

# Do locavores have a dilemma? Economic discourse and the local food critique

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**Abstract** Local food critics have recently argued that locavores, unaware of economic laws and principles, are ironically promoting a future characterized by less food security and more environmental destruction. In this paper, we critically examine the ways in which mainstream economics discourse is employed in arguments to undermine the proclaimed benefits of local food. We focus on several core concepts in economics—comparative advantage, scale, trade and efficiency—and show how they have been used to challenge claims about local food’s benefits in the areas of economy, environment, food security, and food quality. After reviewing the arguments, we then evaluate some shortcomings that emerge from this reliance on economic logic and, importantly, we assess what local food proponents may take away from these critiques. We conclude by identifying several pathways for future research.

**Keywords** Local food · Sustainability · Locavores · Economic critique · Local economy · Food security

## Abbreviation

CASTE Comparative advantage, scale, trade and efficiency

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## Introduction

Do locavores have a dilemma? An increasing number of economics-minded local food critics claim that they do. The dilemma—discussed in popular sources like Desrochers and Shimizu’s (2012) *The Locavore’s Dilemma: In Praise of the 10,000-mile Diet*, Lowry’s (2010) “The Locavore’s Dilemma: One Critic’s Take,” and Glaeser’s (2011) “The Locavore’s Dilemma: Urban Farms Do More Harm than Good to the Environment”—can be summarized as follows: diverse agriculture from small farms produced close to where it is eaten conflicts with the goal of feeding more people better food in an ecologically sustainable way. These critics argue that well-meaning locavores, unaware of economic laws and principles, are unknowingly promoting a future characterized by less food security and greater environmental destruction. These claims are certainly provocative, but does such a dilemma actually exist? On what basis are such arguments made? And should local food proponents pay attention?

In this paper, we respond to these questions by critically examining how the mainstream economics discourse is employed to undermine the proclaimed benefits of local food. In particular, we focus on several concepts that do a lot of work in economics—comparative advantage, scale, trade and efficiency (CASTE)—to show how they form the basis for local food critiques. Because the assumptions underpinning this discourse are frequently presumed to be universally held and/or value-neutral, they are often obscured in economics writing, making it difficult for non-economists to engage productively in these debates. We argue that understanding the terms of such debates is strategically useful, given the force of mainstream economic logic in policy making and the pervasiveness of economics discourse in society more broadly. By showing

how this discourse is used to critique local food, we hope to empower readers to make more informed judgments about the challenges these arguments present to improving the food system, acknowledging that these judgments will vary across readers. As economists committed to a more just and sustainable food system, we have our own ideas about what local food proponents can take from these critiques, which we discuss along with implications for future research at the end of the paper.

To illustrate how the discourse of mainstream economics is applied to the topic of local food, we provide specific examples from several recent popular sources, including Desrochers and Shimizu (2012), Glaeser (2011), Lowry (2010), as well as titles like McWilliams' (2009) *Just Food: Where Locavores Get It Wrong and How We Can Truly Eat Responsibly*, Sexton's (2011) "The Inefficiency of Local Food," and Budiansky's (2010) "Math Lessons for Locavores." Given the focus on popular sources, it is reasonable to ask whether we are setting up an anti-locavore straw man while ignoring academic literature on the subject that is different from or more sophisticated than the sources we review. In fact, our process for choosing these sources began with an extensive search of peer-reviewed economics literature on local food, which includes consumer willingness to pay studies (cf. Carpio and Isengildina-Massa 2009), research on the socio-demographic characteristics of local food consumers (cf. Allen 2010), as well as value chain case studies (cf. Bloom and Hinrichs 2011), but lacks explicit comparisons of the multidimensional benefits and costs of local food versus conventional food. In the process, we became aware of a body of popular literature that made these comparisons, of which Desrochers and Shimizu (2012) is probably the most systematic, arguing that local food is generally not worth its cost. Most of the literature we reviewed was written by academics, and if local food becomes a trendier topic in academic economics journals, as it has in some other disciplines, the CASTE concepts and economic logic reviewed here would almost certainly form the basis of the analyses.

The critics we examine in this paper are not the only voices calling for a more careful look at the potential shortcomings of local food movements. One important line of local food critique relates to what Constance (2009, p. 9) calls "the emancipatory question" in agriculture: "what kind of agrifood system might decrease injustice and inequality?" This question has motivated researchers to question the extent to which the promotion of local food, without more systemic political interventions, can address inequitable access to food and participation in food system decisions along the lines of race, class and gender (cf. Hinrichs 2003; Guthman 2008; Allen 2010; DeLind 2011). The authors who have contributed to this debate have

cautioned local food proponents about the paternalism of interventions and the efficacy of consuming our way to a better world. The line of critique we introduce here is less concerned with the emancipatory question than what might be called the "efficiency question," whether the net benefits of locally produced food outweigh those of food produced in the global food system. The focus on efficiency (making the pie bigger) rather than distribution (dividing up the pie fairly) reflects differences in values and framing alluded to above, but we suggest that it is useful to consider both these lines of critique.

The "efficiency question" also guided our focus and organization of this paper. That is, how do the critics argue that the costs of local food outweigh the benefits? It is worth noting here that the benefits and costs that enter the efficiency equation need not be monetary; according to economic theory, increasing food security is a legitimate benefit just as pollution is a legitimate cost. We organized our discussion of the critics into four areas—economy, environment, food security and food quality—since most of the benefits articulated by local food activists and writers, extension services and "buy local" campaigns fall into one of these areas. We also found that critics tended to address one or more of these categories, to undermine the claims about benefits made by local food activists and argue that the costs are higher than they realize. There are certainly other arguments for local food, such as the benefits of knowing where food comes from, strengthening community and gaining a better sense of time and place (cf. Thompson 2010), but these were not addressed as consistently by critics and so were not included here.

