Intro-duction

AS THE ENDING OF AN ERA OF CHEAP OIL THREATENS GLOBAL food security and forces a reexamination of food-production techniques, alternative models for self-sufficiency demand our attention. City dwellers—in the United States and abroad—have launched a cultural conversation around their relationship to food systems, and in so doing have helped to expose the social and environmental deficiencies implicit in large-scale food production. Many of these activists also see direct engagement as a means of ensuring responsible food security and have welcomed agricultural processes back into the city—as had been the case in urban environments such as Machu Picchu and ancient Egypt—in an effort to better control and understand their own foodsheds. In this context, innovative urban design interventions incorporating productive uses for vacant and underused land offer inspiring blueprints for a post-oil future.

This kind of spatial economy is well underway in Cuba, the socialist nation long burdened by U.S. trade embargoes and the dissolution of the Soviet bloc in 1989. Cuba's isolation from international trade ushered in a new era: the return of locavorism and a willful resurrection of the island's foodshed. This self-reliance led to a new brand of Cuban sustainability—one born out of necessity and fueled by the people.

In the face of resource scarcity, Cubans responded by rethinking land use, implementing organic farming practices, developing low-input agricultural systems, and honing techniques for independence on an island without oil. A rush of socialist success stories followed suit, highlighting innovation sparked by food, fuel, and tool shortages. The government embraced urban agriculture, city dwellers enlisted in the effort, and the island began to provide for itself. As a result, Cuba has emerged as a world leader in sustainable agricultural practices, central to which is a flourishing urban farming program.

During the course of the last twenty-five years of urban farming in Havana, a wide variety of design strategies and physical characteristics have coalesced to form this robust food security initiative. Socialist Cuba's economical and functional methods could be readily applied to other post-oil environments, providing a set of deployable techniques for the food landscapes of cities around the globe. These innovative urban design interventions—tested over decades and appropriate for underused urban spaces—provide a new model for bolstering food production while reducing dependence on oil.

While historically the "agrarian and the urban are two categories of thought that have more often than not been opposed to one another," they necessarily commingle under the threat of resource scarcity.[1] In the Cuban context, urban agriculture tends toward functional motivations rather than aesthetic considerations. However, the divide between conceptions of formal design and utilitarian objectives could be reduced—or even eliminated—by integrating designers into the planning process. In claiming urban farming as a critical piece of "the Future City," the international design community has an opportunity to "grapple with the implications for urban form attendant to their renewed interest in the agricultural."[2] And in the disciplines of architecture, landscape architecture, and urban planning—as well as in the global consciousness—topics of self-sufficiency and food production promise to assume new forms and roles.[3]

Landscape Urbanism

Havana's food system begins with a series of land-use strategies that occupy the intersection of policy and urban form. The infrastructure that supports this movement lays a common groundwork for food security, establishing a set of rules, a code of ethics, and tiers of engagement. At the root of this framework

is a series of farm typologies that forms a kit of parts ready for deployment across an extant urbanized landscape. Cuba's urban food system can be understood as a new photosynthetic infrastructure comprising many distinct pieces that are each contextually responsive and independently activated.

This food network is a clear example of a system's approach to food independence. In this sense the urban agricultural innovations of Cuba are embodied by many of the same infrastructural and social concerns that shaped the landscape urbanism movement that gained momentum in the United States and Europe during the early 2000s. This theoretical reframing has been adopted by many activists in the design community outside of Cuba, whose focus on "urban infrastructure has been repositioned as a topic combining the potential for social and environmental progress, while avoiding the blind alleys and dark corners of urban form."[4] In expanding the profession, landscape architect and professor Charles Waldheim suggests that these issue-oriented urbanists might actually "move the field from its cultural confines into the more quotidian qualities of daily life."[5] Here, the field of landscape urbanism provides a broad platform for the sustainable solutions and systems that do not fall neatly into one of the disparate disciplines of architecture, landscape architecture, and urban planning, and Waldheim's approach launches the conversation into an orbit of broader social relevance.

In identifying Cuba's urban agriculture system as a product of landscape urbanism—rather than the limiting fields of architecture, landscape architecture, or planning—the work can be freed from formal expectations. Although this country-wide initiative lacks design work with a capital *D*, Cuba's new urban food system offers a sophisticated overarching organizational structure—understood to have emerged informally—that can now be more intentionally co-opted by other countries.

Havana's emergent urban spaces contribute to a new brand of food-centered landscape urbanism, with all of the attendant implications for space and form.

