm to sell at their farm stand or to feed to their chickens. Coastal Roots Farm, in return, diverts much of their spent lettuce to their compost piles, helping the greenhouse avoid steep waste management costs. Daron 'Farmer D' Joffe, Founding Director of the Coastal Roots Farms, sees the relationship as a win-win. *It's about finding the synergy and common ground not about trying to find the differences.*

This synergy drew Ellie Honan, Farm Production Assistant Manager, to the farm. *I think one thing that really appealed to me was a sense of more of a community here… it was just this whole larger vision of the place and all of these different enterprises that are happening.* Although, she admits she is reticent to see the farm and greenhouse as two sides of the same

coin. *My gut reaction is to not like it [hydroponics]. Like we haven't gotten to a place that we even fully understand the intricacies in soil.* Sona Desai, Director of Food Systems Development at Leichtag Foundation, shares this hesitance, although from a slightly different vantage point. *I believe in soil-based agriculture as an incredibly valuable connection point for engaging the community in food systems and agriculture. While I agree that you can engage the community in climate-controlled environments, it's different. The connection that people make to their food in a land-based agricultural system… it's a very different type of connection that you're going to get. I mean, it's incredibly powerful when somebody comes, a child comes and picks up soil and digs out a carrot.* This powerful image– a child digging in the soil of a raised garden bed – has been criticized for its romanticism and color-blindness (Guthman 2008a, 2008b, 2014, Kobayashi and Peake 2000). Nevertheless, it is first thing you will see when you go to the farm's website. *I mean, you can't … in my mind, you really cannot create that in a different type of environment.* The words community and synergy swirl in my mind. Synergy is about cooperation and collaboration; seeing past differences to achieve a shared goal. Community and synergy appear to be complimentary; compatible, even. Coastal Roots Farm appears to make it work. How?

4. The Foundation

Can a "fear of poverty" be a foundation for giving? Yes, if you consider Leichtag Foundation (Leichtag 2019a). Initially a family foundation established in 1991, Leichtag became a private foundation in 2007 after the deaths of Max "Lee" and Andre "Toni" Leichtag. Lee and his wife, Toni, were children of Jewish immigrants – Lee's family from Hungary, Toni's from Canada. Lee, in particular, grew up in poverty – the fear of which he credits for motivating him to find financial success as an entrepreneur in the pharmaceutical

industry. Success. Having accrued incredible wealth and moved to "the upscale rural San Diego community of Fairbanks Ranch" where homes are valued in the multi-millions, Lee and his wife eventually sold their pharmaceutical company and focused their attention on philanthropy: "His earnest motivation … was to improve the quality of life of people and the community by ameliorating the poverty that exists on many levels throughout human existence." A venerable ambition. The Leichtag Foundation focuses their efforts in the North County Coastal Region and Jerusalem, bridging a distance of over 7,500 miles. Its Board of Directors includes an impressive collection of attorneys, doctors, authors, academics, and philanthropists, all with personal and/or professional ties to the Jewish community. Together, they oversee efforts to support Jewish life in North County, increase self-sufficiency among Jewish community members, provide workforce development in Jerusalem, and maintain connections between the two regions. The foundation's $101,360,905 net assets (Leichtag 2017b) support these programs including Coastal Roots Farm. This access to capital explains the farm's desirable, coastal setting and underwrites its impressive giving practices. It also gives it an incredible advantage over other nonprofit urban farms with similar social missions. Social missions like food justice – a concept that seeks to dismantle privilege. Without Leichtag, Coastal Roots Farm would undoubtedly share the struggles of other small nonprofits. Sona Desai agrees. *It's so hard to map that out as a real urban farm, because there's so much access to capital… our expenses are incredibly higher than any revenue that we would generate in, and it wouldn't be a sustainable enterprise.*

Should this privilege be a source of criticism? Farmer D says no. *It's a model for how philanthropy can be an important ingredient in community ag and urban ag… It's a model for how community farming can happen in a way that it's very much oriented towards*

specific goals, on social impact and community benefit. Right? …the problem is not that there's a foundation over there [that] Coastal Roots should be criticized for. I think the problem is that we don't see that there should be more foundations doing what Leichtag does. Ellie, Farm Production Assistant Manager at the farm, finds herself oscillating between the two positions. *Part of me when I first came here felt a little bit like well is this a setting that I want to be trained in because this isn't something that I'm gonna be able to go replicate. But then another part of me felt like why not, we should be pushing for larger foundations and corporate whatever, like we should be pushing for big money to support this.* Indeed, few food justice nonprofits have the privilege of a foundation such as Leichtag bankrolling their operations. Should they?

5. The Community Garden

For sale. The red and black sign yells from the chain-link fence enclosing Mt. Hope Community Garden. Diane Moss, Managing Director of Project New Village, the nonprofit that sponsors the garden, showed up one morning and the sign was just there, as though it appeared out of thin air, informing her that her garden, the community's garden, was for sale. *We broke ground in 2011 and everything takes a while to become what it is. But I think it's the gamble up front. Didn't know what was gonna happen five years down the road. Knew we didn't own the land… I don't quite get it why things are moving so fast after sitting there dormant, not doing anything since the '90's.* With things moving so fast, Diane has to move faster. Assemble a team. Write a business plan. Submit a bid. Secure a funding source. *That's not what we've been doing. It's been community engagement and organizing around food and food distribution, but at this point, in order to be a solid player in this game, we're gonna have to re-think.*

Project New Village was established in 1994 as "a community hub for collaborative efforts to increase social wellness" in Southeastern San Diego – a neighborhood with a long history of racially-driven policies (Joassart-Marcelli 2018) including redlining used by the Federal Housing Administration between 1934 and 1968 to rate urban areas with high proportions of racial minorities as too risky for loans (Joassart-Marcelli 2018). Addressing the legacies of past and current racism drives Project New Village's mission and projects – something they are not shy about – like the Good Food District which "addresses the structural, systemic underpinnings of racial inequities, and the capacities needed to support change efforts led by those most affected by racism" (Project New Village 2019). Like African Americans. *We have a multi-cultural focus. But we are African Americans, so clearly, we have more connections, let's just say, with the African American community.* Emails from Diane include a quote from Leah Penniman (2017), author of Farming While Black: "Our food system is built on stolen land and exploited labor. Our food system needs a redesign if it is to feed us without perpetuating racism and oppression."

Food justice is another key ingredient. An entire page of Project New Village's "About Us" section of their website is reserved for the topic of food justice. *[This idea] spoke to me because of the social justice issue and food being a platform.* Since 2008, food has become the primary tool for reinvesting in the community. Three years later, they broke ground on Mt. Hope Community Garden with a five-year lease from the City of San Diego with a rent of $1 per month. From then on, the garden, alongside the organization's farmers' markets and Good Food District model, became a key component for achieving food justice. *If you look at the people who are farmers or who the ag census looks at in San Diego, it's like African-Americans don't exist. So, I thought, oh we could do something about this. I know*

people grow food… there are 40 beds and probably now in terms of demographics, I'm going to say it is majority –over 90% --people of color. Diane admits there was some resistance. *I'm very proud that some of the residents who when we first started they were looking at us like we were from another planet and didn't understand why we were digging in dirt in the neighborhood. But those residents have come around.*

For sale. How could Project New Village possibly raise the funds to purchase the garden it had been cultivating for years? When I interview her, Diane is preparing to make the case for the garden, the neighborhood, the community, to philanthropic monetary gatekeepers like San Diego Grantmakers. *We've been told that it's kind of crass to ask people for money like as a part of your presentation. I get it.* Peculiar advice given the growing importance and cultural acceptance of crowd-funding and venture capital campaigns. She hopes meeting funders will inform future Requests for Proposals (RFPs). *This year would've been a miss for us, it's about… gardening and school children so it is not an emphasis of ours.* The search for appropriate funding channels occupies much of Diane's time now. Her broader vision for transforming Southeastern San Diego into a Good Food District will be impossible without it. Securing Mt. Hope Community Garden alone will require funding. *There's an empty lot down the street from the garden. It's been vacant longer than we've been there and it's about the same size, little bigger… I called them and asked him what would it be for their property and he said, $3,000 a month, half an acre, and his only concern was: did I have the money. I said, well if we move forward with this, we will secure the money… anyway it goes, we're gonna have to move the garden.* There have been wins – in 2016, Project New Village successfully applied for and won a year of mission support through Alliance Healthcare Foundation and a three-year social equity collaborative fund through San Diego

Grantmakers. There have been losses – the nonprofit was unsuccessful in its attempt to receive a $1 million-dollar foundation grant on health and innovation. The award, instead, went to a nonprofit with ties to the foundation.

Money is always a struggle. Diane herself often goes without pay. *Sometimes I'm paid, currently I am not*. She did not get into social justice for the money. *In 2006, I was minding my own business. I was running a teen pregnancy prevention program… I always knew that I wanted to do social service or social organizing kinds of work that would benefit the community. I happened to sit at a workshop with a woman… and she kept talking about this issue of food justice, of which I had never heard of before. I heard of a lot of justice movements, but not food. I come from south central Los Angeles, Compton, and I figured you got what you got… Then when I went to this workshop, she told me to, it was in City Heights [in San Diego] at the Wellness Center. I looked around the room and I didn't see any of my neighborhoods. The conversation was just fascinating. I had never heard it before… I held my first community meeting and in October [2008] with my neighborhoods and some people from the county and said, "What do you think about this issue food justice? How are we going to change our relationship with food and our neighborhood?" People wanted to do that. We kept meeting.* Not long after, Diane began working with community members and city council to change ordinances so that Mt. Hope Community Garden could become a reality. The vibrant, meaningful reality that it is today.

6. The County

Densely populated urban neighborhoods. Sprawling suburbs. Vast, open space. San Diego County is a growing, diverse metropolitan region of over 3 million people. Urban agriculture finds its place among its evolving physical and social landscapes. The physical

landscape – climate, land, and water – undoubtedly dictates the location and form of urban farming. The cool ocean breeze and balmy atmosphere of the coastline beckons, attracting droves of people and leaving little land for farming. Available land is in dry, exurban areas where water is increasingly scarce and expensive – a southern California reality. A perplexing, physical environment that complicates the desire for urban agriculture. Modern technologies offer some remedies. Move the produce inside. Set the thermostat. Adjust the humidity. Control the physical environment. Although it possesses its own vulnerabilities.

The social landscape determines the economic and social resources available to support urban agriculture and shapes the demand for its products; thus, the location of urban farms and community gardens needs to be understood within their social landscapes (Bosco and Joassart-Marcelli 2017, Joassart-Marcelli and Bosco 2017, 2018). Urban agriculture is often described as a grassroots solution to food insecurity, suggesting that it may be more common in low-income areas where the community is organized and actively engaged in its promotion. However, researchers have shown that urban agriculture is more popular among white, educated and affluent consumers (Alkon 2012, 2008, Alkon and McCullen 2011, Guthman 2008). Social and physical landscapes, co-producing one another. Determining where urban agriculture is processed, exchanged, consumed, advertised, and regulated. Favoring affluent and powerful populations (Pulido 2000). Excluding people of color who are more likely to suffer from hunger and less likely to have access to affordable, fertile, uncontaminated land. Reproducing or destabilizing socio-spatial inequalities *Under the Perfect Sun* (Davis et al., 2005). San Diego County is far from equal – in fact, it is a highly segregated area. Race and socio-economic differences are evident in the landscape.