The rest of the paper is organized as follows. The second section provides a brief overview of the CASTE concepts, including their origins in the history of economic thought as well as their presentation in economics textbooks today. The third section, which comprises the bulk of the paper, shows how critics use the CASTE concepts to undermine four claims made by local food proponents: (1) local food is good for the local economy; (2) local food is more environmentally sustainable; (3) local food will lead to greater food security; and (4) local food is safer, fresher, and more nutritious. In the fourth section, we discuss several shortcomings that emerge when these arguments are viewed together, and the final section suggests several lessons for locavores and areas for future research.

### **Background: thinking like an economist and the CASTE concepts**

In 1991, the American Economics Association's Committee on Economic Education agreed—based on a survey of faculty at 127 colleges and universities—that the

overarching goal of the economics major is to train students to “think like an economist” (Siegfried et al. 1991, p. 21). Thinking like an economist involves “evaluating tradeoffs in the context of constraints” and using “deductive reasoning in conjunction with simplified models,” but the overarching goal is always efficiency, which students learn is best increased through competition and trade. Though there are several technical definitions of efficiency in economic theory, it can be broadly defined as the use of resources that maximizes the production of goods and services. According to the 1991 Committee report, “...thinking like an economist involves examining many problems through a filter of efficiency—coping with limited resources” (Siegfried et al. 1991, p. 21). Since additional goods and services always increase well-being in economics’ utilitarian view, greater efficiency therefore leads to greater social welfare. Trade, in turn, increases efficiency because of assumptions about the existence of comparative advantage and economies of scale. Though more than two decades have passed since the 1991 report was written, a recent research article updating this survey found that economics “courses and textbooks today are far more similar to what they were in 1991 than they are different” (Bosshardt et al. 2013, p. 646), providing evidence that the main concepts have changed little. In this section, we will very briefly review the meaning and history of these concepts, to underline their importance in economic thinking and provide context for our analysis.

When challenged by a mathematician to name one proposition in all of the social sciences that was both true and non-trivial, comparative advantage was economist Paul Samuelson’s (1969, p. 9) response: “That it is logically true need not be argued before a mathematician; that it is not trivial is attested to by the thousands of important and intelligent men who have never been able to grasp the doctrine for themselves or to believe it after it was explained to them.” Comparative advantage is defined in economics textbooks as the ability to produce a good at a lower opportunity cost than another producer. Opportunity cost is whatever must be given up to obtain some item; this is likely the part of the definition that makes comparative advantage difficult to grasp and inspires the inevitable illustrative (and hypothetical) example. The famous example used by David Ricardo, credited with formalizing the concept of comparative advantage in *The Principles of Political Economy and Taxation* in 1817, involved Portugal and England as producers of cloth and wine. Even though Portugal could produce both cloth and wine with less labor than England (i.e., it had absolute advantage in the production of both goods), Portugal had to give up more barrels of wine than England to make an additional bolt of cloth (i.e., Portugal’s opportunity cost of cloth was higher), so total wine and cloth production and consumption would

be maximized if each country specialized and traded (Ricardo 1973 [1817], pp. 77–93). Thus, the assumption that comparative advantage exists leads directly to the conclusion that producers should specialize and trade, an idea that Adam Smith naturalized in the *Wealth of Nations* (1982 [1776]) when he asserted that “the propensity to truck, barter and exchange one thing for another” is “common to all men” (pp. 117–118) and noted that this propensity “gives occasion to the division of labor” (p. 119).

Ricardian comparative advantage has been the basis for economic trade theory for 200 years, though with adjustments and critiques. Swedish economist Eli Heckscher (1919) and his student Bertil Ohlin (1933) postulated that comparative advantage between countries is based in different relative factor endowments (land, labor and capital), rather than differential labor productivity, as in Ricardo’s theory, so countries should have comparative advantage in goods that require factors of production that are locally abundant. For example, a country in which land is abundant but labor is scarce will have comparative advantage in land-intensive goods, like corn, and will tend to import more labor-intensive goods, like electronics. The Heckscher–Ohlin theory became the mainstream theory of trade after World War II and is still taught to economics students.

In the late 1970s, evidence contradicting the theory that relative factor endowments are the main sources of comparative advantage, and especially the observation that similar countries often traded with one another, led economists to develop alternative theories of trade focusing more on economies of scale. Economies of scale, or increasing returns to scale, exist when an increase in inputs leads to a more-than-proportional increase in output, and they often arise due to the indivisibility of factor inputs. A tractor, for example, cannot be scaled up and down in proportion to the output desired, and a certain scale is required for efficiency to be achieved. Paul Krugman won the Nobel Memorial Prize in economics for his work on what is called New Trade Theory, in which both economies of scale and comparative advantage are used to explain—and justify—trade (cf. Krugman 1980).