Cuba's vanguard approach to urban agriculture now pairs informal, grassroots participation with official design guidelines and state sponsorship. While this movement began as an unplanned, organic, and spontaneous response to food scarcity in the early 1990s, it has since become absorbed into and formalized by the state. Despite its clear and discernible organization today, this urban foodshed emerged from an iterative decade-long participatory process. The structure of Havana's urban farming network thus developed as a response to existing needs, revealing surprisingly elegant forms and an unusually supportive host state.

In spite of its informal roots, Cuba's urban agriculture response exhibits key indicators of design sophistication. Havana's experiment in self-sufficiency—emphasizing local food, plant, and fuel production—strengthens communities, reduces carbon emissions, and supports biodiversity. This growing infrastructure is an example of what planner and educator Nina-Marie Lister would call *adaptive ecological design*, one that allows for "ecological and programmatic complexity, for both biological and sociocultural diversity, and, accordingly, all facets of sustainability."[6] These agricultural efforts outperform conventional farms and plantations in Cuba, providing a new agricultural typology built upon the leftover scraps of public land found inside the city limits.

Responding to Crisis

Cuba's already-tenuous trade capacity functionally disappeared in 1989 when the island-nation experienced a sudden—and enduring—economic crisis with the collapse of the Soviet Union. The acute resource scarcity that ensued affected both

nationally produced and imported food products, and launched the Special Period in Time of Peace: an austerity program that was officially mandated in 1991 and has come to represent the extreme isolation endured by the country during this extended period of economic crisis. Just as author Thomas Friedman was formulating his treatise on global flattening, Cuba withdrew into a remote and inaccessible outpost—a true trade island.[7]

This isolation has now persisted for more than two decades, during which many observers had anticipated Cuba's ruin. Astonishingly, and against all odds, Cuba's state economy has persevered—even as economists and urban theorists have agreed that protracted socioeconomic decay like that experienced by the island "makes urban resilience exceptionally difficult to sustain."[8]

One would expect that such a sudden imposition of great austerity and isolation on a society and economy deeply enmeshed in the web of global commerce would cause its collapse. Scientist and author Jared Diamond identifies this as a common factor of civilization collapse, when through "decreased support by friendly neighbors, [trade partners] can no longer provide the essential import or the cultural tie, [and] your own society may become weakened as a result."[9] As early as 1960, Cuba's trading partners were limited due to the U.S. Cuban Democracy Act, but not until the lucrative trade agreements buoyed by an ideologically aligned Soviet bloc vanished in 1989 was Cuba forced to turn inward. Today, Cuba's self-reliance and radical egalitarianism, which are intentionally disassociated from neocolonial influences of the past, foster an island-wide sense of solidarity.

Cuba's unconventional food landscape offers a perspective that is both cautionary and inspiring. Standing against the backdrop of political and human rights violations, Fidel and Raúl Castro, the two brothers who have governed Cuba since 1959, ultimately rejected Green Revolution principles in favor

of a socially- and ecologically-oriented agricultural process. Although Havana's sophisticated system of urban agriculture was not planned at the outset, it fell neatly into the socialist mode of production and received early support from party leaders. Much like the spontaneous urbanism identified by architect Cedric Price, urban planner Peter Hall, writer Paul Barker, and critic Reyner Banham in their groundbreaking article "Non-plan: an experiment in freedom," early growing efforts provided Cuban citizens with an opportunity to relate to food production on their own terms.[10] Originating from desperation and defined by direct engagement, Havana's urban farming represents a people's movement.

Even in a country with a socialist land policy, farming can serve as a visible and physical means of claiming space, and—especially in this context—urban food production remains a "clear way to emphasize one's right to have a say in planning."[11] Guerrilla gardening by city dwellers adopting abandoned urban spaces, for example, presents an opportunity for place-based action and civic improvement. This kind of space hijacking fits squarely into the socialist ethic, specifically when converting commonly held lands into a more productive capacity for all.

The food crisis that followed the events of 1989 brought about an otherwise unimaginable inversion of power, allowing guerrilla growers to operate quasi-capitalist enterprises under the full support of a one-party police state. These allowances by the Cuban government signaled a citizen's occupation of the city, very close to that described by geographer David Harvey in *Rebel Cities: From the Right to the City to the Urban Revolution*; in this case the right "to claim some kind of shaping power over the processes of urbanization, over the ways in which our cities are made and remade, and to do so in a fundamental and

radical way."[12] This enlightened attitude toward access and engagement—at least in terms of food production—continues to stand in sharp contrast to corporate agribusiness practices promoted by the United States.