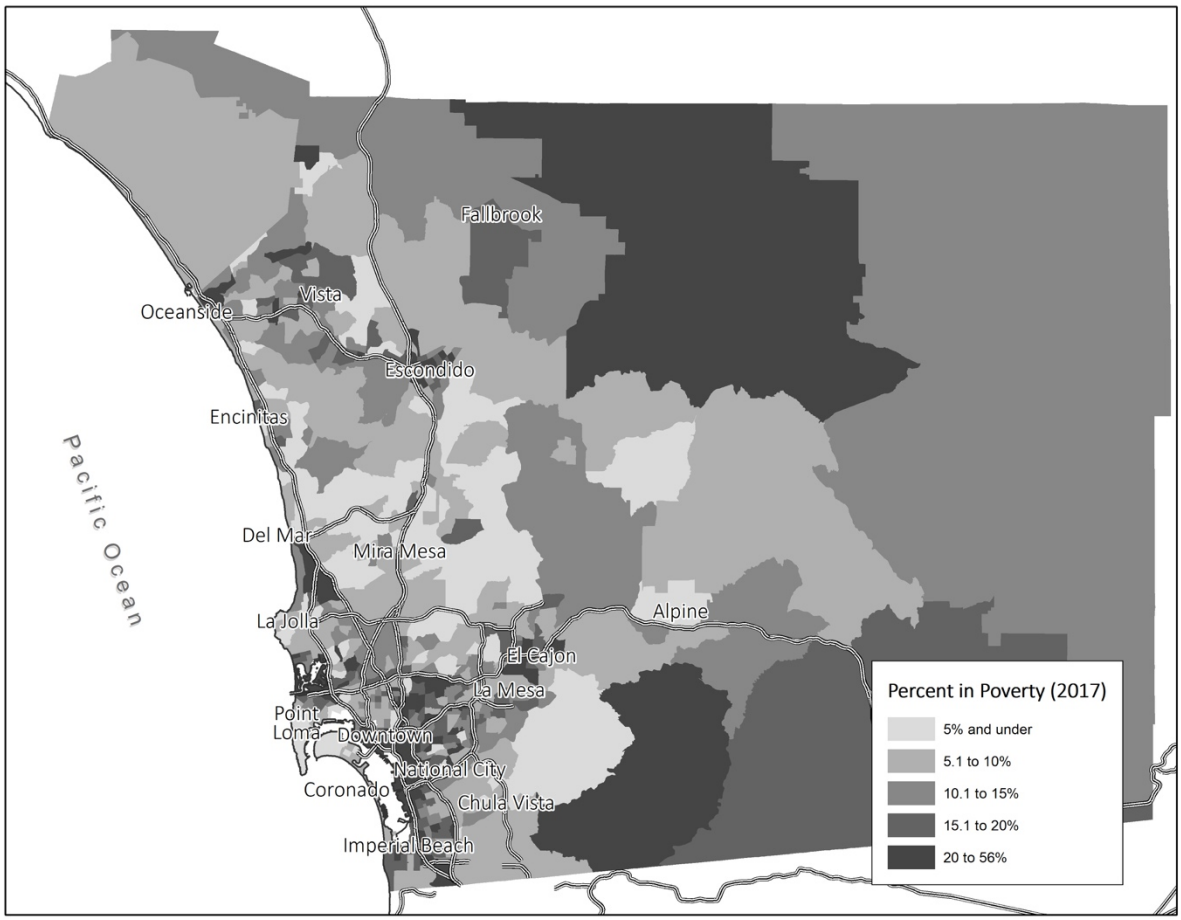

Fig. 12 Percent of Population in Household with Income Below Poverty by Census Tract in San Diego County. Source: Map by author using American Community Survey 5-Year Estimates (2013-2017).

Figure 12 shows the concentration of poverty in the urban core around downtown San Diego, the South Bay, Oceanside, Vista, Escondido and a few large, but sparsely populated rural areas. Racial segregation follows suit, as seen in Figure 13 (in 'neighborhood section' below), but is even more concentrated. Most non-white (including Latino) residents live around downtown and in the South Bay. This pattern is no accident – it is the accumulation of racially-biased political and economic decisions over time. Mortgage policies, zoning regulations, municipal funding, transportation planning, real estate practices, all culminating in an uneven social landscape that still disenfranchises low-income and minority populations today. The relentless suburbanization of the 1950s produced homogeneous exurban enclaves

and gated communities that allowed affluent and white residents to "escape" the central city areas and leave the poor and people of color behind. Although gentrification is reversing this ex-urbanization flow, it reproduces similar patterns of spatial exclusion as low-income residents are pushed out to less desirable areas. Pushing and pulling people; people with vastly different socio-economic statuses. US Census data for 2017 reports a median household income of $70,588 in the county – slightly above the state average. This number, however, masks wide inequality. The top 20 percent of households earn 50 percent of the total income, while the bottom 20 percent of households earn just 3 percent (U.S. Census 2018). Non-Latino white median household income reached $86,790. It was much lower for Latinos ($52,622) and African Americans ($51,602), explaining the high rate of poverty among these groups – 16 percent for Latinos and 21 percent for African Americans compared to 8.3 percent for non-Latino Whites.

7. The Magazine

An antique red tray covered with an eclectic assortment of bowls grabs my eyes. One is filled with ribbons of carrot peel and almost translucent slices of radish and beets. Another with charred lemons, previously squeezed, but not tossed into the trash bin. Next to this charming composition, a retro font declares 'Getting Scrappy.' The cover of Edible San Diego magazine is meant to attract – it's quite literally designed that way. *Full disclosure, it's to captivate people… We're using that visual device to kind of literally connect with people through their eyes to their stomach,* explains Publisher and Editor-in-Chief, Katie Stokes. The cover of the Spring 2019 edition connects the eyes to the stomach to the issue of food waste. "Before the idea of food waste makes your eyes glaze over, hang with us for a minute. *Edible San Diego* is stepping into the fray, diving deeper into food wellness topics in

San Diego County... we hope this spring issue of *Edible San Diego* inspires everyone to pause for a moment and open up to some new habits of growing, shopping, storing, preparing, enjoying, and sharing food" (Stokes 2019, 4). How to inspire? A recipe for Tuscan five-spiced grouper with shaved vegetable salad. Vibrant photos of vegetables fragments, long considered rubbish until now. *It's a company that is directed at the general market meaning anybody or everybody who is interested in learning about food or drink in a given region… it's like that trusted friend or trusted store that you go to because you know that you're going to get the right information or get a quality product. That's an inherent part of the Edible brand and it's truly our most valuable asset.* Who turns to *Edible San Diego* as a trusted friend? *Our core demographic for the magazine has been mainly women, more than 50%, older, so kind of baby boomers in the main but broadly defined between say 30 and 60 years of age, more educated, more affluent, and pretty sprinkled throughout the county but something of a concentration in the downtown area and along the coast.*

Readers can pick up the magazine at numerous locations, such as restaurants and specialty food stores, in trendy urban neighborhoods like North Park, Little Italy, and Hillcrest and coastal communities like Encinitas and Oceanside. Other areas like City Heights, Barrio Logan, and Southeastern – areas that have experiences of considerable disinvestment – have fewer (if any) locations where people can pick up a copy of the magazine. *We also want to invite everyone else into the conversation. So younger women, older women, men, people at different stages of life, students, young professionals, retired people, you name it.* Katie hopes the recent addition of an *Edible San Diego* website will do just that, although she admits doubling the scope of the company – adding new writers, more content, social media engagement – is pricey. This cost is offset by the advertisers who pay

for a spot in the magazine. Ads for local farms and farmer's markets, specialty markets and products, events, and even a real estate agent line its pages and website sidebars. Advertisers are attracted to *Edible* for its readership – they want their products or service to be recommended by the trusted friend. *This is a general market publication that relies on advertising sales to pay for everything. I'm not only thinking about the demographics of my readers and viewers, I'm thinking about my other central partners which are the companies that either like our information but more obviously want to get in front of our readers.* She admits that as a board member of the San Diego Food System Alliance and general advocate for social justice, she gets excited about stories that align with equity, but the reality is, their subjects cannot afford advertising space. They will, however, become the topic of online articles like, "A Guide to San Diego Food Nonprofits" or "Improving Food Access and Fighting Hunger in San Diego County," which feature Project New Village and the Mt. Hope Community Garden. *I have no shortage of, none of the editors do either, no shortage of these really compelling stories and important kind of heartfelt activities like connecting with an ever more diverse range of San Diego County residents and visitors. Yet, my role is that I also have to figure out how to make the business work.... I have to find other people, different businesses that want to pay money so I can keep the lights on…* Different stakeholders, pushing and pulling. Connection is still important. *We're trying to engage people into a conversation about things that everybody can share an interest in like yummy food that just looks really pretty and all of that but whether you live in Tijuana and come over the border to work here or just blown in from some place in the Northeast where it's just too darn cold to live there anymore, or whatever, we're trying to engage people in that kind of eternal topic of food and use it as an entrée to have deeper conversations.* Everybody.

8. The Neighborhood

Three neighborhoods – Encinitas, Vista, and Southeastern San Diego. Three incredibly different experiences. Encinitas and Vista are the subject of *Edible San Diego* 'Day Tripper' guides filled with shopping, market, and restaurant guides. Southeastern San Diego is the subject of 'food desert' reports (USDA 2013). Have some oysters, "cruise the beachy boutiques" and "dip your toes in the tide at Moonlight Beach" in the wealthy, coastal community of Encinitas (Masters 2018). Visit a land-grant rancho previously owned by a Hollywood producer and a silent film star and grab a beer at one of many breweries in the historic Vista (Dial 2018). Southeastern San Diego does not get this kind of press – instead, its "bad press," Carol Kennedy explains in her community essay for the San Diego Union Tribune. "Writers publish articles, they swoop in to do a story and only swoop back in for another story – and it's usually a story about crime… So just what is Southeastern San Diego? It is a diverse community of hardworking families with some of the most breathtaking views of the city, a wonderful farmers' market, festivals, and soon a community garden. There is Market Creek Plaza, The Jacobs Center for Neighborhood Innovation and beautiful Chollas Lake. Downtown San Diego and Coronado are only minutes away. It really is San Diego's hidden gem" (Kennedy 2012). Need restaurant recommendations? The 'Diane's Picks' page on the Project New Village website is "A Trusted Source…" for "delicious cuisine, sourced locally, with an appreciation and dedication to the local communities they reside in" (Project New Village 2019). The vastly different media treatment of these neighborhoods is accompanied by disparate neighborhoods characteristics (Table 5). Where are residents most likely to be wealthy, white, and have a college degree (adults over 25)? Encinitas. Unemployed and/or experiencing poverty? Southeastern San

Diego. How about foreign-born, Latino, Black, or Asian? Also, Southeastern San Diego. As a middle-class community, Vista finds itself somewhere in between these cities for most characteristics. The true contrast is between Encinitas and Southeastern San Diego. Wealth is concentrated in the former – the neighborhood Leichtag Foundation and Coastal Roots Farm call home – and poverty in the latter where you'll find Mt. Hope Community Garden. Wealth versus Poverty. Investment versus disinvestment. Food oasis versus food desert. Media celebration versus stigma.

A history of "racially-motivated policies, planning decisions, and individual choices" like redlining contributes to these stark contrasts. "We need to call racism for what it is. We need to get to a point where people talk about it," says Robert Tambuzi, Chair of the Project New Village Board and long-time activist in the African American community (San Diego Food System Alliance 2017). Institutional racism is a shadow that remains caste over Southeastern that Project New Village hopes to lift from within. For the community, by the community. Gentrification lurks in the background, bleeding into neighborhoods like Barrio Logan and City Heights, neighborhoods with similar histories, but has yet to make landfall in Southeastern San Diego (Joassart-Marcelli 2018, Joassart-Marcelli and Bosco 2017). Encinitas will never have to worry about gentrifying – it is already a wealthy neighborhood. The burden of resisting, changing, and/or improving remains on neighborhoods like Southeastern. The neighborhoods with the fewest white residents. The neighborhoods with fewest dollars. The neighborhoods with fewest resources. Neighborhoods attempting to survive, thrive, and eat well *Under the Perfect Sun* (Davis et al., 2005).

