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ARTICLE

# The labor between farm and table: Cultivating an urban political ecology of agrifood for the 21st century

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## Abstract

The variegated landscape of food production and consumption reveals a great deal about socrionatural relations and processes of urbanization and globalization under capitalism. Food production has changed dramatically over time, shifting away (but never fully divorced) from the rural agrarian landscape to spaces that are characterized as industrial and/or urban. Workers transform nature at each stage in the food production process, not only on farms but also in processing plants, grocery stores, restaurants, and other spaces. This paper draws on urban political ecology (UPE) to position labor as central to understanding the socioecological relations embodied in food systems. It puts UPE in conversation with agrarian political economy, a decidedly un-urban body of literature that nevertheless offers critical insight into the obstacles (and opportunities) that nature and labor pose to food systems development in an urbanizing world. Employing UPE's dialectic conception of humans and nature, this paper highlights the role that non-agricultural and urban-based food labor plays in an increasingly complex global political economy of agrifood. Seeing both the "labor" and "nature" of food from the farm all the way to the table can reveal the myriad transformations, exchanges, and socioecological relations operating within the food system.

## 1 | INTRODUCTION

Food is simultaneously a basic human need, a commodity with a volatile exchange value, and an object of human labor. A material substance commonly recognized to varying degrees as a product of our "natural" environment, food is also an ideal lens through which to explore socioecological relations under capitalism. Food is produced on large-scale industrial farms and in small urban gardens, in fast food chains and local farm-to-table restaurants, and in hog processing plants and artisanal charcuteries. This variegated landscape of food production and its transformation over

time has much to tell us about our social and natural relations and the processes of urbanization that shape our cities and countrysides.

The food production process is in constant flux, shifting but never fully separating from the rural agrarian landscape to spaces characterized as industrial and/or urban. Downstream food sectors—including processing, distribution, retail, marketing, and foodservice—now play a significant role in getting food to its final point of consumption. Moreover, these sectors wield enormous power to dictate upstream processes of agricultural production. For example, fast food chains demand high quantities of uniform and highly palatable ingredients, and industrial farms and feedlots adapt to produce a steady supply. Agrifood research and development also plays a large role in determining how food is grown and processed. For example, researchers developing synthetic agrichemicals and genetically modified seeds, as well as food scientists creating artificial sweeteners and lab-grown meats, transform our food system and shape public consciousness about what is “natural” and “safe” to eat. Meanwhile, the consumption of food is intimately linked to—yet spatially distant from—most of the hands, bodies, and minds who transform the biophysical world into food for human consumption.

Agrarian political economy confronts exploitive labor relations head on, offering a useful lens for understanding the complex role that both nature and labor play in agriculture (Goodman, Sorj, & Wilkinson, 1987; Henderson, 1998; Kautsky, 1988; Mann, 1990). This literature grapples with the obstacles and opportunities that nature poses to agricultural development (e.g., the seasonality of farming) and the ways in which these dynamics perpetuate non-waged labor relations, including seasonal migrant work. As capital confronts nature, food production becomes more mechanized and industrialized, and different types of labor are enrolled to process, prepare, and serve food. However, the literature in agrarian political economy remains focused on rural, agricultural work, which in the United States, for example, makes up only 12% of food labor (Food Chain Workers Alliance and Solidarity Research Cooperative, 2016). In this case, privileging agricultural work renders the other 88% of food workers invisible. ~~As these workers labor in predominantly urban spaces, missing them ignores~~ their stake in our food system.