Beyond highlighting one country's response to crisis, this story of resilience charts a course that could feasibly be run again. Using the infrastructure of cities and towns, Cubans discovered "both old and new ways to boost production of basic foods without relying on imports."[13] In doing so, their experience has galvanized a self-sufficiency movement within the country and now provides a model of post-oil food production for other nations. This is the kind of information that could facilitate and encourage other cities or nations to transition. As journalist Bill McKibben notes, if the global foodshed should suddenly seize up, "it's somehow useful to know that someone has already run the experiment."[14]

Resilience

In contrast to the natural systems approach of ecologists—who define resilience in terms of elasticity, or the ability of a post-disaster environment to return to its original state—historian Max Page identifies a type of civic post-crisis resilience that carries productive implications. He describes this as the renewed vitality demonstrated in rebuilding, which implies growth and progress.[15] In the context of Havana's emergent foodshed, this form of resilience, which led to innovation and restructuring, was the only viable option for the country due to the U.S. trade embargo. This approach—critical to the success of the urban agriculture movement in Cuba—created a brand of community-based resilience that embraced both ecological design principles and household food security.

Agriculture's return to the city presents a new urban ecology, one designed to feed people while reinforcing natural processes. In this sense gardens reveal gaps in the urban hardscape—opportunities to engage with sustainability in a context of environmental degradation. Urban naturalist Lyanda Lynn Haupt suggests that societies "use an idea of 'Nature Out There' to ignore [their] ravenous uses of natural resources"; whereas living landscapes within a city can serve as a reminder and a platform for engagement with the natural world.[16] In Havana, nature made visible through the medium of food production promotes broader goals of sustainability and stewardship in what architecture and urban design historian Grahame Shane calls a "new basis of performative urbanism that emerges from the bottom up, geared to the technological and ecological realities of the postindustrial world."[17]

At the urban scale, locally grown food products contribute to self-sufficiency on many fronts, not the least of which is giving individuals a measure of control over their own sustenance. Urban gardens offer a logical, affordable, and accessible link between farm and table, bolstering food autonomy from the scale of the household up to the regional foodshed. This is a ground-up movement in which growers have the power to choose the food they produce, the seeds they save, and the land they cultivate, and consumers gain increased control over the quantity and quality of their food access.

This brand of urban locavorism improves resilience in a number of ways. In reducing the physical distance between spaces of production and consumption, dependence on corresponding energy-intensive systems, such as refrigeration, storage, distribution, and transportation, also diminishes. Due to the spatial constraints of cities, urban gardens generally occupy smaller land parcels than their rural counterparts,

which in turn reduces a crop's vulnerability to diseases and pests, as well as demands for broad-scale inputs and heavy machinery. Moreover, the independent parcels of land themselves are dispersed and independently managed—individual experiments that Lister calls "safe-to-fail" rather than "fail-safe."[18] Such an extensive infrastructure must necessarily attract substantial citizen participation in order to scale up; in Cuba this movement was adopted by Habaneros simply because it helped them identify their next meal.

Beyond an impressive growing capacity and all-too-incredible production numbers, Havana's urban farming system also fosters social and civic engagement that indicates the development of a higher resilience index.[19] Much as the Country Life Movement signaled a shift in values as well as in actions in the United States, in Cuba the increasing popularity of city farming marks a step forward in the evolution of urban identity.[20] Here, the change in agricultural yields supported socialist ideals broadly and signaled the transformation of society. As a response to real-world needs, Cuba structured viable strategies for social and agricultural change.

This model for post-oil resilience provides a compelling counterpoint to the U.S. food system, in which massive-scale industrial food production supports an illusion of permanent abundance. Its corporate agribusiness relies on a system of heavy inputs and unsound farming practices, including the application of environmentally detrimental pesticides, the widespread use of energy-intensive machines, and the reliance on monoculture crops. The incredible yields that this system generates—which make up approximately 98 percent of the food grown in the United States—rest on the shaky foundation of "mechanically and chemically intensive farming methods for the maximization of profit."[21] As agricultural systems around the world become

more heavily taxed, there is good evidence that this U.S. model is not sustainable. To be sure, factors such as climate change, urban development, foreign-oil dependence, and ever-dwindling natural resources threaten to erode this system in the future.[22]

In this sense, food access has resurfaced as a matter of national security for the United States today. Similar to the position in which Cuban citizens found themselves in 1989, Americans are dependent on calories tied to a foreign oil supply and an energy-intensive transportation infrastructure, either of which could collapse at any moment.[23] In both resource-poor and post-crisis scenarios, whether occurring in the United States or elsewhere, food security will track resilience factors, such as diversity, sustainability, and redundancy. Large farms—whose appetite for irrigation, oil, and chemistry, not to mention reliance on economic subsidies—simply cannot offer the resilience of a diverse-but-interconnected system of small farms.