Table 5 Selected Neighborhood Characteristics for Encinitas, Vista, and Southeastern San Diego in California

	Encinitas	**Vista**	**Southeastern SD**
Population	62595	99496	108605
Economic Characteristics			
Median Household Income	$103,842	$59,833	$42,497
unemployment rate	3.2%	3.3%	11.9%
Percent population employed in agriculture	1.1%	2.5%	N.A.
Poverty Rate	7.6%	15.4%	27.9%
Percent adults 25 and over with college degree	60.6%	21.4%	10.3%
Race, Ethnicity & Immigration			
Foreign-born	13.2%	25.0%	36.6%
Latino	13.3%	45.6%	69.7%
Non-Latino White	78.9%	40.4%	5.9%
Non-Latino Black	0.6%	2.8%	13.2%
Asian	4.1%	4.7%	9.2%
Housing			
Owner occupied	63.8%%	49.20%	40.17%
Median Property Value	$862,300	$423,500	$330,187
Businesses	10307	8070	N.A.

Source: US Census Bureau (2019). 2013-2017 American Community Survey 5-Year Estimates, American Fact Finder.

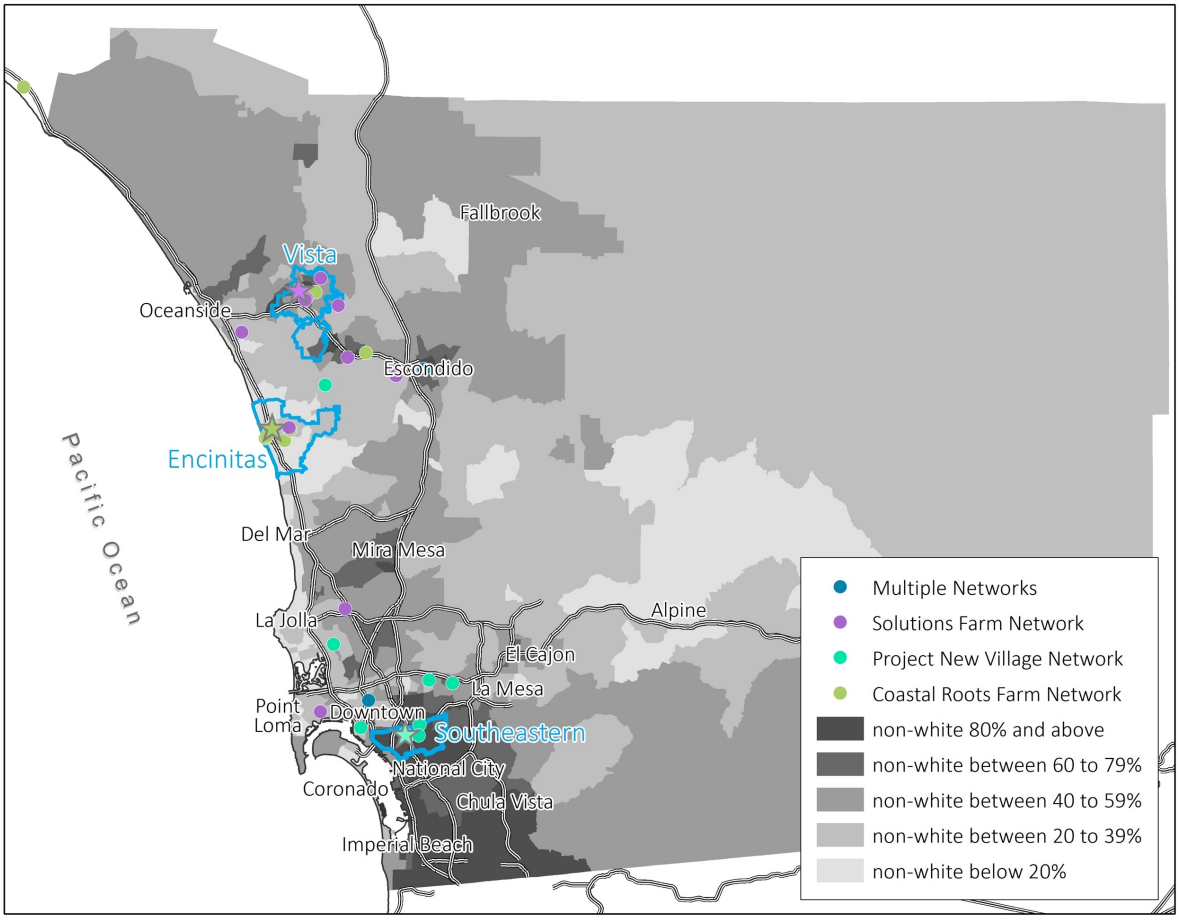

Fig. 13 Study Sites, Neighborhoods and Actor-Networks, displayed over map of Percent of Non-White Population, Including Latinos by Census Tract in San Diego County including Neighborhoods and Actor-Networks. Data Source: Author's data and US Census (2019) American Community Survey 5-Year Estimates, 2013-2017.

9. The Regional Organization

Change. Improve. Two words that seem capture the San Diego Food System Alliance (SDFSA). The organization, established in 2012, seeks to apply them to the regional food system. Their mission is "to develop and maintain an equitable, healthy, and sustainable food system in San Diego County" (San Diego Food System Alliance 2019). 'Change' and 'improve' might also be applied to the organization itself. Much has changed in the three years since I attended my first SDFSA event, "San Diego Food System Alliance Showcase: Food System Changers," in the large, white barn at Leichtag Commons. The room was filled

with government officials, local food business owners, funders, and advocates who came to "learn, connect, and engage in our collective efforts to create long-lasting changes in our food environment" on a sunny Tuesday afternoon in Encinitas. This was my first participant observation event. I channeled my nerves into a word document, capturing everything – the names of the people in the room, the chatter, the relentless, indiscriminating praise for the San Diego food system courtesy of speaker Ellen Gustafson, author and Co-Founder of FEED.

The audience was predominantly visibly white with the exception of Keryna Johnson, Foothold Fellow and Food Justice advocate, who was invited to discuss food justice and equity with the group. Diane Moss explains, *if you look at the membership, I'm usually the African-American in the room. But good people, right?* She is a member of the relatively small (although growing) proportion of people of color that participate in the alliance as voting members.

Later during the event, an audience member asked a panel of leaders of SDFSA's five working groups – Healthy Food Access, Reducing Barriers to Farming, Food Recovery, Urban Agriculture, Sustainable Local Seafood System, and Good Food Purchasing Program – about food justice in San Diego. The ensuing discussion was mostly limited to the general merits of urban agriculture for creating justice. Today, the social equity wing of the organization has grown substantially. Project New Village has become a central partner and a picture of Diane Moss in Mt. Hope Community Garden is even featured on the banner of SDFSA's website. The alliance is documenting and supporting the nonprofit's 'Good Food District' project, which seeks to address institutionalized racism's impacts on the food landscape in Southeastern. Ariel Hamburger, Food Equity Specialist and leader of SDFSA's

Food Access working group, acknowledges that this partnership is incredibly important for the alliance. *It is really one of the only, not one of the only, but I may be wrong about that, but really very focused on like structural issues and historical legacies and racism and those kinds of things, at least from the position of the black community.* The shift is intentional, Elly Brown, the SDFSA Director, explains. *I want it to grow more. We're trying to be more intentional with the equity thing… we want to be more diverse in terms of the type of organizations that are at the table and the type of people that are at the table… I don't think that was done in the beginning of the alliance at all. They were more like 'food system', 'local', 'sustainable', and equity was part of it but I think we want to try to be more mindful and more engaging.*

Yet, there is a tension. The Executive Committee and approximately 40 voting members include nonprofits, researchers, governmental organizations, health and media organizations, processing facilities and farms that work together to steer the direction of the organization. Diverse stakeholders, often with competing interests. *I think the tension is the organizational levels. We're regional and so we tend to work with the bigger institutions but we also want to work with the smaller grassroots organizations… when it comes to the actual advocacy and the work that needs to be done to combat the injustices in the community, there's sometimes tensions with ... there's tension with protecting the rights of certain marginalized individuals and then what's feasible for our government agency to implement.* Ariel agrees. *San Diego is so conservative when it comes to politics and political approaches, it even then ends up affecting the nonprofits and the way that they move forward.*

SDFSA is growing steadily. Since 2016, the organization has added three staff members in addition to Elly and its budget has grown from $67,756 in 2015 to $824,041 in 2018 with

government support (55%), individual donations (23%), and foundation support (17%). The tension is becoming more evident for Executive Committee members like Chuck Samuelson, Founder and President of Kitchens for Good, a nonprofit organization that provides culinary training to homeless, unemployed, and/or previously incarcerated adults in San Diego County. *I'm really excited about the direction [SFDSA] is moving in, but until we start including communities of color in that, then it's just going to be this white exercise… how many people of color are in that meeting? We need to start doing weekend meetings, evening meetings, and we need to reach out to other communities. Middle of the day, come on people. Those are challenging for me to get to sometimes.* Katie Stokes of *Edible San Diego* shares this concern, but believes SDFSA is making strides. *Equity and food access and inclusivity are all topics that come up repeatedly among the alliance… whenever I'm in any meeting, I'm always, I can't help it. I just always analyze things. Who's here? Who's not here? What's being said? What's not being said? Why are things happening the way they are? … I've been encouraging Elly for several years to change up the format of some of the work of the alliance so that we have fewer of those experiences when it's like an audience listening to speakers up on a dais and instead just totally different formats where different kinds of people will not only feel more welcome but more importantly, different kinds of work gets done.* The SDFSA has started rotating its meeting locations – its most recent Tuesday voting member meetings was held in Southeastern San Diego, although still at 2pm, and featured a presentation by Diane Moss. SDFSA events have also taken on more collaborative formats. Will these intentional shifts make enough room at the table for marginalized groups to participate? Or is it a 'field of dreams'?

10. The Farmer

Young, female, farmer – three words not often seen together. At 27-years-old, Ellie, the Farm Production Assistant Manager at Coastal Roots Farm, embodies all three. Statistically speaking, she is quite rare. Only 27% of farm operators in the United States are women and among those only 12% are principal operators. The average age for male and female farmers is 58.3 years old (USDA 2017). *It's super empowering and I feel really grateful to be in the role that I'm in… some things get old like just comments about just people being surprised, like seeing me on a tractor, or yeah, and just even wearing these clothes. It's just definitely constantly battling stereotypes, but then in some ways that also feels good, and it feels like there's something gratifying about challenging stereotypes. And definitely like younger women and girls that I see wanting to go into agriculture, it's really inspiring, so I feel like in that way it's really cool to feel like part of a smaller group.* Ellie only discovered her passion for cultivation after high school while traveling in Kenya. *I ended up working on the farms of the people that I was staying with and just like... it was just a really cool taste of that lifestyle, and a different type of connectedness to food, and especially eating meat. It was like if you had meat you were raising the animal and killing it, and all of that.* During college, a project on micro-finance for her Economics major led her to a local farm in Wisconsin. By her senior year, she was dedicating her studies to local food systems. *I was super interested in accessibility of local food, and that more kind of social justice-oriented side of an equitable local food system.* Even still, she was not planning to go into agriculture after graduation, but as fate would have it, a friend told her about the animal husbandry and composting apprenticeship at Coastal Roots Farm. Starting at the bottom – in the soil, in fertility. *I think that's also not something everybody always gets to start with in farming, and*

it's such a key piece and so important to the success of the crop. Now she works for Coastal Roots Farm full-time as the vegetable production coordinator and lives in their designated housing. *The majority of my time is either planting, weeding, harvesting, or doing other related field work like irrigation.* Although, she does admit she is torn between her love for farming and her passion for larger-scale food systems work. *It's easier sometimes to want to just sit in an office and do more of the planning, and it never feels appealing to go out and weed a bed, but then it's so gratifying to do that… I wouldn't want to lose that, but I also, I mean realistically, it's just so hard on your body to be doing the work that we're doing every day… and then just in terms of what kind of impact I want to be having. So yeah, I'm still definitely sorting out whether the road that I want to go down is being that in the field female farmer, and that's the impact that I'm having, or if I do want to go into more like larger scale systems work.* How to have the greatest impact – a timeless, existential puzzle. Ellie sees improving food access as impactful. She believes neighborhood community farms like Coastal Roots Farm will play an important role; however, she believes people will need to change, as well. *I think the thing that will need to change is how much people are willing to pay for food. I think that's the catch right now is that [mainstream] food is artificially cheap, and it's based on a system of subsidies, and underpaid labor, and mass-produced food. So, I think the only way we're gonna be able to move away from that is for people to be educated around the true cost of food… I think we'll probably never get to that point where everybody values food to the degree that they'll actually pay what it costs to produce it in that way.* The value problem.