Though we have presented a necessarily simplified version of how the CASTE concepts have evolved in economic theory, the main idea is this: economists assert that comparative advantage and economies of scale justify trade, which in turn increases efficiency, or the ability to produce more goods with fewer resources. The early appearance of the CASTE concepts in most economics textbooks affirms that they are key to “thinking like an economist” and important components of the economic discourse (cf. Mankiw 2014; McConnell et al. 2014). In the next section, we provide examples of how some economists invoke these concepts to question the benefits of local

food production and argue, instead, for the merits of long-distance trade.

### How CASTE concepts are invoked in economic arguments against local food

#### Economy

Many people buy local food to support the local economy. A 2012 poll, for example, found that 66 % of those surveyed welcomed the increased availability of local food because it “helps local economies” (Rushing and Ruehle 2013, p. 3), and Michigan State University Extension notes that “money that is spent with local farmers and growers all stays close to home and is reinvested with businesses and services in your community” (Klavinski 2013). The economic argument relies on the multiplier effect: an additional dollar spent on local food will be spent by the farmer receiving the dollar on other goods and services in the local economy, creating a virtuous circle of local economic wealth and jobs. Yet despite the indisputable existence of the multiplier effect, critics of the local food movement argue that buying local “is, at its logical limit, a prescription for poverty and starvation,” due to the presumed failure of geographically limited value chains to use resources efficiently (Carden 2008). Economist Carden (2008) uses an extended hypothetical example to illustrate the potential consequences of producing spinach locally in an area lacking comparative advantage in spinach production:

...the cultivation of spinach in Memphis will require more fertilizer, more rakes, more tillers, and more hoes than the cultivation of spinach in California. Producing these implements will (again) require resources, which will require specialization and trade. We could push the problem back a step and say that we should only use locally produced implements, but we can only regress so far before we run into an obvious problem of definition (how “local” is “local”?), resource constraints (different regions have different natural endowments), and widespread destruction (denuded forests and gouged lands as people assemble locally produced stone tools for cultivation) (n.p.).

Thus, Carden argues resources will be used more efficiently and more wealth will be created overall through exploiting comparative advantage and trade, outweighing any benefits from a virtuous circle of local spending.

Price, as economist Landsberg (2010) explains, reflects the opportunity costs of producing a product, allowing consumers to easily make welfare-maximizing choices if they just choose the lower priced products:

How can we possibly gather enough information to compare the opportunity costs of land, fertilizers, equipment, workers, transportation and energy costs (among many others) and reach a conclusion about which tomato imposes the fewest costs on our neighbors?...Well, it turns out there’s actually a way to do that. You do it by looking at a single number that does an excellent job of reflecting all those costs. That number is known as the price of the tomato (n.p.).

The higher price of a local tomato, according to Landsberg, gives us valuable information: it signals that it is grown at a higher opportunity cost than the lower-priced tomato from afar. The lower-priced faraway tomato has lower opportunity costs ostensibly due to the region’s comparative advantage in tomato growing. Comparative advantage—which, in agriculture, may well arise from climate, soil, labor, and other factors of production, as the Heckscher–Ohlin model suggests—implies that regions should specialize in certain crops and trade.

In the literature we reviewed, agricultural specialization is generally equated with monocultures, which Desrochers and Shimizu (2012) claim are superior to polycultures, as evidenced by their increasing prevalence over time. (Identifying changes over time with progress is common in this literature.). These authors further claim that monocultures are not driven by subsidies, writing that “large-scale monocultures long predate modern subsidies,” pointing to the “grain and olive-oil trade of Mediterranean antiquity” (p. 64). Without trade, the economic advantages attributed to comparative advantage and specialization could not be realized, a point Desrochers and Shimizu (2012) illustrate by describing nineteenth-century Rochester apple growers dumping apples into a river during bumper crop years, apparently lacking the infrastructure for long-distance trade (p. 68). The development of rail in the U.S. and Europe facilitated access to long-distance markets and enabled farmers to sell their crops. While farmers received higher prices thanks to the larger market, local consumers had access to a wider variety of products and could enjoy different foods year-round.

Critics of local food systems also note the importance of economies of scale in both agriculture and food processing. Agricultural economist Sexton (2009) reminds us that, thanks to technological advances that facilitated economies of scale, “agricultural productivity in the United States grew at an average 1.9 % per year from 1948 to 1998, exceeding the rate of growth in the U.S. manufacturing sector” while “50 million acres of land were released from farming in the United States over the last half-century, and the percentage of the national workforce employed in agriculture fell from 16 % to less than 2 %” (p. 5). Desrochers and Shimizu

(2012, p. 72) contend that scale is important for the efficiency of processing and manufacturing, claiming that large-scale slaughter outcompeted the small-scale butchers in the nineteenth century by taking advantage of economies of scale. If enough cows were processed for meat at the same time, the waste could be turned into other products such as glue and lamp oil, creating more wealth for the economy. Meat was sold at a lower price and higher profits were made, generating more wealth in the community. Again, the previous examples are all used to support the claim that the benefits to local communities of CASTE outweigh any multiplier effect from local food.

### Environment

Environmental sustainability is another benefit of local food frequently cited by supporters. After the Leopold Center released a report indicating that conventional food traveled on average 1500 miles from producer to consumer (Pirog and Benjamin 2003), the concept of food miles and the 1500 miles statistic became ubiquitous in critiques of the industrialized food system, even as more sophisticated analyses shed light on the oversimplification of this number (cf. Born and Purcell 2006). Not surprisingly, the authors we reviewed argue that comparative advantage and economies of scale create environmental benefits that outweigh the environmental costs of trade. McWilliams (2009) writes that the food miles concept is “a bit player in the larger drama” (p. 18), an observation seemingly confirmed in a Carnegie Mellon study finding that transport from producer to retailer accounts for only 4 % of carbon emissions embodied in food in the U.S. (Weber and Matthews 2008).

