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Placing food systems in first world political ecology: a review and research agenda

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Placing food systems in first world political ecology: a review and research agenda

Abstract

In this paper I review recent political ecological scholarship on first world agrifood systems and advocate for further development of the field. To do so, I first briefly examine the themes of first world political ecology and argue that first world political ecology of food systems is underdeveloped relative to other themes because of the existence of agrarian political economy, a strongly allied field. This requires interrogating and teasing apart the relationship between political ecology and agrarian political economy. I then turn to review the current “political ecology of first world food systems” literature, which is both in line with established political ecological contours — examining global-local connections, conservation and degradation, and the utility of ecological metrics — but also recently extending analysis to alternative food networks (AFNs) and to the body-consumption nexus. In the conclusion I outline an agenda for political ecological research praxis focused on: increased interdisciplinary work with biophysical and technical scientists; the spatial, social, economic margins; the “invisible middle” of the food industry and the “end” of the food system in human waste and the necessity of mending the metabolic rift; and the need for increased societal engagement by political ecologists.

Keywords: political ecology; first world; agrarian political economy/political economy of agriculture; food systems/agrifood systems

Introduction

The food system is “the set of activities and relationships that interact to determine what, how much, by what method and for whom food is produced and distributed” (OECD, 1981, cited in Whatmore 1996, 37) (Figure 1). It is comprised of “globalized networks of knowledge production, on- and off-farm technologies, production, consumption and regulatory systems” (Watts 2000, 15). Although industrialization has freed much of the population from providing labor to the food system, food production, processing, distribution, and marketing still comprise more than half of all human work (Pimbert, et al. 2001).

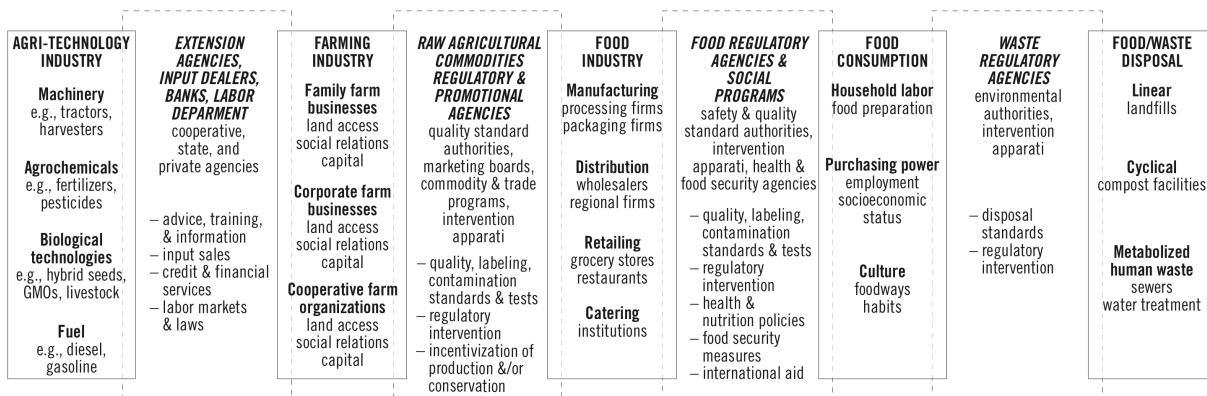


Figure 1: A schematic diagram of the contemporary, industrial agrifood system in the first world (inspired by Whatmore 1996, 40, Atkins and Bowler 2001, 11)

The food system faces serious problems, and society is paying more attention. For one, powerful actors — agricultural input firms, food industry firms, industrialized nations, and the World Trade Organization — have dramatically changed the world’s food system over the last few decades through neoliberal policies that benefit the global North and leave unchecked the ever-concentrating power of transnational corporations (McMichael 2009). Due to inequalities and poverty, a large percentage of the world’s people face hunger and food insecurity despite sufficient food production (Lappé, et al. 1998, Gliessman and Holt-Giménez 2012). The food system is also almost entirely dependent on non-renewable fossil fuels for agriculture, food processing, and trade (Pfeiffer 2006). Environmental problems stemming from food systems, including contributions to global warming, environmental contamination, and soil erosion, are increasingly important as we reach the likely limits of planetary ecological thresholds (Rockström, et al. 2009). Thus, a great deal rides on how we — scholars in geography and political ecology, as well as activists, policy-makers, and engaged citizens generally — engage with the food system.

In this paper I show how first world political ecology has, and has not, engaged with the food system as a research focus. Political ecology on first world food systems is small relative to other topics addressed by first world political ecology, despite its applicability (Eaton 2008). This

apparent gap leads me to interrogate the relationship between a political ecology of food systems and the field of agrarian political economy. I then review recent scholarship falling under the heading “political ecology of first world food systems,” and outline a research agenda that requires simultaneous attention to the workings of capital, rationalities and the makings of meaning, and ecological flows of materials and energy. Scholarship in this area is an opportunity to address severe problems in how humankind relates to the planet, and how we relate to one another.

First world political ecology

Following Blaikie and Brookfield (1987), Robbins (2004, 391) defines political ecology as “empirical, research-based explorations to explain linkages in the condition and change of social/environmental systems, with explicit consideration of relations of power.” Political ecology emphasizes that “[l]ess a problem of poor management, inappropriate technology, or overpopulation, environmental problems [are] *social* in origin and definition” (Watts and Peet 2004, 7, original emphasis). Many academic fields and theories shape political ecology, making it epistemologically and methodologically pluralistic. Geographers, anthropologists, sociologists, political scientists, heterodox economists, biologists, and ecologists contribute strongly. The field draws on peasant studies, political economy, feminist theory, common property theory, science and technology studies, poststructuralism, environmental history, actor-network theory, and nonequilibrium ecology. While some lament this heterodoxy (Blaikie 1999, Peterson 2000), political ecologists typically accept multiple roots and shoots rather than engaging in “intellectual deforestation” (Wolf 1990, 588, cited in Greenberg and Park 1994, 1).