11. The Gardener

When I arrive at the San Diego Public Library, I find Mary browsing the cookbook section in the library book shop with an encyclopedia of herbs pressed under one arm. *I want to get this for the garden. People are always asking me how to cook different herbs.* If a book were written about Mary's life, almost every chapter would include a garden. The garden where her great-uncle grew *corn as tall as him* when she was a little girl. The backyard garden she begged her mother for when she was a freshman in Health Science at San Diego State University. The backyard garden she tended with her disabled, boarding care clients as an adult. And, of course, Mt. Hope Community Garden. Mary was at the neighborhood meeting when Diane presented the idea of bringing a community garden to Southeastern San Diego. *She said I am going to start a community garden. I'm looking for some land and it's time that south east end has a community garden. We don't have one and they were popping up all over the place at the time and so, she kept the momentum going and next thing I know, she had the land that we have now. Absolutely nothing on it, just gravel.* Mary intended to keep growing in her backyard, but gophers were making it near impossible. She recalls the moment she decided to join the garden. *I'm standing there looking out the window. We have a two-story house, I'm looking out the window at the garden and I'm looking at my eggplant going down in the hole.* The gophers had won, and so she started renting two plots at Mt. Hope Community Garden for $5 per month each. Today, she has six plots – the additional four given to her by Diane – where she grows food for sale at the People's Produce Market on Tuesdays and the garden's farm stand on Thursdays. *I have sweet potatoes growing, which I really wanted to grow. I have purple sweet potatoes and yams. I have the three different varieties and then I wanted squash, so I did the squash, I did tomatoes over there, I*

got another bed over there with squash. I wanted string beans, so I got one of the boxes and put the string beans. Mary is a certified producer, allowing her to sell her produce; however, she does not accept money for the fruits of her labor. Diane suggests it, but she refuses. *I need to, but I don't because it's gonna take us a while to build up and I would like to build up a good following for the garden so that if we can make at least $100… that would be great. That would be something that I wouldn't mind taking a percentage of that. Right now, we're not making that much.* Mary stopped doing boarding care not long after her mother passed away. Now, she takes random odd jobs and gardens. She finds serenity in the garden. *I enjoy sitting out, meditating outside, the quietness, that's all a part of my gardening.* For others, gardening is too time consuming. *I have to come and I have to leave my house and come over here and water, I have to leave my house and come over here and check on my harvest. They don't wanna do that. If you're working, they don't wanna be bothered with that. I was trying to get school kids 'cause they walk by the garden every day when school's in. Not interested. Parents not interested.* For Mary, the garden is exactly where she wants to be.

12. The Scientist

Hydroponics and aquaponics are all about the optimal environment. Optimal temperature, humidity, pH, micronutrients, and chemicals. A marriage of science, technology, and engineering; a marriage of formalized knowledge. Knowledge held by so-called "knowledge workers" (Dyer-Witheford 1999) – the purveyors of "a constant stream of innovation" like scientist Ryan Lesniewski at Go Green Agriculture on Leichtag Commons. Go Green is Ryan's laboratory. *I've been growing lettuce for six years and using it as a tool to understand how to grow better lettuce… It's a really short time process to get from seed to harvest and so like if you want you can run an array of experiments with different temperatures each one*

with a degree higher or lower and 30 days you have your answer which is the ideal temperature. You can go to humidity, you can go to nutrient conservation or calcium concentration, so you can go through this array of like different elements and use this simple biosensor to tell you whether it likes it or not. So, over six years, I've been able to hone in on having a really healthy crop and that's not like to publish a paper, that's to supply Costco's distribution center with the best products that they can have the most sustainable way. Ryan finds enjoyment and meaning in his work. *I'm personally excited about it because lettuce is one of the only vegetables that you're pretty much guaranteed not to cook, so, being a microbiologist, I understand there is a very significant influence… if you eat raw lettuce you are eating a microbiome of lettuce and that affects your microbiome in your gut… one of the biggest primary factors influencing your gut health is the type of plants that you eat… I feel like I'm on that chain of helping influence not only the quality and health of the planet but what is on it and I think this is going to be an upcoming frontier in healthy food.* He is also excited about the impact robot technology will have on labor issues. *I think it's freeing up our resources to do other things that are more pleasurable, so I think it's… the best way forward.*

Knowledge work in science and technology is often a white, male activity (Dyer-Witheford 1999). The four scientists I interviewed for these actor-networks are men and three appear to be of European heritage, seemingly supporting the theory that hydroponics and aquaponics is also the domain of white men (Reynolds and Cohen 2016). I ask Jackson Gross, faculty member in the Aquaculture group at UC Davis and collaborator with Solutions Farm, if he agrees and he laughs. *I laugh that you say that, because to me, I don't see it different from a lot of other industries. So that makes me laugh. Now, is it true? Yeah. Are most farmers white men? Probably. Owning land and everything else. Who are the laborers?*

Not white men. So, how do we go about doing that is the real question. Now, I know people who aren't white men who do it. I see people doing it in Africa, you know, doing businesses, all these other things. I see, you know, lot of different people who do it. But do I see it as white men? Yes. Why are more people of color not involved? *I don't think it's... there's nothing preventing- this is a case where it's nothing is preventing people from doing it, the question is access to the technology, right? Sometimes it just requires education. Right? Maybe.*

But isn't it expensive? *Expense is relative*, Dr. Gross asserts. *Aquaponics can be very expensive if you make it. It can also be inexpensive… It could be nothing more than a wood frame and a plastic liner that you fill up with your fish water…Or as inexpensive as cinder blocks with some kind of plastic liner… It doesn't have to be super expensive tanks… the cost of aquaponics, are, energy, feed, and labor. You could throw infrastructure in there, too. So those are the four… If you're someplace else where it's... trying to grow food in the middle of winter, you need lights. But as LED technology has gone down in price and continues to develop, LEDs, that is going down… And then, you know, obviously you need people to harvest your food. The advantage of having good equipment is managing catastrophic failure, right? If you're growing fish, and all of a sudden, your power goes out, and they can't get oxygen and they all die? Right? So, you need ways to keep aerators going, pumps moving – a generator… From whatever that is. So those are the costs.*

13. The Farm Stand

The farm stand – a vital source of income for many small farms. It can be a humble, round table shaded by an umbrella like the one at Mt. Hope Community Garden or a permanent, wooden structure with room to browse and a separate cashier station like at

Coastal Roots Farms. It can feature two to three vegetables and leafy greens, a couple of fruits, and herbs like at Mt. Hope Community Garden or a bounty of fruits and vegetables, herbs, eggs, flowers and even bonsai trees like at Coastal Roots Farm. In some cases, it can attract too many people from the local neighborhood. Ellie, from Coastal Roots Farm, explains: *I think maybe another challenge here just with the mission of the farm and it being focused on getting food out to people that need it, is just being in a wealthier area. Like with our "pay-as-you-can" farm stand, I think it's actually gotten a lot better, but I know that was a challenge at first was actually reaching the people that we wanted to reach with the pay-as-you-can farm stand.* It can also attract too few people from the neighborhood. Mary from Mt. Hope Community Garden tells me it is rare to see people from the neighborhood at the farm stand. *The people in the neighborhood, they come infrequently… It just don't happen. I may see if I can put more information out. I noticed Leo was talking in Spanish yesterday to a lot of the people walking on the street. So that might help them feel more comfortable about coming into the garden. I was glad he was doing that. He was speaking Spanish to several people, inviting them into the garden, so that they feel comfortable I guess, I don't know, but we have to do some more outreach in the area. People just don't wanna buy from the garden. They would rather go to the store and buy their produce.* It can have people – mostly women and families from the neighborhood – lining up at the farm gate before it opens like at Coastal Roots Farm or it can have only one customer in its first hour like at Mt. Hope. These are the vastly different realities I experience while visiting the farm stands of these two nonprofit organizations.

There are some similarities. Both farm stands hope to reach people in need and their prices fluctuate to that effect. For Coastal Roots Farm, the formula is simple – pay-what-you-

can, no questions asked. Things are a little more complicated at Mt. Hope Community Garden. Mary only started the Thursday farm stand three weeks prior to our interview and is still cracking the code for pricing. *My prices do change because I can tell when some people just don't have the money. They just go humming around and going, "Uh, I can't buy that." Sometimes I say, "Well what can you give me? What can you afford?" Sometimes I lower it down to a $1 just because it's just me and them. It's between me and them…* an arrangement that causes slight chagrin for long-time supporter, customer, and neighborhood resident, Prince. Prince has a bed in the garden. He is helping to harvest produce for the stand when I arrive at the garden for the farm stand. A humble harvest of 10 okra, 10 figs, 15 passionfruit, a few bundles of collard green, and one bunch cilantro rests on the table in front of Mary. The stand has been open for less than 10 minutes before Prince asks to purchase almost the entirety of the table's contents. A tricky situation for Mary. *There's no reason for me [as a customer] to come, if you're gonna sell out that soon. That's what I was trying to tell Prince, "Leave something on the table."* The two go back and forth, Mary hesitant to sell her entire harvest in one quick transaction. Prince doesn't understand why he should have to leave things for other people who are not even guaranteed to show up. He is a loyal customer. Mary folds and begins naming prices. $5 for the figs. $8 for the passionfruit. $1, no $2, for the cilantro. By the time she is done naming prices, she is at $20 – a price he considers steep, especially since he knows she cuts other customers deals. *I won't forget this if you charge me too much and don't give me the deal you were going to give some other person. I don't even know these people that are coming*, he says. She folds again – fine, $10 – but cannot make change for the $20. *He supports the garden and what it's doing. He's got a good relationship with Diane, so he doesn't mind spending more money. He gave me the $20 anyway,* she tells

me. The bounty ebbs and flows at the Mt. Hope Community Garden's farm stand. Sometimes the table is covered with heaps of radishes, collards, kale, tomatoes, and eggplants. Other times, it has just 10 okra pods, 10 figs, 15 passion fruits, a few bundles of collard green, and one bunch of cilantro. But like the garden's name, Mary has hope.