After establishing that food miles are poor signals of the environmental impact of food production, critics remind us that production is what matters most, and this is where the CASTE concepts come in. Given comparative advantage, some regions can produce certain types of food using less energy, land, water and chemical inputs than others, which implies that regions should specialize and trade. One study frequently invoked in support of this argument found that growing tomatoes in the UK resulted in three times the greenhouse gas emissions associated with importing them from Spain, since the extra energy and fertilizer required to grow tomatoes in greenhouses overwhelmed the emissions savings from reduced transport (Smith et al. 2005). Sexton (2009) estimates that returning to “a locavore-like production system”—in which each U.S. state produces corn, soy and dairy in proportion to its share of the population—would require 60 million more acres of cropland, 2.7 million tons more fertilizer and 50 million pounds more chemicals to satisfy current consumption levels due to forsaken gains from comparative advantage.

In addition to greenhouse gases and land, water is another resource that critics claim will be saved through trade. Cowen (2012) argues that locavores are misguided because “some parts of the world are running out of water and that trade of food—often long-distance trade—is the best or indeed the only real answer to that problem. Very often, trading across a distance solves more environmental problems than it creates” (p. 158). As an example, Cowen points to how the Saudi wheat growing experiment in the 1980s wasted “six years’ flow of the Nile River into Egypt” (p. 157). McWilliams (2009) points out that water-scarce cities like Tucson and Las Vegas would only be able to develop a local food system “through costly and environmentally damaging irrigation projects” (p. 43).

Growing food in places that have comparative advantage is a theme picked up by economist Glaeser (2011) in his critique of urban farming. According to his calculations, urban population densities would be halved if just 7 % of existing agricultural land were reallocated to metropolitan areas in the U.S., resulting in an extra 1.77 tons of carbon dioxide emissions per year, due to increases in driving. To provide context for that number, Glaeser notes that these additional emissions would represent “1.77 times the greenhouse gases produced by all food transportation and almost four and a half times the carbon emissions associated with food delivery” (n.p.).

The economies of scale concept is employed by local food critics to question the environmental benefits of farmers markets and community-supported agriculture schemes, given that they often require both producers and consumers to make additional vehicle trips. In a 2009 *Mother Jones* article titled “Spoiled: Organic and Local Is So 2008,” Paul Roberts writes: “Because the typical farmers market is supplied by dozens of different farms, each transporting its crops in a separate van or truck, a 20-pound shopping basket of locally grown produce might actually represent a larger carbon footprint than the same volume of produce purchased at a chain retailer, which gets its produce en masse, via large trucks” (n.p.). Similarly, well-meaning consumers making multiple trips to and from farms to buy food may use more gas and create more greenhouse gas emissions than superstore shoppers of global food. Coley et al. (2009), in a UK study, even found that it was possible to reduce emissions if a system of food hubs and home delivery replaced individual trips to farm shops, unless the consumer drives less than 6.7 km round trip.

### Food security

Local food advocates argue that shorter food supply chains and local agricultural diversification will increase food security by making communities less dependent on

uncertain and increasingly costly food imports, in the face of increasing political and climatic turmoil. Critics disagree, arguing that exploiting a region's comparative advantage in food production through specialization, and taking advantage of economies of scale, will result in the production of the most food using the least resources. As Sexton (2011) explains, "A local food system would raise the cost of food by constraining the efficient allocation of resources. The monetary costs of increased input demands from forsaken gains from trade and scale economies will directly bear on consumer welfare by increasing the costs of food" (n.p.). To motivate the importance of increasing efficiency of food production, the authors we reviewed are quick to remind readers that we will need to feed an additional two billion people in the next 40 years.

As evidence that food grown on small, diverse farms and traded locally is likely to hinder food security, the critics commonly referenced societies removed in time or space from the current "developed" world. Paarlberg (2010) warns the reader that a movement toward "organic, local, and slow," if pushed to its logical conclusion, will lead to widespread hunger:

Influential food writers, advocates, and celebrity restaurant owners are repeating the mantra that "sustainable food" in the future must be organic, local, and slow. But guess what: Rural Africa already has such a system, and it doesn't work. Few small-holder farmers in Africa use any synthetic chemicals, so their food is de facto organic. High transportation costs force them to purchase and sell almost all of their food locally. And food preparation is painfully slow. The result is nothing to celebrate: average income levels of only \$1 a day and a one-in-three chance of being malnourished (n.p.).

Sexton (2009) points to historically lower levels of agricultural productivity as evidence that trade and economies of scale have been correlated with greater food security:

Locavores presume that we can return to a historical form of agriculture without also returning to historical farm yields. The average farmer produced 13 bushels of wheat per acre in 1930 and 20 bushels of corn. In contrast, today's farms...are able to produce an average 44 bushels of wheat and 164.2 bushels of corn per acre. While it is surely true that a small, diverse farm today can improve upon the yields of the early to mid-20th century...it is certainly also true that high yields today reflect modern agriculture's exploitation of two basic principles of economic efficiency that the locavores either ignore or discount: comparative advantage and economies of scale (n.p.).

While acknowledging that his historical analogy might not be perfect, Sexton nonetheless argues that local food advocates fail to appreciate the importance of the CASTE concepts for food security.

