Moving the Field of Food Justice Forward Through the Lens of Urban Political Ecology

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Abstract

Food justice has emerged as a powerful social movement across the USA as well as an increasingly studied academic concept. In many circumstances, the food justice movement operates to reject the neoliberal mechanisms that dominate today’s food system, but simultaneously needs to operate within this system (to a degree) in order to exist. The movement’s engagement with larger neoliberal structures, such as the increasingly consolidated transnational food retail industry, can lead to it being co-opted. For instance, selective patronage campaigns focused on the local scale may create market mechanisms that are alternative to those of the conventional market by circumventing intermediaries, but they operate along similar lines of logic that fetishize the commoditization of food for profit. We propose that urban political ecology, mainly through its emphasis on process and outcome, offers a frame to keep both outcomes (such as food insecurity) and processes (governing entities and regulations) associated with food justice in mind, while not shifting the movement too far from its central objectives. Food justice, through an urban political ecology lens, can shed light on the symptoms of unjust access to food within the food system, while simultaneously bringing attention to the insidious causes of these problems, which are rooted in the commodification of food and deregulation of the marketplace.

Introduction

As food justice (FJ) is increasingly researched, scrutinized, and embraced as a legitimate and employable academic concept, does this concept, together with the social movement it supports, run the risk of falling prey to political and economic forces that could integrate it into the neoliberal project? If so, can this be prevented? In this article, we seek to answer these questions and begin with a review of the field of FJ. We propose that FJ has begun to be folded into neoliberalization processes through state involvement and an underlying assumption that food injustice can be solved by private market forces, namely the presence of transnational food companies with increasingly dominant retail arms as well as new types of food provisioning at the geographically localized scale. Our central proposition is that urban political ecology (UPE) offers up a broader theoretical frame for advancing and retaining the potency of the field of FJ while also allowing the movement to progress in alleviating the problems of hunger and inadequate food access. That is, UPE’s emphasis on hybridity, scale, and commodity relations has the potential to ensure that FJ remains true to focusing on outcomes and processes as well as symptoms (e.g. immediate needs such as inadequate access to food) and causes (e.g. structural inequalities) of food injustice within the current neoliberal system.

We identify two primary reasons why UPE provides an effective lens through which to view and understand issues of FJ. First, UPE is capable of highlighting societal structures and the intertwined nature of the urban and the natural; this focus on the hybridity of the material and symbolic for the study of food issues is particularly well suited for analysis under
such a framework (Whatmore 2002). Second, UPE (the Marxist branch in particular) is appropriate for the study of FJ because of UPE’s emphasis on the maintenance of material conditions and relationships, through commodity analysis, that serve the elite at the expense of everybody else. UPE is a framework that has assimilated the concerns of specific movements (namely, environmental justice) while at the same time explicitly situating socioecological processes, relationships, and metabolisms, which create unjust outcomes in space. This is especially true for the Marxist structure formulated by Swyngedouw and Heynen (2003). UPE has the potential to solidify FJ as a radical movement and help to move our understanding of (and discussions about) FJ forward.

Food justice as a social movement arose largely from urban-located social justice groups that explicitly addressed food inequalities based on race and/or socioeconomics. This movement is significantly influenced by historical anti-oppression undertakings and ideology, including those of racial injustice and civil rights. The movement materialized from a broad coalition of activists and organizers who saw the unjustness of the contemporary agrifood system and wanted to change it. Food issues have made their way into the popular vernacular through an array of diverse channels and media.

The modern food system is comprised of a series of connections that begin with production and end with consumption. Between production and consumption numerous degrees of processing, packaging, and distributing can occur. In today’s global market economy, each of these connections is defined by an exchange of money for goods or services. For example, a producer sells raw product to a processor, and the processor then sells the processed product to a packager. In a mainstream food provisioning chain, food follows this path, often traveling large distances and ultimately being consumed by whoever can access the final product based on price, physical ability, and cultural politics (Guthman 2008). The various steps in this chain, including the specifics of production and consumption, are dictated by economic relations and conditions. What has changed in recent history is the scale at which food provisioning operates; where local, regional, or national scales were the once predominant boundaries, improved transportation and telecommunication networks, an abundance of cheap labor, and free trade have made mainstream food provisioning part of a globally competitive marketplace. In this sense, food has become like many consumable goods emerging out of a market economy; there are a variety of products ranging in quality and cost. Therefore, the food provisioning system is defined largely by global retail consolidation and increasing competitiveness between firms. Today, the top 4 grocery retailing firms control 37% of grocery store sales (USDA ERS 2011). Furthermore, these companies are making significant inroads into countries outside of Western Europe and North America, indicating that the retail consolidation trend will likely continue into the future.