Yet, most academics, including political ecologists, engage in “boundary work” by delimiting questions, methods, and areas inside the field from those outside (Gieryn 1983). The most relevant boundary work here is by Bryant and Bailey (1997), who cleaved off “third world political ecology,” setting conditions for the later emergence of “first world political ecology.” Although there are

important precedents (Wolf 1972, Sheridan 1995, Fortmann 1996), first world political ecological scholarship accelerated greatly in the early 2000s (McCarthy 2002, Heynen 2003, Robbins and Birkenholtz 2003, Walker 2003). As I see it, first world political ecology has four overlapping domains, for which I use illustrative, rather than comprehensive, citations:

- the politics of primary production, including fisheries and fishing communities (Mansfield 2004, St. Martin 2005, Dwyer and Minnegal 2006); forestry and forest conservation (London 1998, Kosek 2004, Correia 2005, Berglund 2006, Vernon 2007); cattle and rangeland (Rico 1998, Sayre 2002); alternative food networks and localism (Andreatta 2000, DuPuis and Block 2008, Eaton 2008); subsistence food cultures (Emery and Pierce 2005, Jarvenpa 2008); and conflicts over mining (Bridge 2000);
- struggles over protected areas and the commons, including wildlife conservation (Robbins and Luginbuhl 2005, Rikoon 2006); indigenous and local struggles over environmental control (McCarthy 2002, Hornborg 2005); and construction and contestation of the commons (McCarthy 2005);
- conflicts over the distribution and governance of environmental goods and harms, including rural land use conflicts around development and ecosystem services (Walker and Fortmann 2003, Robertson 2004, Darling 2005, Hiner 2012); multifunctionality and ecotourism (Hollander 2004, Che 2006); water conflicts and politics (Kaika 2003, Swyngedouw 2003, Prudham 2004, Smith 2004); and hazardous waste and environmental justice (Holifield 2004, Sze and London 2008); and
- analyses of most households' everyday lived environments and society-environment discourses, including the suburban lawn (Robbins 2007); urban and exurban political ecology (Heynen and Perkins 2005, Brownlow 2006, Cadieux 2008, McClintock 2011); and food consumption (Bryant and Goodman 2004, Guthman and DuPuis 2006).

Conspicuously, agriculture and food remain a fairly minor topic in first world political ecology literature, especially vis-à-vis third world political ecology.¹ Since food is both essential and increasingly politically heated in industrialized nations, and since about half of the world's cultivable land is in industrialized nations (Dudal 1982, cited in Blaikie and Brookfield 1987), first world political ecology's relative lack of engagement with agrifood systems appears curious.

Political economy of agriculture: similar crucibles, different places and trajectories

A compelling reason for the scarcity of research self-identifying as “political ecology” on first world agrifood systems is that political ecologists see similar work underway, but under a different name: the political economy of agriculture, also known as agrarian political economy. As Robbins (2002, 1509) notes,

First World political ecology might ... simply be a set of broadly defined existing research projects into the politics of natural resource management in urban environments and modern agriculture ... work on contemporary agriculture and rural land use ... has for many years taken a critical political economic stance in examining the transformation of First World farming systems.

While other authors (Ishii-Eiteman 2009, McMichael 2009) group political economy and political ecology vis-à-vis agrifood systems, following Atkins and Bowler (2001) and Moran (2010) I treat them as distinct. I do so because of their different histories and trajectories, even though they have substantial areas of overlap. I use Buttel's (2001, 165) definition of the political economy of agriculture (agrarian political economy), which includes “structural analysis of change in agri-food

¹ Google Scholar searches reveal the scarcity. In mid-2012, the phrase “political ecology of agriculture” appeared in two titles related to first world agriculture (Messer 1987, Zimmerer 2007). “Political ecology of food” appeared more frequently in relation to global and first world contexts (Friedmann 1999, Atkins and Bowler 2001, Pimbert, et al. 2001, Jarosz 2004, Jarvenpa 2008, Ishii-Eiteman 2009, McMichael 2009, Hayes-Conroy and Hayes-Conroy 2012). “Political ecology of agrifood” and its three other spellings appeared once (Pimbert, et al. 2001).

systems, and thus ignores certain topics of obvious importance to the sociology of agriculture and rural sociology/studies more generally (technological change, gender, nature/environment, agricultural communities/localities, and so on).”

The political economy of agriculture started in the late 1970s as part of the “new rural sociology” that sought to infuse a critical edge into rural sociology (Buttel, et al. 1990) because of a “widespread questioning of the social and technical bases of modern U.S. agriculture” because of problems such as soil erosion, rapid inflation of food prices, difficulties of migrant workers and family farmers, and agribusiness’s “antisocial tendencies” (Buttel 1983, 105). During the 1970s and 1980s, agrarian political economy addressed classical and neo-Marxian questions vis-à-vis the social relations of production, specifically: (1) the “agrarian question,” first posed by Kautsky, as to why smallholders persisted in the face of concentration of the means of production (Friedmann 1978, Mann and Dickinson 1978), including an emphasis on contingent structuring by political economic processes (Pudup and Watts 1987); (2) the class position of farmers as independent capitalists, simple commodity producers, or “propertied proletarians,” and class relations generally (Davis 1980, Mooney 1988); (3) agribusiness, especially the penetration of capital through backward and forward linkages to the farm via appropriation and substitution (Friedland, et al. 1981, Goodman, et al. 1987, Kloppenborg 1988); and (4) commodity systems analysis that focused on organizational and social characteristics in the production of specific commodities (Friedland 1984).