Understanding the complex dialectic of labor and nature—including the role of *non-agricultural* and urban-based food labor—thus requires widening our analytical and empirical lenses to include links both further up and down the food chain. In this paper, I demonstrate how an urban political ecology (UPE) perspective can further our understanding of the socioecological relations embodied in food systems. More specifically, I demonstrate how UPE can help push critical food systems literature to (i) more fully engage with labor along the entire supply chain and (ii) conceptualize nature beyond the farm by taking a dialectical approach. I build upon Hillary Angelo and David Wachsmuth's 2015 critique of UPE's tendency toward “methodological cityism,” or privileging the city as the primary site of analysis at the expense of missing the flows and connections between the rural and urban, and the global North and South. Adapting their argument, I identify the “methodological agrarianism” of the dominant critical food studies literature. I demonstrate how shedding these tendencies and viewing labor and the production of food and nature dialectically can help us see how the transformation of food systems is bound up in processes of urbanization and globalization. In doing so, I bring labor more fully into view and encourage critical food studies scholars to examine the role that non-agricultural and urban-based food labor plays in an increasingly complex global political economy of food systems. Seeing the “nature” of food beyond rural agricultural production can reveal the myriad transformations, exchanges, and socioecological relations operating in food systems and can therefore unveil the multitude of food labor being performed within and between cities and beyond.

## 2 | LABOR AND METABOLISM WITHIN URBAN POLITICAL ECOLOGY

A field situated at the intersection of political ecology and urban geography and introduced by Swyngedouw in 1996, the UPE turn signaled an evolution of the concept of urban metabolism. Previously, Chicago School urban sociologists of the 1920s and 30s applied ecological theories of invasion and succession to conceptualize urban processes, thereby naturalizing racial segregation and inequality in the city (Gieryn, 2006). Decades later, environmental sociologists



returned to Marx's formulation of social metabolism to theorize how urbanization and industrialization create rifts in biophysical metabolic relationships, particularly nutrient cycles associated with agricultural production (Clark & York, 2008; Foster, 2000; Foster, Clark, & York, 2010). According to Marx, nature is appropriated and transformed through the labor process to meet human needs, and under capitalism, this process occurs at an accelerating rate, depleting resources, and generating environmental, social, and economic crises. To address crises, capital seeks new locations for production and resource extraction, advances technologically to overcome scarcity and increase productive forces, absorbs new supplies of cheap labor, and relies on temporal subsidies in the form of fossil fuels and other finite resources. But these offer only short-term relief, and the continuous hunt for spatiotemporal fixes transforms, intensifies, and scales up metabolism (Clark & York, 2008; Foster, 2000; McClintock, 2010, 2015; Schneider & McMichael, 2010).<sup>1</sup> Drawing on social metabolism to connect across scale, space, and time, this political ecology literature reveals how drought and famine, food safety scares and price spikes, and other phenomena are not isolated incidents or products of "natural disasters" but are instead inevitable outcomes of an unsustainable global political economy.<sup>2</sup>

Urban political ecologists have pushed the dialog further, employing a dialectical understanding of humans and nature to conceptualize urbanization as a *socio-natural* process (Wachsmuth, 2012) and theorize the uneven "production of nature" (Smith, 2008) as simultaneously political, economic, and cultural. This politicized and dialectical approach views "urban metabolism as a dynamic process by which new sociospatial formations, intertwinings of materials, and collaborative enmeshing of social nature emerge and present themselves and are explicitly created through human labor and non-human processes simultaneously" (Heynen, 2013, p. 2). Importantly, labor is at the heart of Marxian social metabolism and serves as the fulcrum of a dialectical relationship between humans and nature. It is through the labor process that man "mediates, regulates and controls the metabolism between himself and nature" (Capital Vol. 1, p. 283). The exploitation of human labor and the biophysical environment go hand in hand, and placing labor at the center of an analysis of the production/consumption of food/nature can help us map the rural-urban and global North-South connections that are embedded in food systems.