ALTERNATIVE FOOD MOVEMENT

The alternative food movement (AFM) is responsible for the rise in modes of production, distribution, and consumption, which are viewed by consumers as embodying some aspect of alternativeness to this mainstream food system. Sustainable agriculture, local foods, fair trade, direct trade, and slow food are examples of alternatives to mainstream food systems. While many FJ organizations utilize some element of these alternatives, FJ explicitly rejects many aspects of the AFM (e.g. working within current capitalistic market frameworks and disregard and demotion of social justice considerations). Recently, some scholars researching the AFM and food systems have called for more emphasis to be placed on social justice considerations. Discussions of reflexive localism (Dupuis and Goodman 2005) and prioritization of social justice in local food campaigns (Hinrichs and Allen 2008) represent seminal efforts to
better align food system goals with objectives centered on social justice, well-being, and respect for racially, culturally, and economically diverse populations. Still, much of the AFM continues to be defined by White, middle-class individuals, organizations, and institutions and operate within a consumerist, market framework. Food justice asserts that as long as this continues, only the prerogatives of privileged populations will be realized.

The core of the FJ movement is focused on issues of process, recognition, and historical circumstance. Negative food-related outcomes are important, and they frequently serve as a rallying point for impacted organizations and communities (e.g. food deserts), but they do not dominate the movement’s gaze. Instead, the FJ movement is largely concentrated on addressing the causes of inequality in the conventional agrifood system and making justice considerations explicit because “race and class play a central role in organizing the production, distribution, and consumption of food” (Alkon and Agyeman 2011, p.4). Focusing on addressing the causes and outcomes is a challenge; sometimes, their examination unearths contradictory forces (e.g. the corporate food retailer that donates expired food to the food pantry is simultaneously participating in a capitalistic food chain that exploits farm workers). Furthermore, FJ organizations need to operate within neoliberal frameworks to exist (the very same frameworks they ideologically oppose). How can the FJ movement both alleviate current suffering now but stay true to the longer-term vision of FJ? We contend that by utilizing an UPE framework, the current problem of hunger and inadequate food access can be addressed, while systemic causes of these symptoms are identified.

What is at Stake?

LOCALIZATION AS A NEOLIBERAL STRATEGY

The AFM framing and communications focuses on messages like “know your farmer,” “support local farms,” “buy local,” and “vote with your fork” that can only be operational within current market frameworks. These market mechanisms, including a heightened emphasis on entrepreneurialism, are relied on to recalibrate the food system. They do not necessarily oppose current food dynamics but seek to tweak them, ultimately re-creating and reproducing the socioeconomic and racial inequalities that exist in the current system. The AFM, in particular the local food movement, has been heralded as an all-encompassing response to many of the negative attributes of the global food system. This is problematic because local food (or other embodiments of alterity) then becomes an acceptable response to the conventional food system’s unsustainability. By producing, distributing, and buying food locally (or through fair trade, for instance), consumers can avoid supporting negative externalities associated with conventional food chains. As Guthman (2007) observed, “labels not only concede the market as the locus of regulation, but in keeping with neoliberalism’s fetish of market mechanisms, they employ tools designed to create markets where none previously existed” (p.456). Consumer-choice, value-added product development, private product labeling in lieu of government-led regulation, public–private partnerships, and localism are standard attributes of neoliberalism, and all have been embraced by the AFM. Buy Local campaigns, for instance, may create market mechanisms that are alternative to those of the conventional market by circumventing intermediaries (such as the case with direct farmer-to-consumer sales), but they operate along similar lines of logic that fetishize the commoditization of food for profit. This is done as part of a neoliberal process where the state effectively engages in a form of food system reform that changes the status quo within the current system, incorporating sometimes progressive reforms, but does so within the project of deep neoliberalization (Peck and Tickell 2002). That is, government efforts to conduct economic
development, agricultural and rural development, and more sustainable agricultural policy are envisioned to be achievable within the current neoliberal project and can be folded in accordingly.