Other authors argue that reduced international trade in food will make African countries even less food secure than they currently are, by reversing gains made by agricultural exporting in those countries. Using economic modeling software, economists Ballingall and Winchester (2010) attempt to forecast the welfare impacts of a shift in preferences in the UK, France and Germany toward lower food miles and find that the "largest losers from declining demand for imported food, in a relative sense, include Sub-Saharan African nations, such as Malawi and Madagascar, and New Zealand" (p. 1216).

These critics further argue that specialization and trade will become even more important to food security in a world characterized by environmental change. The authors of a white paper on the causes and policy implications of the 2007–2008 food price spikes, commissioned by the UK government, summarize this position well:

The case for trade liberalization is reinforced by the prospect of climate change. Trade helps mitigate geographic-specific risks, so that if there is a constraint on supply in one region...alternative suppliers can fill the gap. In short, international trade is a key underpinning of food security at all levels (Global Food Markets Group 2010, p. 14).

Roberts (2009) notes that Asia and Africa, in particular, will increasingly depend on trade with fertile regions such as the American Midwest to generate surplus food because they are rapidly overdrawing water tables and soil. Desrochers and Shimizu (2012), likewise, argue that reliance on local, small-scale polycultures comes at the cost of geographic diversification and therefore increases risk: "...despite their fondness for diversity in all its forms, locavores are oblivious to the fact that their prescription mandates that a community puts all of its agricultural eggs into one geographical basket while monoculture regions can rely on a broad range of distant suppliers in troubled times" (p. 115).

Specialization and economies of scale are also credited with facilitating increased productivity and efficiency in food production in less direct ways. As DeGregori (2003) writes, "Monoculture today is in fact not only consistent with an incredible diversity of means for crop protection, it is the *sine qua non* for them, because it is not possible to have such resources for all the less widely planted crops" (n.p.). The authors we reviewed note that the surplus wealth made available by agricultural specialization and exchange supports other professional specializations that

help improve productivity, including plant and animal breeders, plant disease researchers and agricultural economists.

### Food quality

In addition to the economic, environmental and food security benefits, locavores often cite the better taste, nutrition and safety of local food. Not wanting to appear overly contrarian, local food critics frequently make a concession like this one from Budiansky (2010): “You’ll get no argument from me about the pleasures and advantages to the palate and the spirit of eating what’s local, fresh and in season” (n.p.). But overall, critics maintain, long-distance trade ensures higher quality food year round, since many regions that can efficiently grow a variety of vegetables during summer months will not have comparative advantage in fresh produce during winter. As Lusk (2013) argues, the choice is not between local beets and imported beets, but between local winter squash and fresh imported fruits and vegetables. “You’ll have a hard time convincing me...that in February winter squash will taste better than peaches, oranges, tomatoes, and lettuce brought up from Florida or South America” (p. 175).

For similar reasons, these authors argue that having year-round access to a variety of low-cost fresh foods is nutritionally superior to eating locally. Desrochers and Shimizu (2012) argue that “[b]ecause locavorism can only result in decreased variety and increased prices, it is more likely to have a negative impact on the quality of human diets” (p. 152). Sexton (2009) points out that since income is positively correlated with consumption of fresh produce, higher prices induced by re-localizing the food supply would effectively make consumers poorer and less able to buy fresh fruits and vegetables (p. 8). Foregoing the greater efficiencies brought by comparative advantage and trade lead to pricier food, which in turn leads to consumers choosing cheaper, less healthy and less nutritious options.

Critics also argue that economies of scale ensure greater food safety. While multi-state outbreaks combined with significant media attention create “an impression that our modern food system is less safe than a more compartmentalized or localized alternative” (Paarlberg 2013, p. 191), economies of scale actually ensure greater food safety, according to these authors. Supporters of community food systems tout small-scale production and shorter supply chains because they believe large processing facilities encourage the spread of viruses and bacteria. But critics argue that food safety violations would actually be more common in a locavore system, due to less specialized safety knowledge and less stringent monitoring. These violations would also be less traceable and less publicized because of their distributed nature.

As with arguments for the economic and food security benefits of globally traded food, evidence for the safety and nutrition claims comes by way of comparisons with food systems from earlier times. Desrochers and Shimizu (2012) point to archaeological evidence showing that prehistoric populations had short lives and frequent health problems (pp. 152–153). Likewise, Cowen (2012) writes that in the mid-nineteenth century U.S., “[f]ood poisoning was common” and “[m]ost foods were local but no one was especially proud of that fact” (p. 9). In short, “[h]umans who benefit from the global food supply chain are now taller, healthier, and live longer than ever before” (Desrochers and Shimizu 2012, p. 162).

### What’s wrong with the CASTE critiques?

In the preceding section, we attempted to provide a representative review of how economic rationale—drawing particularly on the concepts of comparative advantage, economies of scale, trade and efficiency—is used to debate the benefits of local food, using the authors’ own words to illustrate their claims as much as possible. Rather than refuting each argument, many of which rest on the same underlying logic, we discuss in this section several shortcomings that emerge when these arguments are viewed together: a lack of evidence that comparative advantage and economies of scale are as critical to food system progress as the authors contend, an excess of “tradeoff thinking” that assumes any cost can be offset by any benefit, a tendency to ignore or downplay costs relative to benefits, a focus on marginal changes to the exclusion of more systemic ones, and a disregard for the role of power in the food system.