Despite its foundational intentions, the potential for UPE to think processually across these divides is relatively untapped. UPE emerged in part out of a critique of political ecology's tendency toward the "rural Third World" trap or a preoccupation with the rural and an unwillingness to engage with the urban as a site for understanding nature (Heynen, 2013). However, after a short two decades, UPE has itself been critiqued for reinforcing rural/urban and local/global dichotomies by privileging the city as a site of analysis in both theoretical and empirical work, a phenomenon Angelo and Wachsmuth refer to as "methodological cityism" (Angelo & Wachsmuth, 2015). They argue that actually existing UPE treats the city as the "near-exclusive analytical lens for studying contemporary processes of urban social transformation that are *not limited to the city*" (ibid., p. 20). Quoting Keil (2015), they call UPE back to one of its original goals—to "investigate urbanization as a 'complex, multi-scale and multidimensional process,' by examining the different forms the urbanization process takes, or what effects it has, in different locations and at different scales" (Angelo & Wachsmuth, 2015, p. 21). Food, perhaps more than any other commodity, lends itself to such an investigation.

### 3 | FOOD WITHIN URBAN POLITICAL ECOLOGY

UPE offers a critical lens for investigating the material conditions and social relations embedded in food systems and how these might be transformed to yield more socially just and environmentally sustainable outcomes. Agyeman and McEntee (2014) advocate for adopting a UPE lens—with its focus on process and outcome—to expose the structural symptoms and causes associated with the commodification and deregulation of the food system. They argue that the food justice movement, with its contradictory tendency to fight *against* while operating *within* neoliberal structures, can benefit from UPE's approach to scale, human-nature hybridity, and commodity relations.

Urban agriculture has received a good deal of attention from UPE scholars. Chiara Tomaghi (2014) argues that urban agriculture is a marginal and unexplored field in critical geography, and Michael Classens asserts that scholars

1  
2  
3 have failed to acknowledge the “co-constitutive character of nature and society” in their analyses of urban gardens, a  
4 pitfall, which has led some to overlook and others to overstate their transformative potential (2015, p. 229). However,  
5 several scholars have taken a critical geographic and dialectical approach to understanding humans and nature in  
6 relation to urban food production (Domene & Saurí, 2007; McClintock, 2010; Morgan, 2015; Parés, March, & Saurí,  
7 2013). Additionally, McClintock (2014) has already forced us to “come to terms with urban agriculture’s contradic-  
8 tions,” namely, the tendency for these projects to be some combination of radical, reformist, and neoliberal  
9 simultaneously.

10 Food-focused UPE scholarship also identifies the potential for (and necessity of) mapping metabolic relations  
11 within and across scales. Nuanced investigations into urban hunger and obesity reveal how complex bodily biochem-  
12 ical processes are intimately connected to biophysical environments, processes of uneven development, and even dis-  
13 cursive cultural framings (Guthman, 2011b, 2012; Guthman & DuPuis, 2006; Heynen, 2006; McClintock, 2011). At  
14 the same time, communities and food justice organizations are decommodifying food and urban space and exercising  
15 their “right to urban metabolism” to resist efforts by the state and capital to control and regulate bodies, communities,  
16 cities, and foodways (Heynen, 2006, 2010; McClintock, 2011; Sbicca, 2013; Shillington, 2013).<sup>3</sup> For example,  
17 Shillington (2013) demonstrates how food-insecure households in an informal settlement in Nicaragua transform  
18 urban metabolism at the scale of the body, home ecology, and the city through the production and consumption of  
19 fruit and *refrescos*. This work directly and indirectly begins to trouble the distinction between producer and consumer  
20 by mapping linkages between the city and the frontier and highlighting the informal and unpaid labor required to  
21 metabolize food and create particular urban natures (Saguin, 2014).

22 By investigating the material conditions and social relations embedded in our food system(s), the UPE work on  
23 food highlighted here pushes the discipline in new and exciting directions. Adding to the breadth and depth of this  
24 work is necessary to conceptualize the role that food labor plays in mediating human–nature relationships. Food sys-  
25 tems are vast and complex, spanning multiple sites—from rural to urban—and scales—from the body to the globe. An  
26 analytical approach to the study of food systems should be processual, with a sensitivity to changes over time and  
27 space. A UPE of food systems cannot focus myopically on the city but should instead work to also understand how  
28 agrarian economies, ecologies, and labor markets are connected to food production and consumption. Insights from  
29 the robust field of agrarian political economy are critical to understanding the ways in which the countryside, the rural,  
30 the agrarian are enrolled in the production of food. By drawing on this decidedly un-urban body of literature, UPE can  
31 begin to overcome “methodological cityism” and theorize how the rural and urban, the local and global, and the pro-  
32 duction and consumption of food are mutually constituted through processes of urbanization and globalization.