Four major themes emerged in agrarian political economy in the 1990s, strongly influenced by Friedmann and McMichael’s (1989) food regimes concept. Geographers and sociologists created anthologies on globalization of agribusiness and food industries (Bonanno 1994, McMichael 1994, Blanchetti-Revelli 1995, McMichael 1995, Goodman and Watts 1997) and continued with detailed

case studies.² Buttel (2001) noted that the approaches, which continue as current emphases in agrarian political economy, included: (1) world-systems and world-history analyses of agrifood systems aimed at connecting production systems, commodity chains, and state agrifood policies in the South and North (Friedland 2004, McMichael 2009), (2) global commodity chain/systems analysis using empirical studies of multinational firm structures and strategies (McMichael 1994, Clapp and Fuchs 2009), (3) studies that explore changing food system governance, including an emphasis on food quality, organic food, local and alternative food networks, certification, and labeling (Marsden, et al. 1999, Allen, et al. 2003, Goodman 2004, Guthman 2004, Rosin and Campbell 2009), and (4) analyses of agriculture informed by engagements with science and technology studies and actor-network theory (Whatmore and Thorne 1997, Warner 2007, Henke 2008). Most recently, food sovereignty has become a prominent organizing concept in agrarian political economy (Perfecto, et al. 2009, Martínez-Torres and Rosset 2010, Wittman, et al. 2010).

Agrarian political economy and political ecology share many features. Both are interdisciplinary, although their disciplinary compositions are slightly different; agrarian political economy is centered mostly in rural sociology with contributions from geography and anthropology, while the same mix, but centered more in geography, constitutes political ecology. The fields arose in similar crucibles of neo-Marxist thought seeking to displace less radical predecessors. In the 1990s, both fields experienced a lessening of theoretical coherence, in part due to the decline of neo-Marxism. Many theoretical and methodologies approaches and issues are shared: globalization and the interplay of global and local, homogenization/resistance, society-nature dualism, and actor network theory (Buttel 2001, 177). Many scholars contribute to both fields, including Susan Andreatta, Lucy Jarosz, Michael Watts, Julie Guthman, and myself.

² Buttel places other recent developments — the “Wageningen School” and rural studies’ “cultural turn” (e.g., Long 2008) — outside of agrarian political economy.

Yet three important distinctions remain as I see it. First, political ecology is considerably broader because of its vast topical expanse (noted above) and more extensive geographical coverage in its case studies (the spatial coverage has historically been the converse of agrarian political economy). The geographical focus of case studies in agrarian political economy has been on the US, Europe, Australia, and New Zealand, although in the 1990s it expanded to include the global agrifood system. Yet these global analyses typically are not rooted in specific places and informed by ethnographic fieldwork, the norm of political ecology where context-specific work is highly valued.

Second, the fields' engagements with poststructuralism are different. Agrarian political economy has avoided the most "depoliticizing forms of postmodernity" (Buttel 2001: 176). In contrast, political ecology in the 1990s and 2000s strongly embraced poststructuralism (Peet and Watts 1996) and its attention to discourse, power/knowledge, feminist theory, postcolonial theory, critical race studies, and social constructivism (Rocheleau, et al. 1996, Braun and Castree 1998, Castree and Braun 2001, Forsyth 2003, Kosek 2006, Wainwright 2008), although I should note that the commitment to poststructural perspectives varies greatly within political ecology, from largely structuralist reads following Harvey and Smith in which powerful structures produce discourses and subjectivities, to perspectives where the very category of "economy" is constituted and maintained through discourse along the lines of Gibson-Graham's work (e.g., St. Martin 2005). But political ecology's greater openness to poststructuralism means that the fields differ in their engagement with questions of ontology. Most political ecologists, following Smith (1984) and others, are resolutely opposed to the Western ontological binary of nature/society, with much theorizing to get beyond this problematic dichotomy. As Watts and Peet (2004) note, most political ecologists would likely call themselves critical realists, a philosophy which employs a "very inclusive, ... luxuriant" ontology or theory of what is (Collier 2005, 334). Agrarian political economists show less concern about ontological foundations, and, as Buttel did, shy away from social constructivism probably because it

is seen as politically debilitating.

Third, agrarian political economy has typically treated “nature” as an obstacle to the penetration of capitalist social relations in agriculture and a modifier of, or a barrier to, the accumulation of capital (Mann 1990, Boyd, et al. 2001).³ Most political ecology conceptualizes nature as having causal powers or “agency” that must be taken into account for better explanations of social and socio-ecological phenomena (Zimmerer 1996, Bassett and Koli Bi 2000, Robbins 2007, Galt 2010). For example, Grossman (1998) and I (Galt 2010) have critiqued agrarian political economy’s commodity chain analysis for not taking nature seriously enough, arguing that political ecology can better explain farmer decision-making and local environmental outcomes since it is more attentive to the interactions of local ecological conditions and farmers’ agency.

Given the existence, strengths, and very important contributions of agrarian political economy, what does a political ecology of agrifood systems look like? What would it add? Like agrarian political economy it would maintain political economy as a foundation, but simultaneously expand its theoretical lens in two directions to (1) interpretivism, by examining meanings, values, and rationalities, and (2) strategic positivism (cf. Wyly 2009) for analyses of ecological and socio-ecological relations. Thus, a first world political ecology of agrifood systems offers the potential for better analysis and action through paying simultaneous attention to the workings of capital, rationalities and the makings of meaning, and ecological flows of materials and energy (Figure 2). Inklings of this integration exist in the literature, which I review below, but the terra incognita of integration is much larger than what has thus far been done.