STATE EXAMPLE

State-level “Buy Local” campaigns and support are primarily aimed at improving business conditions for producers and secondarily at preserving open space, facilitating rural economic development, and improving food accessibility. The consumer experience is valorized in these programs, and deference is given to the “marketplace” as the problem solver; as an example, consider this language excerpted from the State of New York Department of Agriculture & Markets:

“There’s no doubt that consumers want to buy locally produced food,” the Commissioner said. “What we have found is that regional “buy local” campaigns further raise the profile of local products in a specific region and they often have the opportunity to provide a range of services and activities that help local producers market their products and assist consumers in identifying local products.” The goal of the Regional “Buy Local” Campaign Development Program is to increase consumer awareness, increase recognition in the marketplace, and increase sales of locally produced foods and agricultural products … (New York State 2012)

Financial (e.g. Federal Specialty Crop Funds used for “Buy Local” promotion), informational (e.g. marketing guidance, regulatory and legal information), and networking assistance are mechanisms that enable and encourage producers and distributors to participate in localized market exchanges. In step with neoliberalism, local food becomes one of a multitude of “purchasable solutions” to problems that neoliberalism itself creates (Guthman and Dupuis 2006, p.441). Accordingly, the globalized trajectory of the agrifood system has produced unfavorable conditions, and by buying local, we can buy our way out of the unsustainable predicament.

How Food Justice has Begun to be Folded into the Neoliberal Political Economy

The USDA Food Access Research Atlas (FARA) is a technologically sophisticated web-based mapping program that allows users to search for and identify areas of low-income and low food access nationwide.

In the new Food Access Research Atlas, food access indicators for census tracts using ½-mile and 1-mile demarcations to the nearest supermarket for urban areas, 10-mile and 20-mile demarcations to the nearest supermarket for rural areas, and vehicle availability for all tracts are estimated and mapped (USDA ERS 2013)

In this way, FARA has contributed to the food desert discussion by formalizing, defining, and identifying areas of low food access. On the one hand, this is beneficial because it works to streamline what we mean when we say the phrase “food desert” or “inadequate food access” in academic and policy circles. On the other hand, however, this process sacrifices the malleability of the concept; an attribute that is perhaps most beneficial for those actually living in areas considered to be experiencing inadequate food access (whether or not it has been identified as one by the USDA). The food desert phrase and food access rhetoric are important tools in the FJ repertoire, and by assimilating them within the auspices of the USDA, the US government has achieved an effect analogous to the EPA’s integration of
environmental justice (EJ) policy; the state now defines what is or is not an area of inadequate food access, thereby legitimatizing the claims of some and discounting others who do not meet the state’s criteria. Furthermore, these policies focus on Cartesian realities of spatial proximity and [to borrow language from Walker (2009) regarding inadequacies of first-generation EJ research] are “insufficient and inadequate to the tasks of both revealing inequalities and understanding processes through which these are (re)produced” (p.615). That is, both policies focus on outcomes when the more revealing and meaningful sets of conditions likely lie in the processes that create these outcomes. In the case of the FAR4, adequate food access can be achieved through improved big retail food accessibility (proximity to supermarkets). Food retail in the USA and Western Europe is increasingly dominated by a small number of oligarchic transnational corporations that are continually merging, consolidating, and absorbing independent retailers. Thus, we see how the USDA FAR4 tacitly promotes private market solutions to inadequate food access, legitimizing the market as a remedy to social ills associated with inadequate food access.

Food deserts and areas of low access are not synonymous with FJ, but we contend that the USDA’s FAR4 indicates that FJ has gradually been folded into the broader neoliberal political economy represented by the USDA. Food access, according to what is presented in the FAR4, is focused on access to supermarkets. Supermarkets are, by necessity, operative and profitable within current market structures and represent a highly competitive and consolidated global industry; in addition, the food retail industry, like any large competitive business, is driven primarily by profit and stakeholder satisfaction. The significant food access problems of institutional racism, class, patriarchy, and overrepresentation of private interests in the food system are largely overlooked by the USDA in its focus on the neoliberal solution of supermarkets.

The message put forth by FAR4, that private food retailers can solve inadequate food access problems, shifts the responsibility of equitable distribution of food from the state (including safety net mechanisms) to the market. This reallocation of responsibility is in line with a number of established practices that place this responsibility upon businesses and charitable organizations and their volunteers, namely those of the private emergency food system (Poppendieck 1998). From the moment when humans began to store food outside of their bodies for future use, we see that food became not only a commodity but also an expression of power. This commodification process co-evolved with other developments in human society, such as creation of vast and efficient transportation networks, magnifying the impact of food inequalities.