#### 33 34 35 **4 | THE NATURE AND LABOR OF (UN)AGRARIAN CAPITALISM**

36 Since the turn of the 20th century, political economists have grappled with the “agrarian question”: Why agriculture  
37 has not followed the same development trajectory as industrial manufacturing. Czech-Austrian philosopher Karl  
38 Kautsky drew on Marx to highlight the natural barriers that capital faces when encountering agricultural production.  
39 He theorized that the natural conditions within which agricultural machinery must work and adapt, along with low  
40 rural wages, make replacing labor with machinery less possible and profitable in “agriculture” than in “industry”  
41 (Kautsky, 1899).<sup>4</sup> While technology has dramatically transformed today’s agricultural landscape, it remains just as  
42 uneven, if not more so than it was a century ago; wage labor exists alongside family farming, subsistence agriculture,  
43 piece rate arrangements, tenant farming, contract farming, and sharecropping. What some consider “pre-capitalist”  
44 forms of production that social theorists including Kautsky, Durkheim, Weber, and Marx predicted would be steadily  
45 eroded by capitalist industrialization are still alive and well (Mann, 1990). How can we explain this variegated land-  
46 scape of agricultural production? The answers lie at the intersection of nature and labor, notably the ways in which  
47 the labor process transforms to overcome (and exploit) the obstacles (and opportunities) that nature poses to capital’s  
48 ingress into agricultural production.  
49



1  
2  
3 Early agrarian political economy emphasizes the barriers that nature poses to capital investment in agriculture  
4 (Goodman et al., 1987; Kautsky, 1899; Mann, 1990). The Mann-Dickinson thesis, developed in the late 1970s,  
5 explains how certain commodities, such as cereal grain, require capital to be tied up in lengthy production processes;  
6 this causes the labor time needed for production to ebb and flow seasonally, thereby making the production processes  
7 conducive to seasonal migrant labor and piece-rate arrangements. Capital's entry into agriculture therefore depends  
8 on its "ability to control and subordinate—to civilize—nature" (ibid., p. 4). However, the natural processes that interrupt  
9 the circulation of capital also create the conditions for new industries and technologies (e.g., processing and preserva-  
10 tion) and the circulation of credit capital (e.g., that extended to farmers in the off-season; Henderson, 1998), thereby  
11 enrolling "urban" factories, banks, investment firms, and the broader global financial system (and waged workers), into  
12 the seemingly "rural" production of agriculture.

13 Capital also takes over discrete elements of agricultural production via two parallel processes working at opposite  
14 ends of the food chain: appropriationism and substitutionism (Goodman et al., 1987). Through appropriationism, firms  
15 replace agricultural activities with industrial ones, often using waste byproducts from other industrial processes. Exam-  
16 ples include replacing the process of organic decomposition with synthetic fertilizers from petroleum refinement or  
17 utilizing pesticides from chemical weapons production (Romero, 2016a, 2016b). Through the second process of  
18 substitutionism, firms replace agricultural products with industrial ones. Classic examples are margarine, which provides  
19 a qualitative substitute for butter, and nylon rope as a substitute for those made with hemp. Appropriationism and  
20 substitutionism "constitute a combined, interactive movement of capital successively replacing rural with industrial  
21 activities" (Goodman et al., 1987, p. 57). They enable capital, chemistry, and waged workers to overcome the ecolog-  
22 ical contradictions of agro-industrialization and dramatically transform (and scale up) social metabolism in the process.