The political ecology of first world food systems: a review

In this section I review work that is attentive to political economy and prioritizes ecological

³ FitzSimmons (1989) and Kloppenburg (1988) provide more nuanced political economy accounts of nature in agriculture.

and/or human wellbeing in agrifood networks. More specifically, I include work that uses seminal political ecological scholarship in its argument and/or specifically identifies with political ecology. This differs from some political ecology reviews that examine work in cognate fields (e.g., Watts and Peet 2004, Elmhirst 2011), but the existence of agrarian political economy and the need for brevity cause me to bypass considerable work on agrifood systems that could fall under political ecology broadly construed, but whose authors do not identify the work with the field (e.g., Guthman 2004). This means that I leave out important developments in posthumanist research related to food (Roe 2006, Bennett 2010) and political ecology's intersections with actor network theory and science and technology studies (Whatmore 2002, Goldman, et al. 2011).

The literature reviewed below has followed common political ecological contours — connections between households and global processes, conservation and degradation, and use of ecological metrics — and has more recently used political ecology to examine alternative food networks and to the body-consumption nexus.

Households and livelihoods in the global agrifood system

One political ecological focus has been on the connections between farm household livelihoods, society-environment relations, and the global agrifood system. Many broad political ecological accounts of agriculture and food are quite focused in space and time, although they also cut across countries and continents (Stone and Downum 1999, Carney 2001, Butzer 2002, Hamilton 2003, Galt 2011). Here I focus on world-systems oriented accounts.

Friedmann (1999), a towering figure in agrarian political economy, provides an historical overview of the ecological relationships between households and agriculture over time and space, from domestication to colonization to commodification to industrialization to relocalization. For millennia, “the circles of growing and eating were contained by the lands on which human beings managed the dependent species which fed them The first stage in breaking the apparent

reciprocal dependence between the human species and local ecosystems ... began with colonial conquest and settlement 500 years ago” (Friedmann 1999, 39). Colonialism reconfigured households in relation to racial, gender, and generational hierarchies. She analyzes the contradictory results of these changes in the case of English high farming (ecologically sustainable but socially unsustainable) and settler farming in the “neo-Europes” (ecologically disastrous but socially sustainable). Friedmann’s ecology relies upon an equilibrium view of annual crop agriculture, thereby missing opportunities to engage with non-equilibrium ecology (Botkin 1990, Zimmerer 1994).

Pimbert et al. (2001) provide a more recent overview of the world’s agrifood system and argue for making it more environmentally sustainable, socially just, and democratic, a precursor to later calls for food sovereignty (Pimbert 2006). Through political ecology they combine a “food system perspective” to understand powerful actors within the agrifood system who wield considerable political-economic power and a “livelihoods perspective” focused on economic, ecological, and sociocultural assets, capabilities, and activities necessary to make a living. Striking a prevalent theme (Lappé, et al. 1998, Patel 2007), they note, “[t]he modern food system only meets the needs of a small group of farmers and multinational manufacturers and sellers of agricultural inputs, as well as food processors, distributors, retailers and certain groups of consumers” (Pimbert, et al. 2001, 3). The piece adds a helpful conceptualization, drawing on Reimer’s (1996) work, of diverging rural worlds created through different positions vis-à-vis global trade (Table 1). By increasingly sourcing food from new areas, trade liberalization subjects more farmers to cost-price squeezes through increased competition, forcing farmers to neglect conservation, use agrochemicals, and use shorter rotations and cultivate fewer crops or livestock breeds. Downward price pressure from liberalization is made worse by farmers increasing production to make up for lower prices, further decoupling the costs of production from market prices because of increased overproduction

(see also Cochrane 1979, Bell 2004). The answer is participatory research to address “the causes of economic marginalization” since this is “key to making the multifunctional role of agriculture a reality, and to rebuilding the resilience of agriculture and rural communities” (Pimbert, et al. 2001, 12).

Table 1: Characteristics of farm households in diverging rural worlds, global South and North

	Proportion of farms in category	Social relations of production	Position vis-à-vis global markets	Returns vis-à-vis capital	Connection to agrifood industry	State support	Likelihood of social reproduction
Rural World 1	small minority	capitalist corporate & family farms	globally competitive	capital accumulation	contracts, farmers as extension of food industry	strong, especially in North	very high
Rural World 2	minority	peasant/family farms, relying on off-farm work	shrinking in importance	declining returns	wholesale mostly increasing niche marketing in North	varies greatly across nations and world-system	high to low
Rural World 3	majority	fractured livelihoods, supported by diverse work strategies	redundant or not articulated, focus on survival	surplus extraction & self-exploitation	off-farm migrants become farm workers	minimum, fragile entitlements	very low

Source: paraphrased and modified from Pimbert et al. (2001: 7-8).

Conservation and degradation

Conservation and degradation in first world agriculture has generated a large social science literature, but relatively little from political ecology. Blaikie and Brookfield (1987) address the farmer, state, and land in the first world and note the special context: population and poverty as explanations of land degradation are not commonly advanced and the industrialization of agriculture is more widespread, creating greater food surpluses, decreases in farm labor, and increased productivity per unit labor input. They highlight soil conservation institutions in the US, the 1985 Farm Bill as “an important departure in the role of the state” (Blaikie and Brookfield 1987, 230) with more conservation provisions, and the structural changes in agriculture like concentration and vertical integration with contract farming, which means that food processing and marketing firms play a role in land-use decisions. They conclude that land degradation remains serious and

that farm subsidies tend to encourage poor management (see also Swanson 1993). Gillman (1996) follows these contours with his study of 10 counties in the US Midwest.

Messer's (1987) work on farmland degradation in Australia provides an example of political ecology's attention to the causal powers of nature. The failure of farmers, policy-makers, and professionals to understand "the nature and complexities of the land" is the "primary causal variable" leading to continued degradation (Messer 1987, 233). This includes a lack of integrated understanding due to single-discipline approaches, an overemphasis on technical solutions to degradation, and an agrarian ideology that allows land users and the state to ignore the land's ecological limits and the problems of small-scale farmers. Her analysis highlights security of tenure, the role of the state, integration into world markets, and the power of off-farm capital, and suggests the still-current need for empirical analysis to "differentiate between land degradation that has occurred as a result of the opportunity for capital gain and that due to income maintenance, or simply survival" (Messer 1987, 237).