14. The Restaurant

I am lounging in a shaded Adirondack chair, overlooking a tranquil pond in what feels far more like a sprawling oasis than a beer garden – perhaps it is the "beautiful open-air patio and one-acre organic beer garden" (Stone Brewery 2019). It feels like I am on vacation, I have to remind myself that I am here to do fieldwork as customers pass by with their golden and amber beers. I am at Stone Brewing World Bistro & Gardens in Escondido, California, just a short 18-minute drive away from Solutions Farm in Vista. Solutions Farm's hydroponic lettuce led me to this place that feels more like a sprawling oasis than a restaurant. I talk to a few customers who are relaxing in nearby chairs – some locals, some tourists, all here to enjoy the world-famous craft beers that have helped put San Diego on the foodie map. The crowd is not particularly diverse – most patrons appear to be members of the 74.7% white majority that call Escondido home – and arguably share in their ability to leisurely enjoy a few craft beers on a weekend afternoon.

The brewery was founded in 1996 by Greg Koch and Steve Wagner. Today, it is the ninth-largest craft brewer in the world. Koch is the face of Stone Brewing and the driving force behind the restaurant's food philosophy. "Stone has some pretty strict philosophies when it comes to food. We stand by local and organically cultivated ingredients because we know they're better for the environment, and they taste pretty darn good, too" (Stone Brewery 2019). The restaurant website proudly announces, "As strong advocates for

environmental responsibility and high-quality food, we are the largest restaurant purchaser of local, small-farm organic produce in San Diego County." Solutions Farms is one such farm. You can have a 'Bistro Salad' featuring their hydroponically-grown lettuce alongside some 'Honey Sriracha Quail Knots' or the more substantial 'Pork Belly Stir Fry' on their patio. Koch's interest in alternative food stems from his youth. Throughout high school and college, he suffered from chronic gastrointestinal problems that nearly became debilitating (Davis 2013). He later discovered that his diet was to blame and since, has be preaching the word of "real food" as opposed to "the industrialized notion" of food. During his 2012 TEDx talk in La Jolla, he stabbed a 150-lb bag of sugar, telling the audience that it represented the average annual intake in the United States (Davis 2013). It is not surprising then that Stone Brewing has been involved in the International Slow Food Movement since 2000, as reported in an *Edible San Diego* article titled, "Sustainable Giants: Three San Diego Businesses with Global Impact." The brewery's logo, a gargoyle, is meant to aid it in this sustainable mission. It "wards off cheap ingredients, pasteurization, and chemical additives" (Hesse and Stokes 2018). Stone Brewing is just one of four restaurants in North San Diego County that uses Solutions Farms lettuce, supporting its program for previously homeless families.

15. The Customers

A cool breeze cuts across the Big Lots parking lot where I sit in the shade with Mary. It is the Tuesday night People's Produce Market hosted by Project New Village, one of the only farmers' markets in the neighborhood. Mary is selling this week's harvest from Mt. Hope Community Garden. She accepts cash, card, Calfresh food stamps (via EBT), and WIC for her lush tomatoes, plump berries, and bundles of collard greens and kale – money that will go to Project New Village. Customers are the regulars at the stall – almost unanimously African

American residents from the neighborhood. Attendance is pretty sparse on this afternoon, but the stall is doing well. An older woman gushes over the tomatoes she purchases from Mary – she is going to prepare them as part of a salad for a potluck she is attending this week, but she is also considering something a bit more exotic. *Have you ever made a tomato tart? I've seen it on the Food Network. It's like a dessert.* More customers come and go making small-talk with one another, catching up on their weekends. I recognize a few of Project New Village's board members buying produce from the stall like Robert Tambuzi. Before I can say hello to Robert, the parking lot becomes a dancefloor. A group of women in black leotards and red shirts begin leading line dancing – the cha-cha slide, electric slide, the wobble, and quite a few dances I have never heard before. One of women grabs my hand and next thing I know, I am dancing the electric slide next to Diane.

There is less dancing and more conversation at the Coastal Roots Farms' farm stand, although an eclectic mix of folk music does play from the farm stand speaker. Sara Tezler, the Impact and Evaluations Manager at the farm, hugs her regular customers as she goes about organizing the farm stand and greeting newcomers. Many live in the neighborhood and are happy to talk to me about why they come to the farm. *Quality, fresh, organic produce. It's local. I know the people who grow it. It's not sitting at the border refrigerated for hours. I trust the farmers. It reminds me of my grandfather; he used to farm in his backyard.* Three customers, all senior women, tell me how important the farm stand is for them. *This is my food aid. I am on disability and have health issues… I wouldn't come here if it wasn't organic and sustainable; the food at aid places is expired and not organic and it's detrimental to my health and well-being, so I come here.* Yanira Frias, Food and Nutrition Program Manager at the Community Resource Center in Encinitas, affirms, *we serve a lot of*

seniors here. It's a community where oftentimes we see that people must be well off here, but if you just take a look at the population that we serve, we serve a lot of seniors so it's aging out. So, seniors that once were able to live here and what-not, just stumbled upon something and found themselves in some trouble or what-not, and now we're serving them. It's a place where really, we serve anyone and everyone that we can. The Community Resource Center (CRC) has a humble food pantry, but what gets most of its customers excited is the fresh vegetable and fruit donations from Coastal Roots Farm. Many of them have health concerns that make the produce even more valuable. *You'd be surprised, a lot of our participants will come in here with special dietary restrictions. So, they're really picky about what they want to eat for the day. They'll say, "I don't want anything with gluten in it. I want everything low sodium, everything organic." They know their stuff. So, when they come in here, and we're client choice pantry, so they can certainly say those things and "I don't want this and I do want that."* Susan Chance, a volunteer at the CRC, says having these options is incredibly impactful. *A lot of our clients don't have a whole lot in their lives, and just yesterday when I was there, there was a request for a pineapple, and that's all she wanted was a pineapple, and we were able to go in the back and bring back a pineapple for her. And her eyes just lit up like it was Christmas.* Susan can relate – she was once a recipient at CRC's food distribution center. *I found myself in a place in my own life where I was alone and vulnerable and healing on my own journey in a mental, spiritual, and emotional way. And, you know, I don't think it was by coincidence that I found CRC. Going in once a week and having the staff being present for me in a loving and supportive, non-judgmental way was the encouragement and power that I needed to get through what I needed to get through. And, the food was wholesome and nutritious and there was a part of me that understood that if*

other people felt that they could provide that for me, that I could learn again to provide that for myself. If I learned anything from the customers of Coastal Roots Farm and Mt. Hope Community Garden, it's that receiving and purchasing food at an accessible price can be incredibly powerful. It can align you with your values. It can remind you of your late grandfather. It can heal your body, soothe your mind, and lift your spirit. It can empower people facing years of marginalization. It is powerful.

C. Connecting the Dots: Discussion & Conclusions

An amalgam of people, places, objects, and forces shape and structure the local commodity circuits of soilless and soil-based urban agriculture described in the vignettes above. This research sought to connect the dots between these vignettes in order to "lift the veil" and uncover the social relations that underlie these often taken for granted circuits. We did so by combining commodity circuit analysis and Actor-Network Theory to examine and compare the socio-natural relationships that comprise the *placed* networks that structure the commodity circuits and influence their abilities to enact justice. This practice illustrates the nuanced nature of justice as it unfolds across urban agriculture commodity circuits and provides evidence of the relationships that create openings for justice to be enacted and/or co-opted by actors. In addition to examining the connections within and between the vignettes, we created a network diagram (Fig. 14) that encapsulates the people, places, and institutions enrolled in the separate (although sometimes overlapping) urban agriculture actor-networks that span the three commodity circuits. The diagram illustrates the flows of knowledge, capital, labor, food, and other resources (like media coverage, policy advocacy, and grant-writing services, among others) between actors. Non-human actants such as soil, water, and organic certification, are not included in this diagram. Further, it only accounts for

actors that were encountered during fieldwork and is not meant to be exhaustive. Instead, it hopes to provide a snapshot of the ever-changing networks of actors and actants that were involved during the research period (June 2015 to May 2019).

The practice of mapping out the flows allowed us to identify key nodes of power among the urban agriculture networks in San Diego County, which are indicated on the diagram by use of a darker hue of the parent shade used for each network. For example, Leichtag Foundation (LF) is a key node of power in the Coastal Roots Farm (CRF) actor-network. These actors marshall considerable power in comparison to the other actors enrolled in the networks, whether through the possession of crucial resources such as land and capital, political power, and/or consensus-building. In what follows, we discuss the discoveries we made through examining the vignettes and the network relationships. This discussion provides the results we drew from analyzing the vignettes and the network diagram. It is our hope that this discussion serves as a figurative road map for drawing your own conclusions.

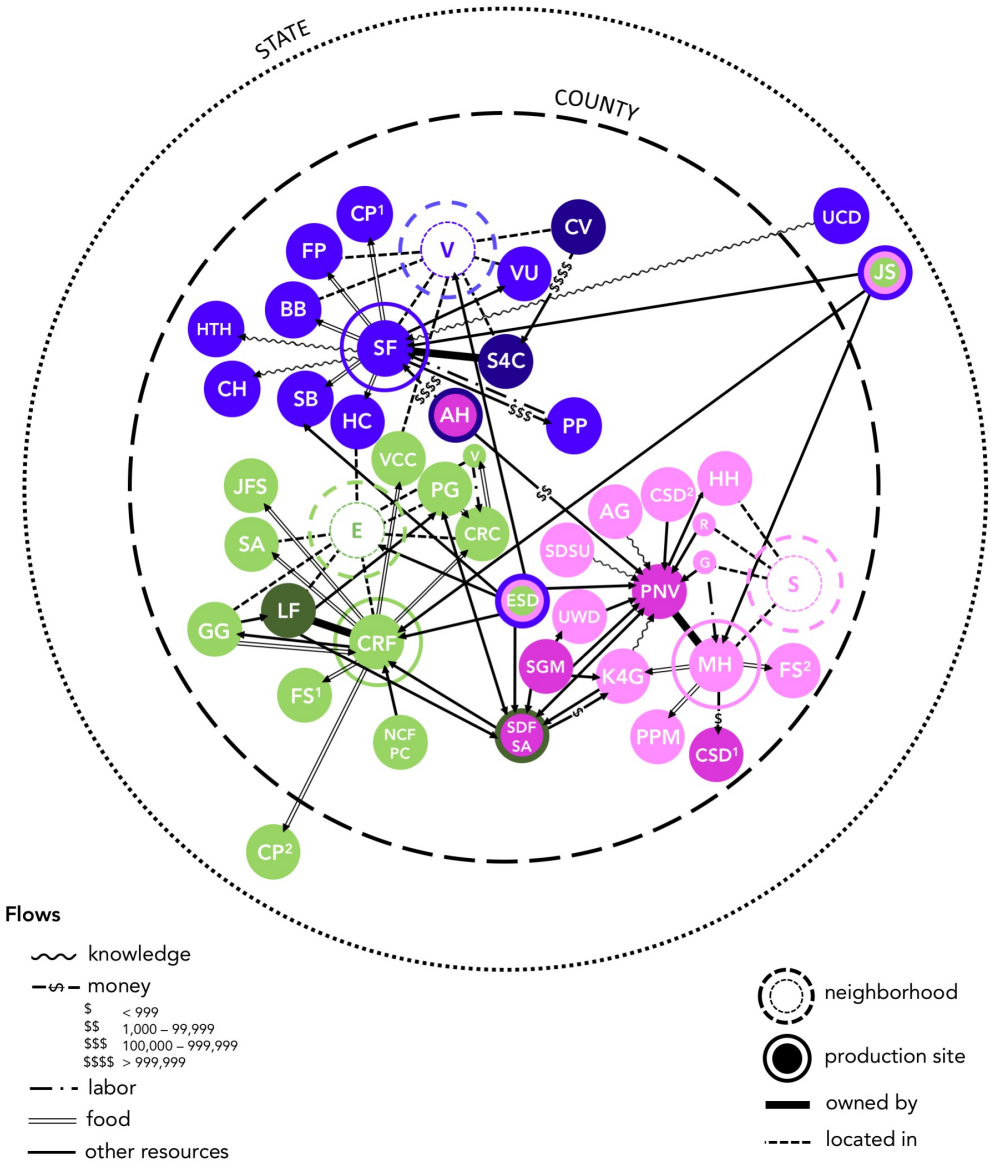

Fig. 14 Network diagram of three *placed* urban agriculture actor networks (Mt. Hope Community Garden (MH) shown in purple, Solutions Farms (SF) shown in blue, and Coastal Roots Farms (CRF) shown in green) and the flows that connect their actors. Acronym key found in Table 6.