23 On the biophysical level, agricultural production presents an opportunity to harness natural processes as produc-  
24 tive forces for wage labor through what Marx refers to as real subsumption (Boyd, Prudham, & Schurman, 2001).  
25 Growth hormones, synthetic fertilizers, pesticides, and herbicides are early examples of real subsumption, but new  
26 biotechnologies and the manipulation of genetics offer new paths. Real subsumption increases productivity—higher  
27 yields, shorter turnover times, and faster plant and animal metabolisms—without having to increase labor productivity.  
28 In this way, "capital circulates through nature (albeit unevenly) as opposed to around it" (ibid., p. 565). The adoption of  
29 biotechnologies also offers a particularly salient example of how certain elements of agricultural production have  
30 moved off the farm and into the city and factory or otherwise become "industrialized." Scientific research breaks  
31 down the natural barriers to capital accumulation and isolates elements of the production process to employ a strictly  
32 capitalist logic. "The labor of the farmer," writes Kloppenborg,

33 *from which surplus value can be extracted only indirectly through unequal trade relations in the sphere of*  
34 *exchange, is replaced with the directly exploitable labor of the roughneck on Exxon's drilling rig, or the labor*  
35 *of the fermenter technician at Monsanto (2004, p. 34).*  
36

37 These examples from agrarian political economy position technology and wage labor as tools that help capital  
38 overcome the barriers and exploit the opportunities that nature presents to the (uneven) development of agriculture.  
39 Technology, credit capital, and wage labor are simultaneously replacing and enabling the persistence of non-wage  
40 forms of labor (Henderson, 1998; Kloppenborg, 2004). Agrarian political economists articulate a steady march of  
41 "industry" into the once "rural" realm of agriculture. However, these apparent shifts—from the field to the factory  
42 and from the country to the city—never fully divorce the production of food from the agrarian landscape. Instead, they  
43 are indicative of the increasing urbanization of food production, which is part and parcel of uneven development and  
44 globalization. Moreover, these shifts illustrate the social metabolic relationship central to UPE and beg for a more  
45 nuanced understanding of "nature" and labor in agrifood systems development.

46 Critical agrarian scholars have made their own case for "bring[ing] urban and rural optics together, going beyond  
47 rural-urban linkages to see 'nature in the city' and urbanized planning logics in the country-side—and to see how both  
48 are constitutive of the other" (Edelman & Wolford, 2017). Privileging the agrarian, a concept relating to the cultivation  
49 of land for agricultural purposes, and focusing on the agrarian landscape as the primary site of analysis, risks

"methodological agrarianism," to adapt Angelo and Wachsmuth's critique of UPE (Angelo & Wachsmuth, 2015). "Methodological agrarianism" reinforces false dichotomies that capital itself does not respect, including humans–nature, rural–urban, and agriculture–industry. It also misses the characteristically *un-agrarian* answers invoked by the original "agrarian question." According to Henry Bernstein,

*Agriculture in capitalism today is not synonymous with, nor reducible to, farming, nor is it constituted simply as a set of relations between agrarian classes (landed property, agrarian capital, labour), as in the "classic" agrarian question. Rather, agriculture is increasingly, if unevenly, integrated, organized, and regulated by the relations between agrarian classes and types of farms, on one hand, and (often highly concentrated) capital upstream and downstream of farming, on the other hand. Moreover, such integration and regulation operates through global as well as national (and more local) social divisions of labour, circuits of capital, commodity chains, sources and types of technical change (including in transport and industrial processing as well as farming), and markets (2006, p. 454).*

The *Agrarian* is too narrow of an analytic for capturing the broad scope of questions and nuanced answers required to explain the rapidly changing 21st century agrifood system or what food regime scholars refer to as the neoliberal food regime (1980s–present; Friedmann & McMichael, 1989). The neoliberal food regime is part and parcel of the broader global political economy and is characterized by increasing integration of transnational agrifood capital, the shift from public to private regulation, and the liberalization of trade and structural adjustment (Busch & Bain, 2004; Pechlaner & Otero, 2010). Global supermarket chains squeeze upstream actors and control what type of food is grown, where, how, and by whom (Konefal, Mascarenhas, & Hatanaka, 2005). Transnational corporations have significantly altered the role of the nation state and gained considerable power to relocate, exploit new labor forces, and reconfigure capital accumulation (Bonanno, Busch, Friedland, Gouveia, & Mingione, 1994). This contributes to a dynamic and variegated international division of food labor and the production and migration of a reserve army of marginalized food workers (Pechlaner & Otero, 2010).