Urban farming reinforces food security in a dispersed and transparent way. While jumping scales from the tiny island nation of Cuba to the vast geography and large consumption demands of the United States appears to be illogical, the two countries share similar cultural, social, technological, and even urban DNA. For instance, much of the common anatomy that fosters productive urban landscapes—the rooftop, the vacant lot, or the pocket park—occurs with similar regularity in each country. While eliminating dependence on foreign oil and food imports appears on the surface to be an audacious demand, the idea of the resurrection of a victory-garden approach seems much more manageable. It is worth remembering, after all, that in 1943 Americans planted more than twenty million victory gardens, and the resulting harvest accounted for nearly one-third of all of the vegetables consumed in the United States that year.[24]

NOTES

1. Charles Waldheim, "Notes Towards a History of Agrarian Urbanism," in *Bracket 1: On Farming* (Barcelona: Actar, 2010), 18.
2. Ibid.
3. Ibid. According to Charles Waldheim, "this renewed interest in the relation of food production to urban form has been made possible by increased public literacy about food and the forms of industrial food production and distribution that characterize globalization."
4. Charles Waldheim, "Urbanism After Form," in *Pamphlet Architecture 30: Coupling: Strategies for Infrastructural Opportunism*, ed. Neeraj Bhatia et al. (New York: Princeton Architectural Press, 2011), 4.
5. Ibid., 4. Waldheim is talking about the *Pamphlet Architecture 30* authors, but is also referring to the broadening of the field of architecture to include urbanists.
6. Nina-Marie Lister, "Sustainable Large Parks: Ecological Design or Designer Ecology," in *Large Parks*, ed. Julia Czerniak and George Hargreaves (New York: Princeton Architectural Press, 2007), 36.
7. Friedman's book, *The World Is Flat*, highlighted the global trend toward interconnected trade, yet Cuba stood out as one of the few countries moving into isolation.
8. Lawrence J. Vale and Thomas J. Campanella, "Introduction: The Cities Rise Again," in *The Resilient City: How Modern Cities Recover from Disaster*, ed. Lawrence J. Vale and Thomas J. Campanella (New York: Oxford University Press, 2005), 7.
9. Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed* (New York: Penguin Books, 2005), 14.
10. Reyner Banham et al., "Non-plan: an experiment in freedom," *New Society*, March 20, 1969, 435-443.
11. Ingo Vetter, "Urban Agriculture," in *Shrinking Cities* 1, ed. Philipp Oswalt (Ostfildern-Ruit [Germany]: Hatje Cantz, 2005), 493.
12. David Harvey, *Rebel Cities: From the Right to the City to the Urban Revolution* (New York: Verso, 2013), 5.
13. Martin Bourque and Peter Rosset, "Lessons of Cuban Resistance," in *Sustainable Agriculture and Resistance: Transforming Food Production in Cuba*, ed. Fernando Funes et al. (Oakland, CA: Food First Books, 2002), xiv.
14. Bill McKibben, "The Cuba Diet: What Will You Be Eating When the Revolution Comes?," in *Harper's Magazine*, April 2005, 62, http://harpers.org/archive/2005/04/the-cuba-diet/.
15. Max Page, "Narratives of Resilience," *The Resilient City*, 90–91. See also Lance Gunderson and C. S. Holling, eds., *Panarchy: Understanding Transformations in Human and Natural Systems* (Washington, DC: Island Press, 2002).
16. Lyanda Lynn Haupt, *Crow Planet: Essential Wisdom from the Urban Wilderness* (New York: Back Bay Books, 2011), 35.
17. Grahame Shane, "The Emergence of Landscape Urbanism," in *The Landscape Urbanism Reader*, ed. Charles Waldheim (New York: Princeton Architectural Press, 2006), 65.
18. Lister, "Sustainable Large Parks," 46.
19. These production numbers are almost unbelievable because they are so positive, and since the Cuban government presents them they are considered somewhat unreliable.
20. At the turn of the twentieth century, the Country Life Movement romanticized rural living and espoused an altruistic community ethos in the United States.
21. Kathryn A. Peters, "Creating a Sustainable Urban Agricultural Revolution," *Journal of Environmental Law and Litigation* 25, no. 1 (Fall 2010), 207.
22. Ibid., 204.
23. Ibid., 230.
24. Laura J. Lawson, *City Bountiful: A Century of Community Gardening in America* (Berkeley: University of California Press, 2005), 2.