Table 6. Acronym key for actor networks in Figure 14.

Name	Abbr.	Name	Abbr.
Arboreta Group	AG	Leichtag Foundation	LF
Alliance Healthcare	AH	Mt. Hope Community Garden	MH
Belching Beaver Brewery	BB	North County Food Policy Council	NCFPC
Carlsbad Highschool	CH	ProduceGood	PG
Community Resource Center	CRC	S4C Program Participants	PP
Coastal Roots Farm	CRF	People's Produce Market	PPM
City of San Diego	CSD[1]	Project New Village	PNV
County of San Diego	CSD[2]	Resident	R
Churchill's Pub & Grille	CP[1]	Southeastern San Diego	S
Camp Pendleton	CP[2]	Solutions for Change	S4C
Encinitas, CA	E	St. Andrew's Episcopal Church	SA
Edible San Diego	ESD	San Diego Food System Alliance	SDFSA
CRF Farm Stand	FS[1]	San Diego State University	SDSU
PNV Farm Stand	FS[2]	Solutions Farms	SF
Grower	G	San Diego Grantmakers	SGM
Go Green Agriculture	GG	Vista, CA	V
Healthy Creations Cafe	HC	Vista Community Clinic	VCC
Hope through Housing	HH	Vista Unified School District	VU
High Tech Highschool	HTH	University of California, Davis	UCD
Jewish Family Services	JFS	Urban West Development	UWD
Kitchens for Good	K4G		

The microgeographies of these local commodity circuits had considerable influence on the discursive and material relations present at these sites. Narratives around place drove and legitimatized sites' growing practices and their approaches to justice, whether based on donations or democratic participation. Further, the characteristics of place drove production, distribution, and consumption practices, which had important implications for justice. Every place in this research had different needs and populations, which drove their place-specific emphases and practices. For example, a mission focused on food sovereignty might be inappropriate in an affluent, primarily white community like Encinitas (where Coastal Roots Farms grows its produce). However, this mission is apt in a low-income, minority neighborhood like Southeastern San Diego, which has experienced considerable disinvestment and structural oppression. These missions at our sites were fitting and reflected

what was going on in those places and within their communities. This drove not only production practices, but also distribution and consumption – the lack of substantial need in Encinitas led to distribution in "less fortunate" communities outside of the neighborhood in order to fully realize their mission. This distribution pattern resulted in a more geographically dispersed network that engaged multiple communities with disparate experiences in a single commodity circuit.

The characteristics of place and the narratives around production and distribution drove the actors and actants that enrolled in these networks. The most successful and stable networks in our cases, Solutions Farms and Coastal Roots Farms, successfully enrolled actors with substantial capital resources such as Leichtag Foundation and Alliance Healthcare. Indeed, Daftary-Steel, Herrera, and Porter (2015) convincingly argue that urban agriculture projects can only truly sustain themselves and produce public goods like nutritious food, education, and job readiness with external investment in the absence of "major shifts in our national wage structure" (p. 27). Three factors, we argue, contribute to this successful enrolment of funders: proximity, measurable outcomes, and narrative content. Powerful actors, especially those with sustaining capital resources, are often not located in areas of the most need like Southeastern San Diego and therefore may have few, if any, ties to the neighborhood. Measurable outcomes also play a role in enrolling actants with capital resources – as we illustrated in Chapter 3, sites that practice distributive justice, which produces more readily quantifiable outcomes, attract more funding because they can illustrate the efficacy of investment. Although Mt. Hope Community Garden is still successful at enrolling philanthropic foundations into its network, investments are relatively small because of the difficulty of quantifying outcomes like participation and social cohesion.

The final aspect is the content of narratives associated with each urban agriculture site, which are part of what makes them unique places. These narratives are both produced by the actor-networks and at the same time powerful actants that shape these networks – an important contribution of Actor-Network Theory. Mainstream neoliberal and reformist narratives that focus on social enterprising and food security (Holt-Giménez 2010) may be more successful at attracting funding, as opposed to narratives that focus on food sovereignty. Indeed, funders are often less connected to the histories of structural oppression that drive grassroots urban agriculture projects like Mt. Hope Community Garden. This trend results in a situation in which the most disenfranchised find it difficult to enroll actors with crucial financial resources, giving support to the hypothesis that those with significant resources are more successful at attracting funding (Reynolds and Cohen 2017). It also reinforces race- and class-based inequalities because projects run by disenfranchised groups, which more often have progressive or radical agendas (such as dismantling racism), struggle to obtain the support necessary to sustain themselves financially. We saw this in our analysis of Mt. Hope Community Garden. The food justice narratives that surround the garden and its parent organization do successfully enroll actors with knowledge and skills to support its activities. However, the garden received considerably less funding from its network members, leaving it at the helm of the City of San Diego and its decision to sell their property.

Actants like soil, water, technology, produce, and the narratives attached to them also drive action and enroll actors into the networks supporting urban agriculture commodity circuits. For instance, the produce grown at the sites determines the extent to which the organizations can generate revenue, feed people, and drive their mission. The use of soil and

narratives around its ability to foster community are particularly salient at sites like Coastal Roots Farm. Technology and narratives around innovation similarly enroll actors that value modernization and novelty – technology played an important role in Solutions Farms enrollment of Alliance Healthcare and its $1 million-dollar Innovation grant. These actants, as Bosco (2015) describes them, allow our case sites to "become what they are" and explain why some networks and the justice activities embedded within them are more sustainable than others (p. 150). Tracing the many connections and relations across our commodity circuits illustrates that the story is more complicated than the presence or absence of soil.

D. Conclusions

This research illustrated the effectiveness of combining Actor-Network Theory and commodity circuit analysis to examine and compare complex, socio-natural phenomena like urban agriculture. This union of theory is useful for examining the material and symbolic processes that shape these local commodities and the social relations underlying them. This approach, we argue, can be extended productively to the study of other social goods such as housing, clean water, and healthcare, because it uncovers the associations between human and non-human actants at multiple nodes that produce the mechanics of power underlying their organization in society (Bosco 2015). Here, we were able to draw three main conclusions using this theoretical framework and our analysis of the vignettes and network diagram. First, justice is spatial; it unfolds across uneven socio-spatial landscapes and must contend with the histories and makings of place. This spatiality informs the type of justice described and practiced at these sites. For example, Project New Village's practices of justice are directly linked to histories of oppression and disinvestment in Southeastern San Diego.

Second, power is unevenly distributed among the actors in the networks, and therefore, connections to powerful actors and alignment with their goals, as well as access to actants that mediate action is incredibly important for success. Solutions Farms, for instance, was successful in obtaining the $1 million-dollar innovation grant from Alliance Healthcare because the social enterprise aligned well with its venture philanthropy mission. This funding is critical for supporting the distributive outcomes for previously homeless families. In the case of Mt. Hope Community Garden, enrolling in the network requires alignment with Project New Village's community-first, participation-based model which privileges neighborhood residents in decision-making.

Third, we must recognize justice not only ideal expressions of justice that integrate distribution, participation, and recognition (Schlosberg 2004, 2007) and seek to dismantle hegemonic structures, but also the "messy, gritty and real everyday rhythms" of justice that are enacted as organizations and businesses "envision, negotiate, build and enact life beyond the capitalist status quo in the everyday" (Chatterton and Pickerill 2010, p. 481). This approach supports not only a reflexive theory of justice, but a postcapitalist approach that acknowledges the politics of possibility in these struggles for food justice, whether they are grassroots like at Mt. Hope Community Garden or more aligned with a neoliberal agenda like at Coastal Roots Farms and Solutions Farms.

Nonetheless, the stories here, whether they are about pulling carrots from the soil, neighborhood struggles, personal successes, ancient faith-based traditions, or trusted sources help to 'lift the veil' on the underlying processes and microgeographies that scaffold urban agriculture networks. They provoke questions, complicate indiscriminate appraisals, and ask us to be more reflexive in our understandings of concepts like social justice. However, more

than anything, these stories ask us to empathize with their subjects and, perhaps even, to allow ourselves to be transformed by them. We hope readers will continue to connect the dots; to develop their own critical knowledges; to "get sucked in" (Cook 2006, 662); to revisit and challenge the geographical imaginaries that influence their experiences and interpretations of the world; and, ultimately, to locate the possibility in the here and now for acknowledging, strengthening, and enacting justice.

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V. Conclusions

The three papers in this dissertation sought to unravel the intricacies of justice in urban agriculture in San Diego County – the thinking, the doing, and the relationships that are deployed in the making of "just" urban agricultural commodities. The three papers built on one another, taking different but complementary approaches – online content analysis, mapping, and multi-locale ethnography – to investigate the multiple layers of the county's urban farming landscape and illustrate the everyday, nuanced nature of justice *in place*. The result is a detailed account of the complexities of food justice as it forms and circulates through different urban agriculture networks in San Diego County. Overall, this research sheds light on a concept – food justice – that has become so over-used and vague that researchers have repetitively called for more systematic definitions, or in some cases, have even stopped using the term all together.

Refining the idea of food justice is critical in a context where evidence of social inequities in the production, distribution, and consumption of food continues to accumulate. Contemporary food systems are plagued by exploitative labor relations, disparate access to economic opportunities for growers such as jobs, income, and food security, and uneven access to nutritious foods (Reynolds and Cohen 2016, Alkon and Agyeman 2011, Gottlieb and Joshi 2010), and uneven distribution of "basic entitlements" including property, capital, and labor (Holt-Giménez and Wang 2011). Many cities and communities have turned to urban agriculture as a tool for addressing these pressing issues, but their strategies often reflect neoliberal trends in "community self-help" (Reynold and Cohen 2016, p. 6) that ignore important "spatial structures" like race, class, and gender in inequities (Soja 2009, p. 3) and "allow[s] unjust structures to remain unchecked" (Reynolds and Cohen 2016, p. 9,

Guthman 2008c). Still, as I argue, openings for justice exist within the neoliberal constraints and represent valuable steps towards positive social transformation.

In general, the findings of this research are important because they help to refine our understanding of justice and illuminate the relationship between justice and both soil-based and soilless urban agriculture, which are growing in prominence in cities throughout the United States. First, this research illustrates that while the way food is grown is an important factor for organization and business identity, by itself it is not a reliable predictor of how they will represent themselves in public forums, specifically on their websites. This complicates a *politics of technology* that presumes that soilless urban agriculture operations will be focused on entrepreneurial themes at the expense of social themes, reflecting a deep-seated popular bias against technology. To the contrary, the online discourse of the soilless entities in our population included themes of food justice like *food access*, *food security*, and *social movements*. Based on our analysis, organizational structure (whether the entity is for profit or nonprofit) seems more likely to drive online discourse – not growing method. However, as nonprofit organizations embrace social enterprising and for-profit businesses move towards more justice-centered, ethical, or socially-conscious practices, I expect these lines to continue to blur.