Despite the global nature of the neoliberal food regime, the local scale is where its consequences are most concentrated and visible, taking the form of poverty, food insecurity, and diet-related health inequalities (Bedore, 2010; Morgan, 2015). The "local" is also the scale at which consumers and activists seek out and create more socially just and environmentally sustainable alternatives to the neoliberal food regime. These efforts are rooted in place-based geographical imaginaries that champion the local as a site of resistance to the global logic of capitalism. As I address in the next section, alternative food politics also reproduce false dichotomies between local–global and rural–urban. Furthermore, they simultaneously glorify the work of small farmers while ignoring (even masking) the work of those who perform the majority of food labor: farmworkers, foodservice, and food retail workers.

## 5 | THE AGRARIAN IMAGINARY IN THE CITY: FALLING INTO THE "LOCAL TRAP"

Proponents often frame efforts to localize food systems as the solution to the environmental and social problems of the global agrifood system. However, investigations of "alternative agro-food geographies" (Bedore, 2010) reveal a more complicated reality. Urban agriculture projects, for example, can be viewed as subverting the industrial food system by treating food as a public good and prioritizing equitable distribution over profit, while simultaneously subsidizing capital and filling in the gaps left by the rollback of the social safety net (McClintock, 2014). Further, urban agriculture projects come in a diverse array of organizational forms, including high-tech, capital intensive, for-profit ventures (Cohen & Reynolds, 2014); this suggests that their potential environmental and social benefits have less to do with *where* these projects are located (i.e., rural versus urban) and more to do with the economic form that they take (i.e., cooperative, non-profit, and for-profit). More broadly, promoting localization as inherently more ecologically sustainable and socially just conflates spatial relations with social relations (Born & Purcell, 2006; DuPuis &



Goodman, 2005). As urban gardeners and ethical foodies shape and are shaped by the city through their performance of “an idealized form of local life,” the scale of their action is mismatched with the regional and global restructuring that is largely responsible for spatial injustice (Pottinger, 2013; Stehlin & Tarr, 2016). These critiques of “unreflexive localism” (DuPuis & Goodman, 2005) or the “local trap” (Born & Purcell, 2006) parallel broader debates within critical geography around place-based political responses to globalization (Harris, 2010; Harvey, 1996; Massey, 1994).

With regard to labor, some scholars demonstrate how the social relations embedded in alternative food production diverge little from the status quo. Local production and community-supported agriculture, for example, do not necessarily secure the livelihoods of small farmers, who struggle with the increased labor and time demands of direct marketing as well as competition from industrial organics (Galt, 2013; Jarosz, 2008). Labor concerns are largely absent from organic standards, and agrarian rhetoric serves to defend individual farmers’ rights and naturalize the organic landscape “as if no work goes into its making except for the hard labor of the yeoman farmer and ‘nature’s work’ itself” (Guthman, 2014, p. 175). Moreover, as larger farms are pushed out by suburban development and smaller urban farms that meet the pastoral idyll crop up, “the agrarian landscape is moving from a ‘working’ landscape of production to one of esthetic consumption” (Jarosz, 2008, p. 238). And while consumers tend to acknowledge the connections between the social and ecological relations of local organic food and express reverence for the human labor required to produce it, they may not extend the same consideration to industrially produced food or paid farm labor (Alkon, 2013).