Food justice is grounded in a grassroots movement and focused, to a large degree, on distributional inequalities related to food access. It is evident, however, that FJ is also willing to grapple with broader issues of recognition and process related to race, class, and power. Even though the field of FJ has taken up the issue of food, “it has most often employed the traditional EJ approach focusing on disproportionate burden” (Alkon and Agyeman 2011, p.9). The FJ movement has meaningful contributions to make by, from its inception, focusing on both the outcomes associated with food injustice and the structures and institutions responsible for these outcomes, in very much the same fashion depicted by Pulido’s contributions to our understandings of environmental racism. Food justice has taken this more radical and grassroots frame all along; the role of race and class is central to FJ. Pulido’s observation that by rigidly defining environmental racism to malicious intent, for instance, “continual contraction in the definition of racism” is permitted (Pulido 2000, p.19). As she explains:

The normal functioning of the state and capitalism are thus naturalized, as racism is reduced to an aberration. A good example of limiting the domain of racism can be seen in conceptions of the market. Instead of viewing the market as both constituted by racism and an active force in (re)producing racism, scholars have treated it as somehow operating outside the bound of race (Pulido 2000, p.19)
In this sense, the market is assumed to be nonracist when really this containing of the definition of racism not only limits claim making (Pulido 2000) but also obfuscates the fact that the market is created, maintained, and controlled by structures, institutions, and projects that are not only inherently racial but also often racist. In actuality, structural and institutional racisms are embedded in the market itself. Alkon and Agyeman (2011) frame the food system itself as a racial project that contains “political and economic undertakings through which racial hierarchies are established and racialized subjectivities are created” (p.4). Thus, market-based mechanisms created to distribute food to consumers, the food insecure and hungry, or target symptoms of food injustice will perpetually fall short because, like racism itself, food injustice has become part of the architecture of political and economic entities that dictate the rules of the marketplace and, subsequently, the food system.

Food justice acknowledges the importance of inequalities in access and mobility and also, through its attention to class and race structures, the historical–materialist relations responsible for the creation and re-creation of unjust circumstances. Yet, FJ’s position is in a theoretically awkward space. This is because it is a movement not only guided by reactions to unequal access to food but also interested in addressing the causes of unequal access to food, which are tied up in broader structures and political–economic forces. Holt-Giménez and Wang (2011) articulated this in-between position inherited by FJ as “attempting to address racism and classism on one hand while trying to fix a broken food system on the other” (p.91). Indeed, this is reminiscent of a similar position occupied by EJ, being a field focused on visible and urgent problems with limited explanatory power. However, FJ has always been focused on both, yet being spread too thin may be what weakens the movement, allowing it to be defined primarily by the state and the market.

Neoliberalism, Urban Political Ecology, and Food Justice

Before further discussion, we see utility in providing a clear foundation for our employment of the concept of neoliberalism. Neoliberalism has been used to describe the “political philosophy that promotes market-based rather than state-based solutions to social problems” (McEntee and Naumova 2012, p.248). However, nuanced understandings and projections of neoliberalism are continually being studied and developed, which makes creation of a single unified definition difficult. Contemporary discussions involving neoliberal processes, philosophies, and projects consider them, broadly speaking, as driven by market rule and commodification. There is a growing emphasis on neoliberalism’s variegated nature (Brenner et al. 2010, p.184) and its existence as a process and not an end state (Peck and Tickell 2002). We apply this concept in this paper to highlight various ways in which the state is explicitly and implicitly encouraging market-oriented solutions to the problem of inadequate food access, therefore illustrating how government can extend the reach of neoliberalism through state-sanctioned programs.

URBAN POLITICAL ECOLOGY

Urban political ecology’s historical–geographical materialist approach to urban-nature metabolic processes illuminates the focal concerns of FJ. Food justice’s approach is to identify and address unequal access to food as well as the corresponding causes, rooted in race and class. To fully understand these beyond the liberal Rawlsian interpretations of distributive justice that has limited some elements of the EJ movement (Walker 2009), it is necessary to hone in on “the relationship between environmental change, socioeconomic impact and political process” (Keil 2003, p.728). After all, food is as politically entrenched, networked, historically bound, and tied to nature as other resources required for human survival. What distinguishes
food, and makes it a revealing candidate for UPE analysis, is the fact that it is imbued with significant cultural meaning. This is not to say that other resources [such as urban green space and trees (Heynen 2003)] are not. However, there is likely no other resource required for human survival that is as culturally bound yet so dependent upon material realities of the natural environment. These material realities and corresponding physical, chemical, and biological metabolic components they are tied to “generate disabling socioecological conditions that often embody contradictory relations,” what Heynen calls “the political ecology of urban hunger” (Heynen 2006, p.131).