With the separation of animal and crop production in the first world, degradation from industrial animal production looms large. Durrenberger and Thu (1997) focus on conflicts over pollution from industrial hog operations in Iowa and North Carolina, analyzing how various actors use science and powerful connections to amplify or dampen policy signals. With the goal of seeing how complex states act as part of complex ecological systems, they demonstrate connections among powerful players in the industrial swine industry, government, and the land grant universities in North Carolina and Iowa, and posit environmental changes in hog production as resulting from food industry changes along the lines of vertical integration, with new locations sought in areas where resistance to industrial animal production is lower. Although peoples' complaints "are an integral part of the environmental system," "rural residents who are affected cannot automatically affect the remedies" (Durrenberger and Thu 1997, 35).

Energetics of production and indicators of sustainability

A few political ecologists have engaged with studies of energetics, treating farms as input-output systems à la systems ecology. Bayliss-Smith (1982) provides a comparative political ecology of agriculture from non-industrialized to fully industrialized systems. His work combines energetic analysis from systems ecology (Pimentel and Pimentel 1979) and cultural ecology (Rappaport 1968) with attention to exploitation and agrarian change caused by capitalism and industrialization.

Although the book provides a number of important insights, one case shows that English farm workers produced five times the food energy consumed by their families, a vindication — via energy metrics — of exploitation. As Friedmann (1999, 43) notes, Bayliss-Smith “refuses to accept as useful the ‘abstract’ measure of gross energy productivity (total food energy, including fodder, divided by total population) — eight times higher than New Guinea labor — because of the unequal distribution of the product compared to egalitarian shifting cultivators.”

With more focus and detail, Moseley and Jordan (2001) continue with energetics to compare no-till and conventional tillage corn systems in Georgia. As a political ecologist-ecologist collaboration, the work contributes to discussions of sustainability metrics. Using agronomic plots to experiment with no-till versus conventional corn production and to test energy input/output analysis as a metric of sustainability, the authors find determining the more sustainable system depends upon the measurement used, as conventional till corn has a higher ratio of kernel calories to total energy subsidies (e.g., machinery, fuel, etc.), but no-till corn had a higher ratio of total aboveground biomass to total energy subsidies, which is the most important measurement for farmers because of higher returns. They conclude that energy input/output analysis “is appealing as an indicator of ecological sustainability because it is a whole ecosystem measure” (Moseley and Jordan 2001, 113). This kind of engagement is needed to question the bizarre divide often seen between critical analysis and quantification.

Alternative food networks

A considerable literature has followed the rapid expansion of alternative food networks (AFNs) in the last decade (Campbell, et al. 2011, Goodman, et al. 2012). Farmers' markets, community supported agriculture (CSA), food cooperatives, fair trade, and community gardens are meant to build closer links between production and consumption, and/or decreasing surplus extraction from the farm. Patricia Allen (2004, 141), an extremely influential figure in agrifood studies, has called for agrifood scholars to draw on political ecology "as a new epistemological approach for alternative agrofood movements and institutions." While academics have done some of this, the links between AFN practitioners and political ecology as an epistemology are tenuous.

Political ecologists have created detailed case studies of AFNs, focusing especially on production-consumption linkages. Andreatta (2000) explores the growth in organic agriculture, its regulation by certification agencies and the state, and the specificities of organic agriculture, marketing, and consumption in North Carolina. She creates a "political ecology of organic production" that elucidates the relations among farmers, local governments, policy makers, and markets at a variety of scales that support a more ecologically-oriented agriculture in North Carolina: "state and federal standards for certifying organic food, government decisions about the location and management of farmers' markets, tax codes affecting farm income, and the eligibility of growers for farm subsidies and emergency relief based on politically determined criteria" (Andreatta 2000, 48). Qazi and Selfa (2005) focus on the development of AFNs in Washington counties dominated by industrial agriculture and conservative ideologies. In these areas, AFN farmers face large challenges relative to those in urban and exurban regions that Qazi and Selfa (2005, 48) identify through a political ecology approach focused on the "producer-consumer nexus" and "on broader structural forces with an examination of regionally distinctive social histories, natural environment, and institutions, that helps to explain the local emergence of agro-food networks." They uncover

hostility toward organics because of the implication that conventional fruit is less healthy; “organics pose a threat to the values ascribed to conventionally grown, local produce as nutritious, healthy commodities produced by hard-working families who care about the land they farm” (Qazi and Selfa 2005, 57). Given specific discourses and circumstances, the rural consumer base in the area provides few opportunities for alternative agrifood networks. In a similar vein, DuPuis and Block (2008, 1989) show that “[d]ifferent localist politics create different political ecologies in part through different politics of scale.”

Turning to consumption in AFNs, Bryant and Goodman (2004) examine representational practices around fair trade and green “alternative consumption.” Taking political ecology to task for its poor understanding of consumption and a lack of attention to how everyday social processes in the North shape the South, they draw on a commodity cultures approach focused on commodification and the social-material life of commodities. Alternative commodities, in contrast to silent conventional commodities veiled by the commodity fetish (Harvey 1990), “veritably shout to consumers about the socionatural relations under which they were produced through carefully wrought images and texts” (Bryant and Goodman 2004, 348). Along with many others (Szasz 2007, Guthman 2011, Johnston and Szabo 2011), they critique the current neoliberal construction of consumption as the way to politically engage: “‘resistance’ itself is commodified insofar as protest over perceived environmental degradation or social injustice is expressed through the strategic manipulation of consumption practices and exchange relations” (Bryant and Goodman 2004, 345).

