



Growing Buffalo's capacity for local food: A systems framework for sustainable agriculture

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A B S T R A C T

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This paper employs a systems framework to explore sustainable agriculture as a source of food in Buffalo, NY and other Rust Belt cities that exhibit an abundance of abandoned property and vacant lots in core urban areas. Considering land as a common stock proves helpful for determining whether or not a system is sustainable, such that stocks of natural resources are not depleted faster than they can be replenished. By identifying feedback relationships in the local food system, planners and activists in these cities are redesigning their food production and distribution systems to meet the needs of food-insecure residents.

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A common stock

“The earth is given as a common stock for man to labor and live on. If for the encouragement of industry we allow it to be appropriated, we must take care that employment be provided to those excluded from the appropriation. If we do not, *the fundamental right to labor the earth returns to the unemployed.*” (emphasis added)

– Thomas Jefferson¹

In recognizing the necessity of land for livelihood, Jefferson reasoned that limits should be placed upon the appropriation of land if it resulted in the exclusion of the people who depend upon it. As with citizenship, when recognized, our implicit human right to labor the earth becomes a civic responsibility. The logic of returning the land to its inhabitants has anticipated the emergence of voluntary ‘guerrilla gardening’ of neglected spaces as a way to overcome property bounds, largely because the property is devalued in areas that are neglected. As implied by their moniker, guerrilla gardeners seek ‘war’ against scarcity and neglect, and to reconsider land ownership in the quest to “reclaim land from perceived neglect or misuse and assign a new purpose to it”.² Through interactions with the newly formed Buffalo Growing (<http://buffalogrowing.org>) coalition and practitioners such as Buffalo's Massachusetts Avenue Project (<http://www.mass-ave.org>),

this study examines the potential for sustainable agriculture to shift urban focus from *planning* per se to *planting* seeds for change. Using a systems approach, we consider two issues involving human rights and responsibilities in shaping a sustainable urban ecosystem:

- a) How to equitably satisfy the human right to healthy, local, fresh, and culturally appropriate food.
- b) How to exercise the human right to labor the earth in such a way as to restore its ecosystem function.

Systems modeling is the art and science of linking system structure to behavior for the purpose of changing structure to improve behavior. With its normative emphasis, systems modeling is well-suited for studies involving sustainability. Sustainability science focuses on the complex dynamics that arise from interactions between human and environmental systems (Clark, 2007). One way to view sustainability of the urban ecosystem is to consider the intersections between these dimensions in the quest for an equitable (society & economy), healthy (society & ecology), and efficient (ecology & economy) city (Horner & Widener, 2010; Knigge, 2010). However, conventional wisdom that the economy be balanced with the environment excludes the hierarchical dependence of human life on the finite natural resources provided by the earth (Gore, 2006; Meadows, Meadows, Randers, & Behrens, 1972). Because humans are part of the earth's ecosystem, and the economy is of our own devise, a hierarchical conception of the three pillars of sustainability (ecology > society > economy) is warranted.

Sustainable agriculture, as management of a complex adaptive ecosystem, requires process-based tools for policy analysis and

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¹ In a letter to James Madison dated October 28, 1785, cited in Berry (1977, p. 220).

² From <http://www.guerrillagardening.org>, accessed June 23, 2010. Eponymous texts have been authored by Adams (1983), Tracey (2007), and Reynolds (2008).

evaluation amidst system uncertainty. The principle of adaptive ecosystem management holds that practitioners should locate themselves within the ecosystem they manage and thereby move toward sustainable scenarios (Norton, 1999). Effective stewards of the land must learn to pace expectations according to natural cycles, as adaptive management requires both an understanding of current conditions and foresight as to how biological rhythms may shift as growing seasons change (Karl et al 2009).

The food movement

Amidst economic crises, oil shocks, and apprehension of global climate change in an already resource-constrained, conflict-ridden world, food security has become one of humankind's most pressing problems (Brown, 2009; Magdoff & Tokar, 2009; Pollan, 2008). This study was motivated by media representations of urban agriculture and a growing public appreciation of and demand for locally grown, healthy foods. Like sustainability, the 'local' norm may prove more useful as a relative concept – *more* local than the current (global) food system, with its complex supply chain and intensive fossil fuel inputs (Selfa & Qazi, 2005). Whether the local 'foodshed' is defined by the extent of its bioregion, a fixed radial distance (e.g., 100 or 200 miles) or a set of counties surrounding a core metropolitan area, local foods provide fresh, accessible alternatives to industrially-produced, processed foods that are shipped hundreds or thousands of miles before being purchased.