In this sense, studying the human metabolization of food through the lens of UPE facilitates the recognition of cultural, political, and economic processes responsible for the myriad food outcomes that FJ scholars are interested in understanding. Furthermore, race, class, and gender are already established parameters of UPE; to borrow from Swyngedouw and Heynen (2003), (our words added in brackets) “environmental [and food] transformations are not independent from class, gender, ethnicity or other power struggles and, in fact, often tend to be explained by these social struggles” (p.911).

Material and symbolic boundaries within UPE are not distinct but blurred and overlapping, and there is a fundamental resistance against dualistic understandings of socioecological realities. UPE recognizes that the “natural and the cultural, the pristine and the urban are…intertwined and inseparable aspects of the world” (Keil 2003). As a well-known hybrid geography topic, food inhabits a space of meaning that is defined by both the material and the cultural as well as their interrelated exchange [as well as how these meanings change over time (see Brownlow 2006)]. UPE brings these relations to the surface, moving analysis beyond material outcome to discussions of explanatory potential. Thus, to understand FJ through a UPE frame, we need not only understand the “economic, political, and cultural processes [that] govern human metabolization” (Heynen 2003, p.981) of food but also understand the push and pull between these and their overlapping existences.

Future of the Movement

A UPE framework contextualizes the origin of outcomes. Many anti-hunger campaigns, such as those operating in the private emergency food system, perpetually seek to address the symptoms of hunger and, in so doing, enroll the help of large institutional food companies who donate food to this system. In this sense, the organizations have embarked on a perpetual journey where the causes of hunger fail to be targeted; FJ movements can benefit from this cautionary tale (Holt-Giménez and Wang 2011). No matter how local or healthy, an FJ campaign, if it in any significant way relies upon the charity of “big food” or re-creates conventional exchange-value markets that fetishize profit and commodification of food, then the movement will encounter a parallel symptom-focused existence. The significance of recognizing broader economic and political conditions is a valuable and necessary contribution toward a critical understanding of FJ issues.

With this in mind, focusing on outcomes only (e.g. the actual physical space and inequality of a food desert but not the political and economic causes) will allow the movement to be co-opted by a weakened state and empowered food retail industry and private food businesses (like those that hold oligarchic control over food retailing and have a financial stake in perpetuating the private emergency food system).

Food justice, through a UPE lens, can shed light on the very real symptoms of unjust access to food, while simultaneously bringing attention to the insidious causes, which are rooted in the commodification of food and deregulation of the marketplace. This leads to more transparency on the ground through co-location of food production and consumption (Heynen et al. 2012)

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and has the potential to undermine and expose the entrenched power relations responsible for commoditized food and the unequal and exploitative power relations that accompany the commodification process. Therefore, solutions are not rooted in reliance upon the neoliberal mantra of informed consumer choice or for waiting for the corporate food regime to reform on its own. Holt-Giménez and Wang (2011) refer to groups like the Family Farm Coalition, La Via Campesina, and the Detroit Black Community Food Security Network as successfully addressing, through key mechanisms like alliance building, the effects of food injustice on the ground while also shedding light on the responsible racist and classist structures.

Food is bought and consumed, and for most people, the identity of food is masked until it appears in a highly managed form on the supermarket shelf. Just as some people can afford to live in healthier, more attractive environments, some people can afford to buy healthier, more attractive foods. Commodity fetishism, whether witnessed on a local or global scale, or applied to the environment or food, is able to “veil and hide[s] the multiple socioecological process of domination/subordination and exploitation/repression that feed the capitalist urbanization process” (Kaika and Swyngedouw 2000, p.136). Thus, when picking an apple from the supermarket shelf or chopping up a carrot from the weekly community-supported agriculture, the commodity relations embodied in these products are rarely made explicit, and this is no accident. Like any commodity, “who gains and who pays” (Swyngedouw and Heynen 2003, p.901) is obscured in order to maintain power relations. While capitalism propagates clear distinctions between society and nature, continually striving to commodify “nature” in innovative ways, UPE allows us to study and understand the relations behind them.