More broadly speaking, “unreflexive localism” romanticizes an idealized agrarian past that is in reality marked by exploitative, racist, and patriarchal land and labor relations (Alkon, 2012; Alkon & Agyeman, 2011; Carlisle, 2013; Gray, 2014; Guthman, 2011a, 2014). The production, distribution, and consumption of food is organized around race, and many communities of color have not only been stripped of their access to the means of producing food (Mitchell, 1996; Slocum, 2010; Slocum & Cadieux, 2015; Slocum & Saldanha, 2016) but are also exploited as food workers and disproportionately lack access to healthy food (Alkon & Agyeman, 2011; Liu & Apollon, 2011). Migrant farmworkers in the United States, for example, face high rates of poverty and food insecurity as well as unsafe working and living conditions (Holmes, 2013; Minkoff-Zern, 2012, 2014a, 2014b).

Scholars argue that in order to have truly sustainable food systems, food workers must be able to sustain themselves through living wages and healthy working conditions (Jaffee, 2012; Levkoe et al., 2016; Lo, 2014; Lo & Jacobson, 2011; Minkoff-Zern, 2017; Myers & Sbicca, 2015). However, a review of this scholarship reveals that the focus on labor in critical food studies is predominantly on agricultural work, with food systems labor often functioning as a synonym for farmwork or agricultural production. Privileging agricultural labor—both within alternative food movement discourse and the scholarship that critiques it—reinforces the “agrarian imaginary” and renders invisible the workers whom urban dwellers are most likely to come into contact with on a regular basis: the food retail and foodservice workers who stock, bag, prepare, and serve food (Hunt, 2016). A more holistic approach, with insight from UPE, would go far toward capturing this “missing middle” (Moragues-Faus & Marsden, 2017) and interrogating the exploitative relations and contradictions that underlie the entire food system, from the farm all the way to table.

## 6 | AN URBAN POLITICAL ECOLOGY OF AGRIFOOD FOR THE 21ST CENTURY

The changing landscape of agrifood labor, particularly the *urbanization* of food labor, calls for a less agrarian-centric approach to mapping the 21st century agrifood system. The labor of food production is not relegated solely to the farm nor does food cease being “nature” once it leaves the field. On the other hand, in order for UPE to avoid “methodological cityism” and resist reinforcing the very dichotomies it aims to problematize, it cannot ignore how the “rural” is intimately enrolled in food production and consumption in the city. To this end, agrarian political economy provides useful tools for understanding transformations in the labor process up and down the food supply chain. Through appropriationism and substitution, elements of agricultural production are transformed and replaced. The



development and use of growth hormones, synthetic fertilizers, pesticides, herbicides, and biotechnologies brings a host of new industries, geographies, and laborers into the fold. The production and consumption of highly processed foods, genetically modified organisms, and lab-grown meats attests to the shift of many farming activities away from the field and problematizes socially constructed notions of what does and does not constitute "food" and "nature" or "agriculture" and "industry."

These insights from agrarian political economy are critical to mapping the complexities of the global agrifood system and considering how labor and natural resources from the countryside are not only embodied in our food but also enrolled in processes of urbanization. When put in conversation with dialectical framings of social metabolism offered by UPE, we can conceptualize the rural and the urban, the global North and South, and agriculture and industry—not as separate geographies, but as mutually constituted. Moving beyond the classic "agrarian question" and instead grappling with a contemporary "global agrifood system question" enables us to better situate empirical work related to food production and consumption.

To this end, I offer three potential directions for future research. First, a fuller engagement with labor along the entire supply chain will generate a better understanding of the role of retail, processing, marketing, distribution, and foodservice sectors in shaping the global agrifood system. Second, a process-oriented approach to examining food production can better explicate the connections between the rural-urban and Global North-South and link the experiences of food chain workers to the global political economy. Third, building off of these first two directions, applying a dialectical lens can help conceptualize nature beyond the farm and overcome unproductive dualisms, including humans/nature, rural-urban, and Global North-South.