This stands in contrast to other political ecologists’ interpretations of AFNs, such as those claiming that they “aim to de-commodify food and agriculture” (Pimbert, et al. 2001, 19). Indeed, a great deal of theoretical work is needed to bring political economy and the community/diverse economy approach (e.g., Slocum 2007, Harris 2009) into dialogue around AFNs, as there are considerable tensions between them (compare, for example, Jarosz 2011, and, Galt in press).

Finding ways to make these tensions productive and spark off each other is an exciting challenge for future political ecology.

The consumption-body nexus

Recent work in food studies has focused on the relationship between cultural norms and identities, consumption, and bodies. While Guthman and DuPuis (2006, 438) note “political ecology has been astoundingly silent” on “eating and bodies,” anthropological political ecologists have been expanding the literature on eating, ranging from highly proletarianized consumers to those still engaging in subsistence production (Heyman 1994, Kawamura 2004, Heyman 2005, Wilk 2006, Jarvenpa 2008). For example, Jarvenpa (2008) provides, through food, an account of the intersection of dominant and subordinate (somewhat subsistence-oriented) societies in Canada and Finland (see also Emery and Pierce, 2005; Kawamura, 2004). By providing a typology of meals in different contexts and thick descriptions, he theorizes culture as a “fund of historical experience” and the means by which people negotiate contradictions between local ecology and external political economy. He concludes that continuous juxtaposition of subsistence foods with industrial foods “is a transcendent form of communication, a means of inserting the past into the narrower vision of the social present” and that subsistence foods are a “demonstration of ecological competence” (Jarvenpa, 2008: 20, 24).

In one of the first political ecological analyses to turn to the body (see also Hayes-Conroy and Hayes-Conroy 2012), DuPuis’s (2000, 132) political ecology of milk consumption explains how cows’ milk became a US staple. She shows the importance of religious promoters who deemed milk to be the perfect food, industry advertising, and cultural changes in women’s roles. Contra a political economy perspective (Goodman and Redclift 1991), it was not incorporation of women into the workforce that led to the increased use of purchased milk as a substitute for breastfeeding, since working-class mothers were the most likely to breast feed. Rather, urban, upper- and middle-class

women's feeding of cows' milk to their infants — in the face of known dangers of deadly diseases — emerged from cultural changes in Victorian times: (1) demands like visiting, entertaining, and furnishing and running a home separated women from their children because they were seen as incompatible with children's presence, (2) earlier networks of "helping out" eroded with the expansion of the romantic ideal of friendship, and (3) older children who were formerly apprenticed outside the home required greater time for in-house education and discipline. Thus, "[t]he cultural declaration by religious reformers that milk was a 'perfect food' and necessary for infants ... melded with the contradictions of the middle-class urban family to create a new food habit" (DuPuis 2000, 147).

Expanding their political ecological lens further, Guthman and DuPuis (2006) argue that adequately explaining obesity in the United States requires rejecting single-factor explanations. They employ an "ontological rapprochement" between literatures typically occupying specific sections of the food system: political economy (focused on food production and industry), cultural studies (focused on consumption), and politicized notions of nature from political ecology. Specifically, political ecology allows them to "maintain sensitivity to the social construction of obesity, to the political economy of obesity, and to the materiality of nature" (Guthman and DuPuis, 2006: 438). In an expanded analysis, Guthman (2011) employs a critical political ecology approach (cf. Forsyth 2003) with a healthy dose of science studies to problematize the "problem closure" that has occurred around obesity in the U.S., in terms of its common explanations, its "cures," and the consequences of these framings. The work forces a thorough rethinking of obesity by showing problems with how obesity is defined and measured, contradictory epidemiological evidence, and, finally, pointing in new directions, especially around epigenetics and the role of toxic environmental exposures in producing fat cells. Her concerns include the lack of attention to policy moves that would "undermine a food (and industrial) system that simultaneously brings hunger, danger, and

unremittingly undercompensated toil; ... the absence from public discussions of acknowledgement that our food system is part of a political economy that systematically produces inequality; ... the reluctance of much of the alternative-food movement to take on the big fights” (Guthman 2011, : 186).

Looking back as a whole at the reviewed work above, political ecology has been extended to first world agrifood systems on a variety of scales and topics. Recent work on AFNs and the body-consumption nexus usefully applies and expands political ecological theory, but many possibilities remain.

A research agenda for a political ecology of food systems

A large challenge ahead is creating a democratic, just, and ecologically sustainable agrifood system that provides sustenance for all humans and does not unduly take away from non-human communities and future generations. While both agrarian political economy and political ecology can and should contribute to these changes, I focus below on a research agenda for political ecology since that has been my focus.

Political ecology’s key insight is that transformations, first and foremost, requires rethinking and recreating social structures. As we face peak oil, the more ecological-oriented food systems replacing industrial food systems will be diversified, reliant on fewer fossil-fuel-based inputs, more efficient in nutrient cycling, more labor intensive, and need to be embedded in plural and just agrifood economies that meet food needs through various combinations of subsistence production, entitlement programs, gift economies, and market-oriented activities. Social movements must forge these new conditions, as they will not occur under self-regulating markets (cf. O’Connor 1993).

In relation to this challenge, I maintain that as a form of knowledge creation for praxis, a political ecology of agrifood systems provides a partial antidote for a tendency in the field of food studies to look inward toward food, rather than outward to larger context. In going forward, I think

political ecology should:

- maintain critical realism as a philosophical foundation given the materiality of agrifood systems, social inequalities, inadequate nutrition, and environmental exposures, and the space within critical realism for productive tensions between interpretivism, structuralism, and positivism. This means furthering political ecology's strength of drawing upon major philosophical traditions usually treated as separate by acting as a meeting ground between philosophies with different ontologies and epistemologies. By possessing knowledge of biophysical and social sciences, political ecologists can facilitate boundary crossing in a divided academy, thereby helping to join agroecology, food studies, and political economy to produce new insights and actions (Figure 2).