In the writings we reviewed, the economies of scale concept is often employed too loosely and abstractly to be useful. As small farmers know, economies of scale undeniably exist with respect to various inputs to agricultural production, but the concept is not synonymous with “bigger is better,” as is implied in some of this literature. A 2013 U.S. Department of Agriculture report by economists enthusiastic about the trend toward increasing U.S. farm sizes notes that “most economists are skeptical that scale economies usefully explain increased farm sizes,” in part because “crop production still covers a wide range of viable farm sizes” and “multiple small farms can effectively share equipment” (MacDonald et al. 2013, p. 22). These authors also note that “analysts widely believe that managerial diseconomies of scale set in as farms get large enough to have to rely extensively on hired managers and workers” (p. 49). Further, in the less heavily capitalized agricultural context of the Global South, research indicates that an inverse relationship between farm size and

productivity is more the rule than the exception, though the reasons for this phenomenon are subject to debate (Barrett et al. 2010). Given the highly contingent relationship between farm size and productivity, as well as the real ecological costs associated with expansive monocultures, any discussion about appropriate scale in agriculture should be context-specific and take into account non-market costs and benefits.

While there may be no denying that comparative advantage based on climatic and soil conditions exist (it is “logically true,” according to Samuelson), evidence of the role of this type of comparative advantage in improving the efficiency of our food system over time, or for the idea that cost reductions are mainly brought about through natural sources of comparative advantage, is lacking in the literature we reviewed. As we illustrated in the previous section, much of the support for the importance of exploiting comparative advantage comes by way of intuitively reasonable hypothetical examples, rather than evidence of its efficacy. Even the comparative advantage shown in some of these examples is socially constructed and contingent rather than natural. California’s comparative advantage in spinach production to which Carden (2008) refers is made possible by federally subsidized, imported irrigation water. Other important sources of comparative advantage in the food system—Florida’s access to low-wage tomato pickers, for example, or the U.S. government’s grisly interventions in Latin American politics to keep banana prices low—are conspicuously absent from these examples. Production and processing technologies, natural resources, and specific labor skills are developed over time, as can be seen in the growing of seed crops, fruits, flowers, and specialty potatoes in Washington’s Skagit Valley. In this area, agricultural land was “created” after years of infrastructure development that put in place miles of dikes and drainage systems (ECONorthwest 2010). On an international scale, dependency theorists and world systems theorists have long argued that power relations, more than comparative advantage, determines what is produced where, and for whose benefit (cf. Prebisch 1950; Frank 1967; Wallerstein 2011 [1974]).

Costinot and Donaldson (2012) represent a novel attempt to empirically assess whether comparative advantage in land productivity actually drives crop decisions. The authors find that it does, but that it explains only about a fifth of the choices observed, and it helps predict crop choice better at a global level than within countries. While the CASTE proponents might take this as evidence that more attention to comparative advantage is needed, it undermines confidence in the assertion that comparative advantage has been the main force driving the evolution of our increasingly industrialized food system.

In warning of the dangers of turning our backs on comparative advantage and economies of scale, the critics

sometimes seem to be attacking a straw man: an industrialized country’s food system in which suddenly, all foods and inputs to production are produced locally, rather than a system in which more food is produced locally and other food is traded fairly. Related to the straw man problem is the problem of weak analogies: local food critics are fond of comparing a local food future to subsistence farming in present-day Africa or agricultural autarkies in places like Nazi Germany or Mussolini’s Italy (cf. Desrochers and Shimizu 2012, pp. 126–135). Analogies like these may be necessitated by the dearth of examples of actually existing locally based food economies in “developed” countries, but more consideration of the political, economic, cultural and technological differences that may weaken the usefulness of these comparisons is surely warranted.

The foregoing critiques addressed the quality of evidence given for claims about comparative advantage and economies of scale. Another class of critiques may be attributable to an excess of “thinking like an economist.” We have already seen how deductive reasoning based on first principles like the assumption of comparative advantage can stand in for the use of actual evidence in support of claims. As noted above, thinking like an economist also emphasizes “evaluating tradeoffs in the context of constraints,” or evaluating the costs and benefits of available decisions to make the efficiency-maximizing choice. Evidence of this “tradeoff thinking” abounds in the literature we reviewed. Paarlberg (2010), for example, acknowledges that “industrial food systems...have many unappealing aspects, but without them food would be not only less abundant but also less safe” (n.p.). Sexton (2009) writes: “The debate about the future of agriculture must weigh the uncertain potential for environmental improvements under local production with the more certain risk to vulnerable populations, if food production doesn’t increase” (p. 8). Carden (2008) worries that “the theoretical problem of externalities is not by itself sufficient to suggest that government intervention is warranted” (n.p.) given the transaction costs and market-distorting effects of regulation. The idea that all “benefits” (food, good soil, happiness) and all “costs” (inputs, pollution, psychological distress) might be measured and weighed against one another to make efficient decisions belies the utilitarian philosophical basis of economics. It may be a reasonable way to make many decisions, but it is not objectively correct. Many ecological economists, for example, believe that some ecosystem limits cannot be ignored and are not simply costs that can be traded off against monetary benefits (cf. Martinez-Alier et al. 1998; Ekins et al. 2003).