Existing scholarship that begins to do this work includes Deborah Barndt's (2004, 2008) ethnography of Mexican women working in the tomato supply chain in the United States, Mexico, and Canada. She demonstrates how these women engage in "multiple strategies for survival," including subsistence farming, primary caretaking, and wage work, and she identifies five dimensions of power that explain their divergent experiences: North/South asymmetries, socio-economic disparities, racialized and gendered divisions of labor, and age and family status. Seth Holmes's (2013) deep ethnography that quite literally traverses the U.S.-Mexican border reveals the struggles of migrant farmworkers who are navigating market forces, anti-immigrant sentiment, and the dangers of pesticide exposure. Lo and Jacobson's (2011) work exploring "human rights from field to fork" encourages workers to organize across the many boundaries that divide them: racial/ethnic lines, gender, immigration status, and different links in the food chain. Additionally, Myers and Sbicca (2015) investigate how alternative food organizations and labor unions are building alliances to fight for food justice and economic justice in big box retail.

UPE can build upon this work to offer a more holistic understanding of the global political economy of food by investigating how human labor transforms nature at each "link" in the food supply chain and how transformations in production processes, in turn, continually reshape labor and nature. Metabolism, in particular, helps us see how nature's labor (e.g., photosynthesis and fermentation) is harnessed by capitalists for the purpose of accumulation (Heynen, Kaika, & Swyngedouw, 2006) and by urban dwellers reclaiming a right to the city (Agyeman & McEntee, 2014; Eizenberg, 2012; McClintock, 2010, 2014; Sbicca, 2013; Shillington, 2013; Stehlin & Tarr, 2016). UPE asks, "who produces what kind of social-ecological configuration and for whom?" (Heynen et al., 2006, p. 2). Investigating these contours offers an opportunity to explore more radical and just possibilities for the production of our food system.

In 1997, David Goodman and Michael Watts proclaimed, "The sustainability of fundamental metabolic relations between nature-society is likely to become the predominant formulation of the 'agrarian question' in the new millennium" (p. 23). Applying a UPE lens to food systems enables us to take seriously the role of both agricultural and non-agricultural food labor as the fulcrum of a dialectical relationship between humans and nature, one that also overcomes "methodological cityism" by linking different nodes of production across space. A dialectical understanding sees the nature circulating in all types of human work. Nature is metabolized in the ketchup processing plants in Ohio. Nature circulates in the trucks and trains and planes that transport chickens from factory farms and slaughtering facilities in the U.S. south, to processing and packaging facilities in China, and then back to U.S. markets. Nature is

present on the supermarket shelves that simultaneously feature both “government” and “artisanal” cheeses. Nature is served in the farm-to-table and fast food restaurants where so many meals are consumed. Nature also circulates unevenly in the home kitchens where family meals are prepared and in the digestive systems where the metabolism of nature takes on a particularly intimate bodily relationship. Seeing nature in these places captures the myriad transformations, exchanges, and unequal social relations operating between the field and the final point of consumption and beyond. Applying a critical UPE lens to food systems reveals how the exploitation of humans and nature is intimately intertwined. Of course, this is true not only of food but also of the production of all commodities. A more holistic UPE analysis can help us see how the struggles of all workers are integral to building a more socially just and environmentally sustainable society.

## ENDNOTES

- <sup>1</sup> This political ecology literature draws heavily on agrarian political economy, which Galt argues the reason that the topic of food systems is underdeveloped relative to other themes in political ecology.
- <sup>2</sup> For example, Lucy Jarosz continues in this tradition and reveals food crisis to be a “predictable outcome” of a feedgrain-livestock complex that contributes to climate change and food insecurity and endangers and impoverishes workers around the world (Jarosz, 2009).
- <sup>3</sup> For more on the “right to urban metabolism,” which builds off of Lefebvre’s “right to the city,” see Shillington (2013) and Swyngedouw, Kaika, and Castro (2002).
- <sup>4</sup> Kautsky drew the distinction between “agriculture” and “industry” to highlight the uniqueness of agricultural production. However, this distinction has become less stark as the landscape of agricultural production becomes increasingly complicated and, some might argue, more “industrialized.”

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