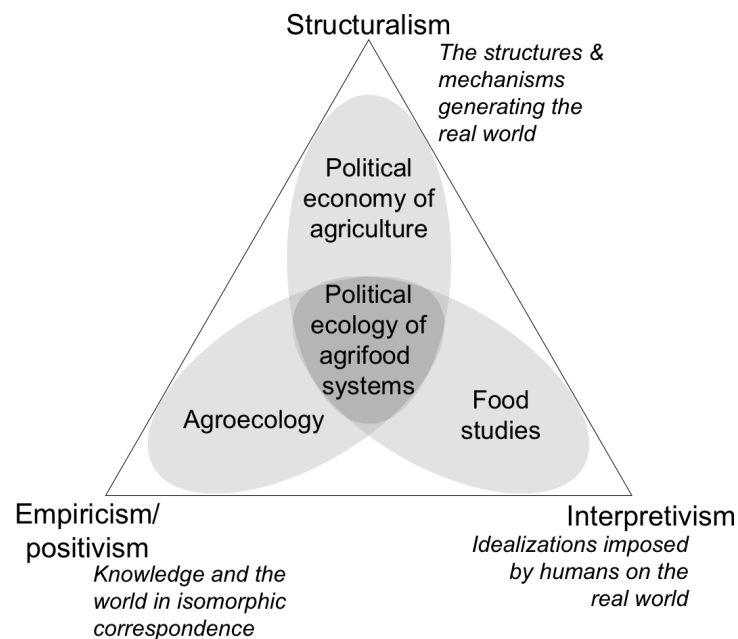


Figure 2: Three views of the relationship between ontology and epistemology to be productively brought together in a political ecology of food systems (inspired by Sheppard 2005, 11)

- be relentlessly reflexive about the effects of new knowledge production, and the position of the researcher to the research problem and subjects (Taylor 2005, 246).
- work toward socioecological configurations based on greater equality, non-exploitation, re-valuing the commons and public goods, and decreased material consumption in industrial economies by continuing to produce critique, and aiming more for positive visioning and creative projects by working with social movements (Rocheleau 2008).

Below I identify themes I consider important research areas for deepening political ecology's engagement with first world agrifood systems. The first three are topical, while the last addresses how we do political ecology.

Political agroecology

Agroecology, a rapidly growing field, was initially defined as “the science of applying ecological concepts and principles to the design and management of sustainable agroecosystems” (Gliessman 1998, 339). Francis et al. (2003, 100) argue for an extended definition — “the integrative study of the ecology of the entire food system, encompassing ecological, economic and social dimensions” — to which political ecology can greatly contribute. This will require “inveterate weavings” of transdisciplinary inquiry (Zimmerer and Bassett 2003) between political ecology and the biophysical sciences relevant to agriculture, creating a *political agroecology* (see also Gonzalez de Molina 2013). In working with biophysical scientists, political ecologists should incorporate a critical understanding of material and discursive social processes — capital accumulation, competition, marginalization, domination, identity formation, resistance, social movement action, etc.

One of the most promising areas for political agroecology is linking social phenomena — social units engaged in food systems processes, social relations of production and exchange, and

institutional arrangements — and environmental change at multiple scales (cf. Friedmann 1978, Galt 2010, Moore 2010). Many types of agro-environmental analysis can be conducted (López-Ridaura, et al. 2002, Giampietro 2004) and connected to political ecological analysis, but particularly needed engagements between agroecology and political ecology involve measurement the well-being of farms and the energy efficiency and greenhouse gas emissions from the food system, including its “conventional” side and AFNs. While the return of food energy (at the farm gate) to fossil fuel energy is about 2:1 in highly industrialized agricultural systems (Bayliss-Smith 1982), when expanded to the food system, the industrial food system’s ratio is 10:1 at the point of consumption (Giampietro and Pimentel 1995, cited in Pfeiffer 2006, 21). Declines in fossil fuels will likely create a heightened crisis of high food prices disproportionately affecting households already on the margin of adequate nutrition and plunging those below the margins into deeper crisis. The magnitude of the crisis will depend upon how quickly we can preemptively shift food systems to renewable energy systems, and create entitlements for households and individuals. In preparation for this shift, life cycle analysis (LCA) gives us tools through which to analyze energy returned on energy invested (e.g., Andersson and Ohlsson 1999) and environmental impacts, especially greenhouse gas emissions.

In these engagements, a valuable contribution from political ecology can be a critical understanding of sustainability to show that it is not just a technical problem with technical solutions, but also (1) a problem of social organization, since the main problem is *production pressure on resources*, created through pressures for accumulation and social mechanisms of surplus extraction, i.e., the quest to maximize short-term capital accumulation at the farm level and beyond (Blaikie and Brookfield 1987); and (2) a challenge of reorienting agrifood systems from domination and exploitation to values of respect and recognition of radical interdependence. Thus, justice and fairness toward all humans and non-humans involved in the agrifood system remains a necessary component of sustainability (Allen 1993), and political ecologists can be advocates for this view.

Reinvigorating the focus on the margins

Blaikie and Brookfield (1987) focused on the margins, combining concepts from ecology, social science, and economics. The margins, more appropriately called interstices, are necessary for resilience as they tend to harbor resources important for transformation (Galt, et al. 2013). I use “margins” metaphorically here to gesture to three topics. First, political ecologists should continue to engage in geographical analysis of alternative food networks, including production, consumption, disposal/cycling and all sections in between. A key question is for these often interstitial practices is: to what extent will AFNs be co-opted, or remain isolated islands in capitalism’s thrust to commodify and accumulate, or be propelled into the mainstream by success in reworking current food systems and access to productive and consumptive resources? Spaces and practices of non-capitalism/post-capitalism (Gibson-Graham 2006, 2006) — e.g., subsistence, barter and non-monetized trade, reciprocal relationships, gift economies, and cooperatives — offer potential monkey-wrenches for the gears of continued capital accumulation by the wealthy. The relationships between these community economies and urban and community food systems will require more political ecological analysis of a number of forms, including community garden allotments, dooryard/backyard gardens and subsistence production, foraging, and urban agriculture generally (McClintock 2010).