Tradeoff thinking may be less problematic if all relevant costs and benefits were taken into account, but few of these authors give more than passing consideration to the environmental and social costs of the industrialized food



system, aside from reminding readers that food miles are a poor indicator of greenhouse gas emissions. The authors we reviewed may be correct in observing that the bulk of the environmental impacts from agriculture come from the production phase (cf. McWilliams 2009), but this observation is used as an entry point to discuss the merits of comparative advantage, rather than examining production practices that routinely poison farmworkers, erode soil, destroy rural communities, breed herbicide tolerant weeds, impoverish farmers, and result in the eutrophication of bodies of water. Landsberg's enthusiasm for price as a signal of opportunity costs is only merited if there are no externalities, or costs and benefits that are not accounted for in the market transaction, but research and casual observation indicates there are many of these in agriculture (cf. Pretty et al. 2000; Tegtmeier and Duffy 2004).

Another characteristic of thinking like an economist is marginalist thinking, which favors analysis of incremental changes over systemic or paradigmatic shifts. This tendency is rooted in the desire of nineteenth-century economists to mathematically formalize economics principles from Newtonian physics and calculus (cf. Howey 1972), but these technical considerations have had substantive effects on the questions economists ask and the problems they identify. Glaeser (2011) is likely correct that New York could not sustain its population density if several Iowan cornfields were transferred there. Likewise, Sexton (2009) is right in claiming that growing corn, soy and dairy using the same methods and in the same amounts that we currently do, with only a shift in where they are grown, would require more land and chemicals. Yet, advocates of urban farming and other agricultural alternatives are not seeking to reproduce the existing food system closer to where they live. While there are analytic benefits to changing one variable while holding the rest constant, this methodological commitment limits the discipline's ability to consider large-scale change. Tellingly, in the "think like an economist" report, the authors recommended that economics students be required to take a broader range of classes, as focusing too heavily on economic theory "...all too often results in students acquiring a narrow, parochial perspective, unable to come to grips with deviations from marginalist thinking, and incapable of dealing sensibly with problems that involve approaches different from atomistic models of individual choice" (Siegfried et al. 1991, p. 23).

Possibly the most glaring oversight (or blatant disregard) in the CASTE analysis is the inattention to the role of power relations in shaping the food system. Power is a concept that does not fit easily into a discourse focusing on the freedom of autonomous and equal individuals to make utility-maximizing decisions. In this discourse, the market is simply an institution that coordinates production and

distribution decisions through its near-magical capacity to gather information about consumers' preferences and producers' costs, while preserving the aforementioned freedom and autonomy. Yet, looking through the conceptual lens of power relations—between agribusiness and contract farmers, food corporations and low-income consumers, the government and immigrant farmworkers—gives us a clearer picture of who determines what costs and benefits are created in the food system and how these costs and benefits are distributed.

Perhaps no economist has better theorized the role of power disparities in perpetuating social and environmental inequalities than Boyce (2002, 2013). Conventional economics tells us that the market, in many cases, will naturally come to equilibrium at the place where social benefits most outweigh social costs. Boyce (2002), describing a power-weighted social decision rule, asserts that *who* benefits and *who* bears the costs matters. If the beneficiaries from chemical-intensive agriculture are more powerful, due to wealth, political influence, coordination or information asymmetries, than those who suffer from the pollution, then more synthetic pesticides will be used than if the winners and losers had more equal power, according to this theory. More equal power, in turn, can come about through organization and movement-building of those who disproportionately bear the costs. This theory certainly seems to explain the experiences that have fomented environmental justice movements (cf. Bullard 1990; Shrader-Frechette 2002; Mohai et al. 2009) and food justice movements (cf. Levkoe 2006; Alkon and Norgaard 2009; Gottlieb and Joshi 2010) better than most economic theory.

In the context of this paper, paying attention to power allows for the possibility that the falling food prices attributed to comparative advantage and economies of scale may be related, instead, to the ability of the powerful to offload social and environmental costs onto the relatively powerless. The implicit consensus among the authors we reviewed is that we are currently living in the best of all possible food worlds, but they fail to explain why a political and economic system that has increasingly adopted the CASTE logic still has so many problems with hunger, food security, environmental degradation and job creation. More attention to inequities in power, and how they might be diminished, could fill this gap.

### What can we learn from the CASTE critiques?

As the near absence of power and distribution in the CASTE analysis indicates, much of the disagreement between local food supporters and these critics can be chalked up to differences in discourses and the values underlying them. If economists value efficiency above all

else and believe that uncertain social and environmental costs can be traded off against other benefits, while locavores have different end goals—providing enough food for all and creating more resilient local economies while staying within ecological limits—these groups are likely to talk past one another. Yet, both the CASTE analysis and its shortcomings suggest some items for the locavore “to do” list, including clearly articulating why “local” is important, acknowledging the real benefits the existing food system provides, understanding how power affects who receives these benefits, and keeping in mind needed systemic shifts while we make marginal changes. We will elaborate on some of these ideas below.

The critique that “local” is ill-defined and amorphous as a guide to food purchasing is not new: the University of California Davis Community Food Systems Bibliography (UCD 2013) listed 85 articles on the definition of local. On one hand, fretting too much about semantics can hamstring progress. On the other hand, the extent to which other related goals—including local economic development, environmental protection, and food quality and security—are naturally furthered by buying local food is unclear. While the CASTE critics have not provided a great deal of evidence that local food undermines these objectives, neither have local food activists been universally explicit in assessing progress toward them. It may be true, as Edwards-Jones et al. (2008, p. 272) claim, that “it would be almost impossible to develop a scientific dataset which would enable formal testing of the hypothesis that local food is better than non-local food.” It may also be the case—as DeLind (2011), Werkheiser and Noll (2014) and others have pointed out—that some local movements are more focused on individual choices than political system changes, leading to observed heterogeneity in objectives and approaches. These academics have provided useful guidance about what we can and cannot expect in terms of setting goals and measuring progress, but we argue that members of local movements in particular, along with sympathetic researchers, could benefit from putting more effort into articulating the values and goals that define what it means to be “better” and determining how progress toward them might be monitored. Doing so can allow these movements to assess whether resources are being used in a way that promotes their goals.