In *Diet for a Small Planet*, Lappe (1971) critiques the economic construction of scarcity and underscores how shifts in our everyday food choices have a significant impact on the prospects for our shared future. Her daughter Lappe (2010) advocates a plant-based 'real' food diet with a potential to 'cool' the planet, via a lowered ecological 'foodprint' with fewer greenhouse emissions, many of which currently coming from large-scale animal factory farms. With an informed reckoning about the state of the planet, citizens can take action to grow and exchange local food, thereby reducing our ecological foodprint. When consumed fresh, local produce is more nutritional – and potentially more flavorful – than food that was grown to endure travel over long distances (Kingsolver, 2007; Pollan, 2006). 'Locavores' who participate in the emerging local food movement seek to relocalize food systems through farmers' markets, community supported agriculture, food cooperatives, and home and community gardens using ecologically sustainable practices (DeLind, 2002; Lyson, 2005; Pollan, 2010). Although terms like 'locavore' and 'foodprint' may be new to our lexicon, calls for a sustainable agriculture, or permaculture, have long been made by advocates for sustainably sharing our common stock of land (Berry, 1977; King, 1911; Lappe, 1971; Todd & Todd, 1984).

While the locavore impulse has taken hold among many conscious food consumers, different facets of food are emphasized by those participating in the broader movement to align food choices with the needs of the planet. In a Google search for "local food", the top hit is the Slow Food USA website (<http://www.SlowFoodUSA.org>), along with the question: "Love Locally Grown Food?" The site advocates for 'good, clean, fair food' from 'plate to planet'. This global, grassroots 'slow' food movement has rippled through the United States as a public fight against fast food, an industry whose excesses have been exposed by Schlosser (2001). Will Allen, a MacArthur fellow and leading proponent of sustainable agriculture, has officially marked the tipping point of the food movement by declaring the 'good' food revolution, under the premise that fresh, healthy food should also taste good (<http://www.growingpower.org/blog>). Not all local (slow, real, cool, just, good, etc.) food advocates are vegetarian or vegan. While normative, these descriptors are notably vague on the role of meat in a healthy diet (Pollan, 2006). However, food advocates are increasingly 'less-meat-

arian', eating lower on the food chain out of concern for environment and health. A variation on the theme is the 'freegan', one who may not be a vegan but chooses to reduce waste in the food system through activities such as dumpster diving, sorting through food discarded by others. Though advocates may disagree as to the optimal norm for diet and lifestyle, many of us would agree with Will Allen that the food movement has become a revolution.

Empirical context

Over the course of its rich history, the city of Buffalo, NY has accrued a number of nicknames: Queen City, Nickel City, City of Light, City of Trees, City of No Illusions, and the City of Good Neighbors. Buffalo's particular Rust Belt image and associated narrative of decline come into focus with visits to once iconic sites now abandoned such as the Central Terminal and the Statler Towers. In addition to the images derived from visiting urban places, narratives of Buffalo's historical trajectory have manifested in a range of media sources. Aware of the persistence of negative public perception about long-term economic and population decline, Rust Belt community activists and politicians struggle to instill a positive image of their cities. Although an emergent rhetoric emphasizes the 'green economy', local leaders generally reinforce the normative urban-economic growth discourse, seeking quick fixes for economic ills without addressing needs of existing residents, exemplified by recent unsuccessful attempts to lure a Bass Pro Shop to Buffalo's waterfront.

Western New York's geographically dispersed and automobile-dependent population is fragmented politically (with 44 local governments in Erie County) along textbook lines of Republican Party dominance in the suburbs and Democratic Party dominance in the city. As a case in point, the Democratic incumbent Mayor Byron Brown, the city's first mayor of African-American heritage, was re-elected in 2009 without an opponent from the Republican Party; the first time since the Civil War that a Republican nominee was not on the ballot. With low Democratic turnout for the uncontested mayoral election, the GOP picked up three additional seats on the County Legislature, bolstering the power held by Erie County Executive Chris Collins, a Republican who was elected in 2007 on a platform of "running government like a business". True to his word, Collins' administration has targeted cuts in public services that benefit the city at the expense of the county, reflecting his own roots in the affluent suburb of Clarence, whose poverty rate is an order of magnitude less than Buffalo's nearly 30% of the population who live below the poverty threshold.³ Buffalo's poverty rate is comparable to other Rust Belt cities (Detroit, Cleveland) and Western New York communities (Rochester, Syracuse).⁴

Disparities between the city and its suburbs are evidenced in part by the abundance of grocery stores in the latter, and a notable absence of such stores in the city. Fig. 1 maps the locations of full-service grocery stores in Buffalo, using a half-mile buffer for travel along the road network, to illustrate areas that lack access. Moreover, underserved areas are apt to house a larger fraction of the population (indicated by darker shades of green) who lack access to a private automobile. Buffalo's approximately 14,000 vacant lots (shown in blue in Fig. 1) are concentrated largely in the city's East

³ The US Census estimates the 1999 household poverty rate at 2.2% for Clarence (population 28,084) versus 25.4% for Buffalo (population 292,648). Since 1999, Buffalo's population has dropped by 7.6%–270,240 (2009). Recent (2007) assessments of the poverty rate from the American Community Survey estimate Buffalo's population in poverty at 28%.

⁴ A thorough positioning of Buffalo's poverty rate was performed by Wende Mix (2008) in "The Geography of Urban Poverty," available at <http://www.buffalostate.edu/geography/documents/paper.pdf>.

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