Food justice has begun to be folded into neoliberal processes, namely through the US government, evident in efforts such as the FARA. The focus of the locator is on spatial proximity as well as market-based solutions to food deserts. If a supermarket can be located within a USDA-identified food desert census tract, then the residents can presumably count on this as remedying the food desert problem; this logic conveys the message not only that can residents of food deserts buy their way out of this problem but also that the market is responsible for providing a solution. This logic is not new to neoliberalism’s repertoire; in community-based food-related projects, often located at the local level (such as community gardens), “citizenship achieves its most perfect expression through consumer choice in the marketplace” (Pudup 2008, p.1238). Whether it is a community garden responsible for a weekly community supported agriculture (CSA) share or a corporate food retailer, both embrace a notion of citizenship that is defined by the ability to have consumer choice; for this reason, both mainstream and alternative forms of food provisioning have the capability to express neoliberal traits.

The practical implication for moving forward is to call for greater acknowledgement of the tremendous power now placed in the hands of the corporate food regime. This applies to government, including the USDA, which is not only supportive of big food business in various capacities but also, as described in this article, encouraging of market-based reforms that perpetuate the idea that FJ and profit are compatible. At the local, albeit a just as (or more) important, scale, the anti-hunger and emergency food organizations, providing a last line of defense against hunger, need to continue their essential work, while re-directing some resources towards the explicit acknowledgement that contemporary food injustices are the direct result of a commodity-driven system where hunger is a by-product of profit. In this sense, even though anti-hunger, community-based, and FJ organizations operate in an increasingly neoliberal context (and thereby need to adopt some neoliberal mechanisms to even exist), this reality does not mean that they inherently support it and in fact may be working against it, albeit at an incremental pace. These entities’ work, especially those advocating for food as a public good and right, is necessary in order to bring about this change in food provisioning. On the one hand, devolution of governments and encouragement of entrepreneurial skills for farmers
represent a neoliberal mentality; on the other hand (especially in the case of widespread adoption of urban agriculture zoning policies), “they simultaneously represent a progressive, if not radical, return to the means of production to urban residents” (McClintock 2013, p.13).

While the USA has never had a laissez-faire approach to food provisioning, current trends in retail food provisioning and public policy are headed in a direction that relies heavily on market determinism to dictate who gets food. Market forces fail to account for the structural limits imparted upon racial minorities and economically disenfranchised communities. However, UPE provides a generalizable framework and set of tools for understanding the chief concerns of the FJ movement: the immediate injustices in the form of hunger and food insecurity (outcomes) and the systemic radical critiques of the global food regime rooted in socioecological processes that disempower based on racial, economic, and gender lines and the interrelatedness (between process and outcome). What is more, UPE, like much of emerging FJ discourse, is focused on explicit uncovering of processes that bring about injustice instead of the distributional outcomes that much of first-generation EJ and some of the current FJ work remains focused upon. UPE is equipped to identify and deconstruct these “uneven socioecological conditions” (Swyngedouw and Heynen 2003, p.913) in a manner that looks beyond material outcome. In this light, FJ is a string in the bow of urban political ecology.

Short Biographies

Julian Agyeman, PhD, is an environmental social scientist with degrees in botany, geography, conservation policy, and environmental education whose expertise and current research interests are in four broad areas, each of which critically explores some aspect(s) of the complex and embedded relations between humans and the environment, whether mediated by institutions or social movement organizations, and the effects of this on public policy and planning processes and outcomes, particularly in relation to notions of justice and equity. He is currently a Professor and Chair at the Department of Urban and Environmental Policy and Planning, Tufts University.

Jesse C. McEntee, PhD, is a Manager and Founder of the Food Systems Research Institute. Trained as an environmental social scientist working in the transdisciplinary settings of resource economics, land use, and regional planning, his food systems expertise draws from both private and public sectors. For instance, he supervised the intake of discovery materials for a litigation judgment of 1.6 billion dollars against Enron’s energy transmission fraud in the Western US power market and has performed feasibility assessments of an international crop biofortification program for the Bill & Melinda Gates Foundation. He has owned his own consulting firm, worked for state government, and continues to teach at the university level. A prolific writer, he is the author of a number of internationally peer-reviewed publications, including articles and book chapters.

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