Socially, “the margins” can offer alternatives to the white, masculine agrarianism that dominates alternative food networks, especially in the US (Guthman 2008). These agrarian myths infuse the image of farming in the US with whiteness and maleness, as did the now-infamous Dodge Ram advertisement for the 2013 Superbowl, often erasing people of color and women *as farmers* from public consciousness (Carney 2001, Filan 2011, Carlisle 2013). A large number of other ethnic groups are important in agriculture as farmers and farmworkers, although many are ignored in popular accounts and have been subjected to institutional racism by institutions like the USDA (Gilbert, et al. 2002). These include black farmers in the South; Hmong and Mien farmers in

California and Minnesota; Punjabi farmers in California; Latino farmers and ranchers in the West; Chinese, Japanese, and Filipino farmworkers and farmers in California; and Mexicans and Central Americans farmworkers in much of the US. Political ecologists — together with other food justice scholars (Alkon and Agyeman 2011) — should be producing antiessentialist understandings of the intersections of identities and agrifood systems to help overcome racism, sexism, other forms of discrimination, and structural inequalities in food production and access (Carlisle 2013).

Economically, by focusing on the margins I mean increasing public scrutiny of the distribution of surplus value, including the processes of capital accumulation, surplus extraction, farmer self-exploitation, and farmworker exploitation. Political ecology has long argued that surplus extraction from producers is a primary reason why farmers' practices often undermine ecological integrity (Blaikie 1985), leading to the question: what is the relationship between curtailing surplus extraction and sustainable production? Unfettered profit maximization runs counter to sustainability, so surplus extraction by off-farm capital cannot be replaced by unmoderated capital accumulation at the farm level. Sustainability, then, requires not just the *absence* of surplus extraction from farms, but also a commitment to ecologically sensitive techniques and practices, and off-farm support for these. In other words, once external surplus extraction is overcome, we need structures that allow for a land ethic to prevail over capital accumulation, while still allowing for enough income for farmers and farmworkers — this is not an easy balance (Galt in press). With market integration, structures must be created to avoid surplus extraction and to facilitate a land ethic praxis, and not just among farmers who already have a strong environmental ethic.

The invisible middle and the ignored other “end”

Production and consumption have received scholarly attention from the political economy of agriculture, food studies, and political ecology. The food industry, including food processing, distribution, and retail (Figure 1), has received little empirical attention from political ecologists and

food scholars generally (but see Fischer and Benson 2006, Morgan, et al. 2006, Striffler 2007). Although attention to the global food system, global food industry firms, and commodity chain analysis are common, analysis rarely focuses on produce buyers, food processors, retailers or distributors as social units for which explaining inner workings, leverage points, and variation is the core analytical task. Doing so requires focusing on these often secretive firms and can be enhanced by coupling political economy with (1) biophysical science techniques to understand ecological impacts at all sections of the food system, and (2) more culturally-oriented approaches that allow us to understand managers, workers, and agency throughout the food system.

What happens *after* consumption — i.e., excrement (Jewitt 2011) — also remains underexamined. The flow of materials and energy is not a linear chain (contra Figure 1), and the human body is not a final destination. Humans are enmeshed in ecological food webs; one organism's waste is the food of another. Political ecologies of human waste regulations, composting toilets, night soil, and sewage sludge beg for attention. With coming scarcities of synthetic nitrogen with peak oil and peak phosphorous from depleted rock mining supplies (Cordell, et al. 2009), these nutrients loops must be closed within a matter of decades — a major feat, but one not yet on the popular radar. Thus, political ecology must draw attention to this metabolic rift (Foster 1999) and help mend it.

Engagement

Walker (2006, 393) notes that despite professed interest, “the actual engagement of political ecology with fields of research and public debate outside the academy has been limited.” Although many political ecologists are quite engaged, many of us look primarily inward to the academy. Walker implores us to become better storytellers, but we also need to overcome our propensity in the academy to only call for more and novel research, when we commonly have practically adequate understandings of causal relationships that show the need for structural changes in line with

commonly held values. For example, Sen (1983) and Lappé et al. (1998) are still correct about entitlements, economic rights, and civil society, and that what stands in the way of feeding everyone is largely an ideology of the undeserving poor and assumed absolute (rather than constructed) scarcity. Scholarly praxis — through policy and/or advocacy (e.g., Iles and Marsh 2012), work with communities, social movements, and/or popular education (e.g., Heyman 2010), etc. — in this and other realms can remake political ecology into a field that examines *and makes very public* the power struggles around the socio-ecological conditions of human existence, including food.

The food price spikes witnessed in 2008 and the riots resulting from vast structural inequalities (Holt-Giménez 2011) are a glimpse into one possible future. We will see more food shocks in the near future unless we seriously confront the functioning of food markets (including financial sector speculation) and simultaneously reduce the agrifood systems' fossil fuel dependence, address climate change, reduce social inequalities, and make market society more just and ecological (Patel 2010). Unless the coming crisis is severe with radical revolutions overthrowing established structures of power and ownership, privileged consumers will still be eating, including most of the readers of this journal. We cannot say the same for hundreds of millions of the world's other citizens who have lost access to land and the means of production in our "planet of slums" (Davis 2006). As engaged scholars, political ecologists can and should work to remake the agrifood system to align it with shared human values. While we do it, we need to learn with and from each other and from those on the front lines of food system and social change.

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