Second, my analysis across the entire commodity circuit of our cases widens the lens on justice, illustrating that it is not just an abstract outcome that appears at the end of the product life cycle with consumers controlling the process and reaping most of the benefits of ethical food commodities. Instead, justice is an ongoing process that is built from the ground up and transforms as it travels through its commodity circuit. If we want to understand and enact justice, we have to look at this entire process of circulation – the discursive and material, the

intentions and the actions, the human and non-human – to see the opportunities, possibilities, and vulnerabilities of justice. Only then can we understand how ethical values are created and transformed and why some urban agriculture organizations and/or businesses achieve justice goals while others do not.

Third, this research demonstrates that justice – although a universal idea— is incredibly sensitive to its local socio-spatial context. The foodscape itself is a powerful actor, orchestrating a symphony of intricate, *placed* networks filled with intentions, actions, discourses, objects, actors, and forces. Place, in this sense, is the setting where these material and discursive relationships unfold – a grounding force that brings these relationships including empowerment and exploitation together in the everyday. However, place is more than a locality in which these processes unfold; it is an actant with its own social history that participates in and exerts power within actor-networks of urban agriculture. Southeastern San Diego, for example, has a long history of disinvestment driven by racist policies and economic decisions that supported spatial processes like red-lining which prevented local residents – mostly low-income, people of color – from acquiring property and building equity between 1934 and 1968. This practice is nestled within greater trends of segregation, such as white flight, that contribute to the uneven racial landscape of the county that exists today. Urban agriculture networks are embedded in these contexts and often must work within their limitations. Indeed, Mt. Hope Community Garden must contend with the history of Southeastern San Diego, which materializes in the garden's lack of capital and land and, ultimately, its vulnerability. This context also underlies justice narratives and practices that prioritize participation and recognition. The role of place cannot be overstated when talking about the diverse nature of urban agriculture projects.

Finally, our findings show that the way food is grown undoubtedly influences its actor networks and the journey it takes as it travels through its commodity circuit. However, growing methods *per se* are not the primary indicators of the presence or absence of justice. This connection is tenuous at best and secondary to factors like access to socio-natural resources such as land and capital, the characteristics of place, and the broader political economy. Ultimately, all of the networks examined in this research enabled tangible, meaningful transformations that benefited marginalized people, whether farming was soil-based or soilless or the approach was radical or neoliberal. However, the networks differed in their ability to achieve the broader goals of justice outside of distribution – namely, in the realms of participation and recognition. In other words, while most were involved in improving access to fresh food through various redistribution schemes, not all networks privileged the participation of residents, growers, and other community stakeholders nor did they acknowledge the race-, class- and gender-based structural inequities underlying injustice. These aspects of the trivalent theory of justice (Schlosberg 2007, 2004) are fundamental to the *politics of possibility* that Gibson-Graham (2006) argue is necessary to challenge and unravel the deep-seated inequities that underlie and structure urban foodscapes including disparities in access to capital and land ownership. Urban agriculture organizations and businesses should embrace participation and recognition within their commodity circuits in order to remedy these disparities. They exist in the "here and now" and should be challenged in the present. As Holland and Correal (2013) summarize, "… it is not necessary to wait for a full transformation of the capitalist system"; everyday actions (like participation and recognition) can "support conditions for positive social and economic transformation" (p. 132-133).

Bringing these four points together, I call for scholars, activists, policymakers, organizers, and businesses involved in all forms of urban agriculture to: (1) abandon a priori assumptions about the narratives of soilless and soil-based urban agriculture networks and instead examine how they think about and do justice; (2) embody food justice as a process that includes participation and recognition throughout urban agriculture commodity circuits, not just a distributive outcome; and (3) pay attention to place and its influence on the thinking and doing of justice as it gets built from the ground up. Ultimately, by recognizing the *politics of possibility* (Gibson-Graham 2006) – the ways in which we can "act ourselves into alternative worlds" through small, grassroots actions that "destabilize[e] capitalism" (Holland and Correal 2013, p. 132) – we can begin to see the vast field of opportunities for building soil-based and soilless urban agriculture networks steeped in justice that do not just redistribute outcomes, but create spaces of participation and recognition.

A. Contributions

Substantively, this research adds an additional, necessary dimension to research around soilless urban agriculture – its social implications. Discussed under the monikers such as Z-Farming, high-tech farming, and even 'technologically-advanced urban agriculture' in our own work, research on soilless urban agriculture has been mostly limited to understanding its environmental requirements and impacts (Alshrouf 2017, Barbosa et al. 2015, Putra and Yuliando 2015). Although researchers have begun to consider the social impacts of more recent evolutions of urban farming like rooftop agriculture (Specht, Reynolds, and Sanyé-Mengual 2017), a considerable gap remained for soilless agriculture. Soilless agriculture, for the most part, has been characterized as a "technological fix" (Scott 2011) that draws attention away from meaningful social justice projects that would empower marginalized

groups (Reynolds and Cohen 2016) and instead assumes that social problems can be solved by technological innovation without challenging their deep structural roots (Datary-Steel, Herrera and Porter 2015). This research is among the first to empirically consider this claim, illustrating the complicated realities of soilless and soil-based urban agriculture that influence their practices. It uses an ethnographic approach similar to other researchers (Alkon 2012, Reynolds and Cohen 2016) to examine these realities, framing analysis in terms of capital, land, and labor, commonly discussed in food regime literature (Holt-Giménez and Wang 2011) and providing evidence of the everyday social dynamics that create opportunities and/or barriers to justice in different scenarios, often regardless of growing method.

By adding justice considerations to research on soilless agriculture, this research also diversifies critical inquiry into justice, which currently does not consider soilless agriculture as much more than "entrepreneurial" (Reynolds and Cohen 2016). It does so by building on research that moves away from a priori assumptions about farming practices, stressing the importance of actors' motivations (Born and Purcell 2009, Joassart-Marcelli and Bosco 2014) and the narratives underlying them (Alkon 2013, Guthman 2008a). Inspired particularly by Born and Purcell's (2006) call to focus on the goals, as opposed to the means, in local food systems planning, I interpret means to include not only a priori assumptions around scale, but also growing methods, illustrating the importance of questioning politics of scale as well as politics of technology. Instead of classifying soilless urban agriculture as incompatible with justice, this research considers the narratives and practices that surround soilless urban agriculture in San Diego County and compare them with the county's soil-based urban agriculture. Our analysis affirms suspected entrepreneurialism on the surface level; however, deeper analysis illustrates that the realities of soilless urban agriculture are

much more complicated and influenced by a multitude of factors, especially the actors involved and their socio-spatial location.

In regards to justice more specifically, this research continues the trend in critical food research of challenging indiscriminate appraisals that ignore systems of privilege and underlying racial tensions (Slocum 2007, Guthman 2008b, 2011, Alkon and Agyeman 2011, Holt-Giménez 2011, Gottlieb and Joshi 2010). It also pays attention to structural inequities underlying food system injustices (Colasanti, Hamm, and Litjens 2012, Cohen and Reynolds 2015, DeLind 2015) and problematizes the role of capitalism and neoliberalism in urban agriculture (McClintock 2014, Cadieux and Slocum 2015). However, instead of arguing that justice will come when these systems of privilege are dismantled – as often suggested in food sovereignty research (Holt-Giménez 2011, Alkon and Agyeman 2011, Cadieux and Slocum 2015) – this research embraces the post-capitalist perspective developed by Gibson-Graham (2006) that focuses on the *politics of possibilities* that exists for justice in the present (Holland and Correal 2013) through small actions. The application of this theory is inspired by Joassart-Marcelli and Bosco (2018), who call for acknowledgement of "the transformative potential of spontaneous, small-scale, and grassroots initiatives" (p. 25). Soilless models like hydroponics and aquaponics, I argue, should also receive this acknowledgement because although they are often quite neoliberal, they may also produce incremental shifts towards justice through their practices and help destabilize the mainstream food system. Food activists should recognize these opportunities, I argue, instead of reifying a scenario in which justice can only be obtained when capitalism has been upended, and even then, only through soil-based growing methods.

Embracing post-capitalist politics, I argue, requires a more open understanding of justice. The "reflexive theory of justice" developed by Goodman, Dupuis, and Goodman (2014) provided this theoretical foundation, moving away from universal and abstract notions justice, while also avoiding an 'anything goes' scenario in which justice is so open it is rendered meaningless (Cadieux and Slocum 2015). I avoided the latter by combining the reflexive theory with the 'trivalent' approach to justice (Scholberg 2004, 2007) that defines distribution, participation, and recognition and considers them as key elements in justice narratives and practices (Walker 2009). From here, I was able to consider the everyday, nuanced experiences and narratives of justice at our case sites without drawing strict boundaries around the ideal. My dissertation's most significant contribution to research on justice, however, comes from its geographic approach to analyzing the role of space and place in shaping justice.

People seek justice to remedy a wide range of inequities, including racism, sexism, and many other 'isms' that are embedded in place and the result of historical political and economic processes. Indeed, many researchers have argued that research on local foodscapes calls for perspectives embedded in place (Joassart-Marcelli and Bosco 2014, DeLind 2011, Born and Purcell 2006) that consider local histories, policies, economies, cultures, and ecologies (Joassart-Marcelli and Bosco 2018). Returning to Martin's (2003) poignant quote in the introduction, "place is both a setting for and situated in the operative of social and economic processes" (p. 732). This research situates itself within this body of thought, agreeing with its sentiments, recognizing that food justice is contingent upon the socio-economic context in which it is advocated, fought for or against, and/or ignored. This research also recognizes that places are part of a larger socio-spatial fabric that requires

scrutiny in order to understand justice. This acknowledgment connects this research to concepts like spatial justice, which sees inequities in the distribution of socio-economic resources "and the opportunities to use them" across space as critical to understanding injustice (Soja 2009, p. 2).

Researchers have argued that spatial justice should be incorporated into concepts like food justice (Agyeman 2013) by asking questions like "who is included, who belongs, who has access to resources, and who benefits from these opportunities" (Joassart-Marcelli and Bosco 2018, p. 24). This research responds to this call – I engage a spatial perspective when examining how space determines urban agriculture organizations and businesses' access to socio-economic resources like land and capital and to powerful actants that possess and/or attract these resources. For example, Coastal Roots Farms in Encinitas does not suffer from the race- and class-based "locational discrimination" tied to neighborhoods like Southeastern San Diego, and benefits from access to socio-economic resources and lucrative actor-networks, illustrating the power of "spatial structures of privilege and advantage" (Soja 2009, p. 3). Applying these theories to examine justice within urban agriculture was productive, but not necessarily novel. Researchers have illustrated the important role of space in creating or restricting opportunities for justice (Soja 2010, Mitchell 2003, Lefebvre 1972) and its importance in food networks (Joassart-Marcelli and Bosco 2018). The main contribution here is our approach to examining the role of place and space in urban agriculture by focusing on the actor-networks that scaffold the local commodity circuits of urban agriculture.

Commodity circuit and/or chain research has not been common in *local* food networks or urban agriculture. Indeed, local commodities are often equated with trust, accountability, and transparency, which are directly linked to their shorter supply chains (Horst et al. 2017,

Tornaghi 2014, Hunt 2007, Seyfang 2006, Ostrum 2006, Ross 2006, Feagan 2004). This assumption ties again to Born and Purcell's (2006) argument against politics of scale that privilege the local as inherently better (e.g., more transparent, trustworthy, just, among others). Unsurprisingly, commodity chain and circuit research has tended to focus on global commodities (Challies 2008, Castree 2001, Gereffi 1999, Leslie and Reimer 1999, Mansfelt 2005, Raynolds 2002) including food commodities like papaya (Cook 2004), fair-trade coffee (Goodman 2004) and rum (Evans and Joassart-Marcelli 2017). This type of research seeks to illuminate the hidden power inequities that underlie global commodities. Yet, I argue, there is much to be discovered behind the veil of local commodities, as well. Despite the presumably shorter supply chains, numerous actors are involved in creating urban agriculture produce and bringing it to the plate. Structures like race and class are often hidden in narratives surrounding local foods like urban-grown produce, which are typically described as ethical. This research illustrates this by "following the thing" (Cook 2004, 2006), specifically urban agriculture commodities, as they travel through their local commodity circuits, filling a considerable gap in analysis of local food commodities.