While overlooking pressing social justice and ecological problems in the food system when making efficiency judgments is not intellectually honest, the critique that local food activists have downplayed benefits of the existing food system is worth addressing. As Thompson (2010) suggests, the industrial food system has been responsive to consumer needs and wants. Many people do enjoy the diversity of foods that are now available year-round; the thought of relying more heavily on foods that can be grown

in winter or canned in summer does not appeal to everyone. Nutrition and lifespans *have* improved, thanks in part to food access. Likewise, because of inequalities—perpetuated, to be fair, by the system that allows agribusiness giants to profit year after year—higher priced food would make it even more inaccessible to the nearly one in six Americans that is already food insecure (Coleman-Jensen et al. 2013). Furthermore, industrial agriculture has delivered high quality food and niche products like fair trade to those willing to pay for it. It is possible to acknowledge the benefits of the industrialized food system without concluding, as the authors we reviewed often do, that the existing food system is the best we can hope for. It is also possible to acknowledge them while understanding that these benefits, in many cases, are possible because of costs imposed on already vulnerable groups of people. Only by having a clear view of who wins and who loses can we make informed, collective decisions that do not alienate important segments of the community.

In conclusion, we identify several broad avenues for future research, stemming from our analysis. First, it would be useful to compare the extents to which “global” food is cheaper because it takes advantage of the CASTE principles, on one hand, or because it externalizes environmental and social costs, on the other. It is likely that both are true to some extent, for some foods. Since environmental and social costs have no natural prices, answers to this question are not straightforwardly quantifiable, but insight could be gained using qualitative studies that compare where value is added and where costs are imposed along the production and distribution chain. Though its focus is not on externalized costs or distributional issues, the U.S. Department of Agriculture’s Economic Research Service study, “Comparing the Structure, Size, and Performance of Local and Mainstream Food Supply Chains,” may nonetheless provide methodological inspiration for studies focusing on specific foods (King et al. 2010).

Second, research estimating the land, labor and inputs needed to produce a given amount and variety of food within specified regions would add a great deal of concreteness to a heretofore abstract debate. While Sexton’s (2009) estimates of the land and inputs needed to grow all corn and soy locally rest on questionable assumptions, it is a good example of the type of low-tech study that provides useful ballpark figures for use in decision-making. The New England Food Vision project is another example of this type of research, making some assumptions about food varieties and consumption patterns and estimating that New England would need to devote approximately three times the land currently devoted to farming to produce 50 % of its own food by 2060 (Donahue et al. 2013).

Third, the theories advanced by Kneen (1993) and Princen (1997) that distance between various buyers and

sellers in the food system makes space for social and environmental problems, or the “shading” of externalities, in Princen’s terms, leads to the conclusion that reducing distance is a necessary condition for reducing these costs. Yet, as the critics we reviewed tell us, everything is local to someone, including manure lakes and pesticide-laden fields. Research could provide empirical evidence on the contexts in which the relationship between short supply chains and sustainable production is more or less likely to hold. That is, to what extent and in what cases is “local” likely to correlate with economic, environmental and social welfare goals? Research can also document and critically assess how specific local food systems, such as the one in Hardwick, Vermont (cf. Hewitt 2010), are meeting the job-creation, environmental, food security and food quality goals set forth by local food supporters.

Fourth, power and distributional considerations should be included in economic analyses of the food system. In addition to estimating the benefits and costs of a food system intervention, even at the local level, it is important to ask, as Boyce (2002) advocates, who wins, who loses and why? For example, the increasingly popular economic and job impact studies of local food interventions should consider not only the amount of money and number of jobs shifted to the local area but who does and does not benefit from these changes. The answers to questions about who wins and loses are often related to differences in power and therefore point toward political solutions. As DeLind (2011) and others have noted, simply making the choice to “buy local” is unlikely to achieve social justice or environmental goals.

In a similar vein, it is important to keep in mind the systemic problems underlying the more proximate ones we observe in the food system, to avoid constraining our choices and to increase the likelihood that the (often marginal) changes for which we advocate are moves in the right direction. For example, mental energy spent fretting over whether local greenhouse-grown tomatoes contain more embodied carbon than those imported from Mexico, or how far people can drive to pick up their organic CSA (community support agriculture) shares before the energy expenditures outweigh the savings, may be better spent demanding renewable energy, so greenhouses and transport are less reliant on fossil fuels. Instead of assuming a false tradeoff between affordable food for low-income consumers and decent wages for producers, we can ask what institutional changes could make room for both. These bigger, more systemic changes may seem unattainable, and it is likely a sense of overwhelm, rather than ignorance, that keeps us focused on narrower and more manageable changes. At the same time, the social, political and economic systems in which we live are created and maintained by people and, as history has shown, subject to large and occasionally rapid shifts. Understanding the ways in which

goals of the local food movement are intertwined with movements for renewable energy and inequality reduction, for example, can help mobilize the power needed to make these changes.

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