Our results demonstrate the power of using this approach, revealing the taken for granted, local material and symbolic processes that shape commodities and have important implications for justice. Further, it highlights the spatiality of justice and its processual nature – it unfolds as urban agriculture commodities travel through their local commodity circuits. Indeed, spatial organization is critical for both producing and resisting the social and economic inequalities that food justice seeks to remedy (Joassart-Marcelli and Bosco 2018). This research demonstrates the importance of the different socio-spatial settings that commodities move through as they circulate through their commodity circuits (which may be

relatively spatially constricted or expansive) in creating opportunities for justice or injustice. Thinking about justice this way makes an important contribution to research on urban foodscapes by illustrating the importance of examining the networks of placed, socio-natural relationships that shape and add value to commodities and ultimately affect justice outcomes. Similarly, it provides an important lens for analyzing other social inequities in cities, including those related to labor and housing, and envisioning place-based forms of resistance. The approach is rendered even more salient for research on justice when combined with other theories that pay attention the role of specific actors, places, things, and forces in these commodity circuits.

Indeed, an important aspect of justice is unveiling the power inequities that underlie these global and local commodity circuits by analyzing the disparate experiences of those who participate in it. For Cook (2006), this means shedding light on the lives of distant others to create empathy across vast distances and inform policy and consumer choices. Here, a productive connection is made between Actor-Network Theory and the commodity circuit approach in order to examine the many participants at various nodes where value is created and exchanged in urban agriculture commodities. This connection is not new in research on geographies of food, specifically global commodities (Stassart and Whatmore 2003, Winter 2005, Cook 2004, Whatmore and Thorne 1997, Goodman 1999, FitzSimmons and Goodman 1998, Busch and Juska 1997); however, applying it to local actor-networks is novel and sets this research apart from its predecessors.

When engaging with Actor-Network Theory in this research, I relied on foundational texts (Latour 1993, Murdoch, Marsden, and Banks 2000, Whatmore et al. 1997). However, I was also sympathetic to Castree and MacMillan (2001)'s critique that Actor-Network Theory

falsely assumes that all actants marshall equal power in their networks and fails to acknowledge the uneven power dynamics that create and/or reinforce spatial injustice. Recognizing this weakness, this research engages a "weaker" version of Actor-Network Theory that incorporates political ecology to examine the uneven power distributions in local actor-networks (Castree and MacMillan 2001). I engage urban political ecology (Swyngedouw 2004, Heynen, Kaika and Swyngedouw 2006) specifically by focusing on the power imbalances among actors that foster the unfair power relations and unequal access to resources in San Diego County. I highlight these differences using the results of multi-locale analysis and network mapping, stressing the role of land, labor, and capital in producing power differentials and amplifying socio-spatial disparities. Political ecology, thus, offers the critical lens for examining actor-networks, allowing us to pinpoint the particular actants and actors that marshall the most power in urban foodscapes. It also engages discussions of race and class (Slocum 2007, Guthman 2008b, 2011, Alkon and Agyeman 2011, Reynolds and Cohen 2016) that provide additional depth to my analysis.

In addition to using political ecology to strengthen the actor-network approach, I build on this body of theory, especially its concerns with nature, technology, and understandings of urban natures (or socio-natures). While the concept of socio-nature has been used to examine the soil-based, organic urban agriculture (Alkon 2013), little is known about the socio-natures that govern soilless urban agriculture. I bring them into the discussion and problematize the nature-society narratives that underlie assumptions about this form of food production, especially in regards to justice arguing that if justice is the goal of an agriculture project, then all forms of agriculture regardless of the way their socio-ecological assemblages are organized, should be considered.

The combination of Actor-Network Theory, commodity circuit analysis, and political ecology in this research creates a robust spatial framework for identifying the entry points where justice can be enacted, built-upon, or in some cases co-opted, in urban agriculture, and is a powerful tool for research on local geographies of food. It highlights not only the everyday, nuanced experiences that exist at different nodes throughout commodity circuits, but also the role of various actors in bringing about justice. Like most research on food justice, this research emphasizes the contributions of grassroots organizations (Alkon and Agyeman 2011, Joassart-Marcelli and Bosco 2018). However, it focuses on the entire actor-network including individual stakeholders, funders, regional organizations, magazine editors, restaurant owners, as well as "things" like generators, soil, signs, and plants. The result is a more complete understanding of justice that illustrates the importance of the ways in which actors interact with each other and subsequent impacts on food justice. By emphasizing the role of place in these networks, I illustrate how the social relations of place and its position in the greater socio-spatial fabric of the county also influence these relationships and the process of justice. Further, by comparing the political economies and political ecologies of soilless and soil-based urban agriculture, I add to a growing body of literature on the uneven power relations that underlie the material and discursive realities of modern foodscapes.

In addition to these substantive and theoretical contributions, this research also empirically enriches concepts in urban and economic geography including the creative city model of urban development (Joassart-Marcelli and Bosco 2018), creative economies (Donald and Blay-Palmer 2006), urban entrepreneurialism (Joassart-Marcelli 2018, MacLeod 2002), neoliberal urban governance (Langegger 2015, Peck 2005, Brenner and Theodore 2002, Graefe 2002) and innovation (Ettlinger 2001). Indeed, much research has shown that

urban landscapes are breeding grounds for creativity (Florida 2005, 2003) and innovation (MacKinnon and Cumbers 2007, Gibson and Kong 2005, Rantisi 2002, Markusen 1996), but also sites of deep inequalities and social exclusion (Heynen, Kaika, Swyngedouw 2006, MacLeod 2002), exemplified in gentrification which displaces less affluent residents and people of color into less desirable areas (Reynolds and Cohen 2016, Joassart-Marcelli and Bosco 2014, 2018b, McClintock 2014, Crouch 2012). Technology, innovation, and creativity are often implicated in this displacement. Indeed, cities seek to attract the 'creative class' of high-paid "knowledge workers" that produce innovation, but still require low-wage service workers to make the machine run, reinforcing inequalities (Dyer-Witheford 1999) and the "ideology of technocracy" (Marcuse 2004). This research adds additional support for these theories by showing that the more innovative, neoliberal forms of urban agriculture in our cases were better able to attract resources. Further, they reflected this social stratification between different forms of knowledge. Substantively, it provides an account of the ways in which urban agriculture is being (re)made within the context of innovation – adding to research in information technology (Davenport 2013, Graham 1998), finance (Storper 1995, 1992), and bio-tech (Audretsch and Stephan 1996, Feldman 2000).

Neoliberalism was a particularly salient theme in our research. Researchers have argued that urban agriculture is influenced by the shift towards neoliberal governance in cities (Bosco and Joassart-Marcelli 2017, Joassart-Marcelli and Bosco 2014, McClintock 2014, Kaufman and Bailkey 2000), favoring entrepreneurial approaches (Gandy 2006, Harvey 2002, Brenner and Theodore 2002). Indeed, our research illustrates the relative success of the market-based distributive approaches in attracting resources. The soilless urban agriculture case study provides a timely example of the rise of the social enterprise and technology in

urban agriculture projects seeking to contribute to justice. For instance, the case of Solution Farms illustrates how innovation, neoliberalism, and urban agriculture come together in novel social enterprises that use food and technology to alleviate systemic issues such as homelessness. The social enterprise model, however, also illustrates how a focus on entrepreneurial and technological solutions may ignore underlying social injustices (Reynolds and Cohen 2016) that produce conditions like homelessness. Nonetheless, as I illustrate through the application of Gibson-Graham's (2006) *politics of possibility*, such approaches still may produce justice benefits incrementally.

B. Opportunities for Future Work

This dissertation has built a credible foundation for future inquiry into the locally embedded processes of justice and the networks that create and transform it. It provides a powerful entry into the nuances of justice in urban agriculture, especially soilless. I would have liked to have included more case studies, especially representing soilless urban agriculture. However, I was limited by the novelty of this form of growing in southern California where soil-based agriculture has long been the status quo. I was also unable to capture some of its more technologically advanced methods, which allow food to be grown indoors without sunlight. Indeed, soilless urban agriculture in itself is more diverse than just greenhouse hydroponic or aquaponics (the only types found in San Diego County). Examining these diverse forms of urban agriculture, which rely on different combinations of land, capital, and labor, may deepen understandings of justice and its possibilities in urban foodscapes.

Unfortunately, the scope of a dissertation prevented further investigation into the importance of concepts like *nature* and *technology* in framing justice narratives and practices

in urban agriculture. These concepts have a history of importance in framing alterity in local food movements, which have often sought to return "back to nature" and away from the so-called technological improvements of the global, industrial food system (Belasco 2006). The addition of small-scale, technologically-advanced agriculture into local food systems – often framed as spaces of resistance to a global, industrial food system that infringes upon *nature* – brings up interesting questions regarding the histories and trajectories of the concepts of technology and nature in the alternative food movement.

Continuing from the discussion of nature, the substance underlying this research – soil – also offers fertile ground for continued inquiry. This research, although not directly, begged the question: can justice only be found in the soil? Yet, soil in itself is far more complicated than a mere discussion of presence and absence. Soil is a power actor in the network that drives narratives and action around justice. In itself, it enrolls a whole host of actors – germs, bacteria, nutrients, and even chemicals – into urban agriculture that can either threaten or promote justice. For instance, soil is often considered the bedrock of food production and food justice activities; yet, in communities with legacies of industry and perceived (and often real) contamination, the soil may actually be dangerous and further environmental injustice. Still, the symbolic image of a child pulling a carrot from the dirt permeates discussions around building community. I have already begun planning a paper that deals with the subject of soil as it relates to justice in urban agriculture using a place-based approach as a continuation of this research.

Because my dissertation research focused primarily on the process of justice, I examined the narratives and practices associated with food justice, considering the main actors involved and the ways they represent and understand their contributions within the local

networks of urban agriculture. I was less focused on measuring the traditional outcomes of urban agriculture such as food security and employment, which despite their emphasis in the literature remain poorly substantiated empirically. Ideally, process and outcomes would be brought together in order to analyze the impacts of urban agriculture on its many participants, encouraging comparisons across place and social groups.

Building on the influence of structures like race and class on justice in urban agriculture networks, I also would like to extend this discussion to consider the role of gender. The importance of gender came up throughout this research. Gender was underlying the types of work and the value of that work that were performed by actors within the urban agriculture networks presented here. For instance, in the urban agriculture actor-networks I examined, all four of the scientists involved were men; women primarily handled growing and management in production spaces. In the case of Mt. Hope Community Garden, Mary – the garden's certified producer – was unfortunately not compensated for her vegetable production. Similarly, the garden's director, Diane, often goes without pay. These observations hint at the thesis that women are disproportionately poorly compensated for their labor in urban food systems and farming in general where their work is often invisible.

Funded future research will expand the geographic scope of this analysis to multiple urban areas in the United States including Los Angeles, Seattle, Detroit, and Boston. I will focus specifically on soilless urban agriculture and its contributions to justice and sustainability, using the work laid out here as a foundation for my approach. I hope that cross-sectional analysis of the socio-spatial contexts of soilless urban agriculture in these cities and their surrounding neighborhoods will allow me to further understand the role of place in constraining and/or promoting justice processes.

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