Farming Freeway Corridors

"The realization of limited-access divided highways in the second half of the twentieth century points to many of landscape urbanism's ambitions, notably to strategically engage the urban landscape at a metropolitan scale within the constraints of the prevailing political economy, and to consider environmental and infrastructural systems as primary ordering devices." — Jacqueline Tatom

Carey Clouse
University of Massachusetts, Amherst

As the end of the era of cheap oil threatens global food security and forces a reexamination of food production techniques, the U.S. freeway system stands poised to enter a new age. As increasing energy prices force more and more cars and trucks off of the nation's highways, this dendritic infrastructure will see dramatic shifts in use and capacity. In cities and towns across America, new land use patterns will evolve, finally referencing the system of roads that have heretofore enjoyed their own formal autonomy.

From its inception, the U.S. freeway system has been viewed as a new type of landscape, conjuring up the enthusiasm of developers and creativity of designers often exhibited in so-called frontiers. Indeed, this typology presents radical new opportunities in terms of scale and access, where "highways are public space writ large, in the metropolitan reach of their network as well as their sheer size."[2] From political giants like Robert Moses to scholars such as Christopher Tunnard and Lawrence Halprin, early responses to this infrastructure sparked visionary proposals for restructuring roadways. While this professional discourse has not substantially interrogated the concept of the freeway system in practice, new proposals are now gaining legitimacy, where increasingly "designers see 'non-local' mega-networks as a pertinent context and seek to establish real, virtual, or symbolic connections to telecommunication, transportation, and broad informational systems."[3]

This changing relationship to highway infrastructure calls for innovative design tactics; suburbs, exurbs, drosscapes and peripheral rings offer exceptional opportunities for constructive design interventions. As communities look for new ways to integrate on-site food production and localized fuel sources, this freeway system offers itself up as an untapped resource. This paper explores one such design proposal, in which food security is paired with guerilla activism to support a new kind of freeway landscape. In this proposal, the vast and connected land abutting interstate freeways would become a linear garden, seized, planted and harvested by the people.

1

2

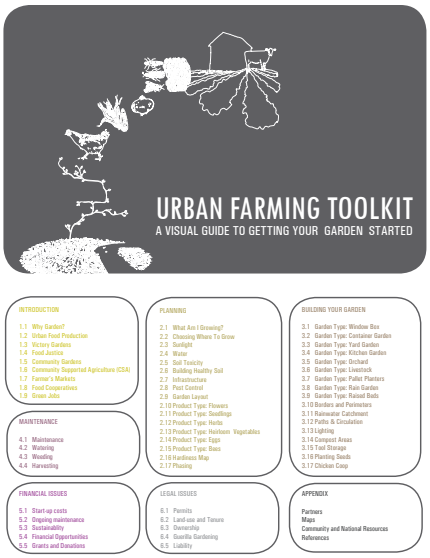


Figure 1: A garden created from a vacant lot in New Orleans. Photo: Carey Clouse

Figure 2: The Urban Farming Toolkit, a publication of the Tulane City Center, in conjunction with the New Orleans Food and Farm Network. Image: Carey Clouse

HYPER-LOCAL AGRICULTURE

In an oil-poor world, food security will draw heavily upon local energy reservoirs.[4] Beyond farmer's markets and community-supported agriculture programs, cities and regions are already beginning to direct local food strategies through policy, advocacy and funding. The United States has seen a recent upsurge in local and state food policy councils, which address the need for place-based food production.[5] But this top-down approach to change is both slow-moving and costly, and underestimates the enthusiasm of individual citizens.

Connecting individual growers to their adjacent cities and suburbs, the land along road and freeway systems transcends the rigid boundaries of plot plans and ownership restrictions. Moreover, this infrastructure "often has considerable adjacent waste land, affording opportunities to integrate the production of food with the spaces provided for energy and transportation."[6] The transformation of freeways has already appeared in the agenda of Complete Street proponents, who assert that "in the process of building fast rail down some freeways it is possible to turn the auto-oriented road into a system that is also compatible with biking and walking."[7] The addition of productive landscapes to these roadsides begins to nurture a more holistic corridor.

THE END OF AN ERA

Without radical shifts in transportation planning and vehicular technologies, U.S. freeways will wither with the end of oil. In addition to the American freeway system, interstate and tertiary roads combine to create a vast web of arteries, veins, and capillaries. These dying roads occupy a staggering footprint, which will increasingly yield other opportunities as the oil age draws to a close. Landscape ecologist Richard T.T. Forman has considered the impact of this man-made network on the wider band of roadside ecologies, where he estimates that "about one-fifth of the US. land area is directly affected ecologically by the system of public roads."[8] Overall, nearly four million miles of paved roads traverse the landscapes of the United States.[9]

Forman also notes the latent potential in this comprehensive web of roads, where "landscape ecologists and scholars of related fields increasingly recognize ecological flows across the landscape as critical for long-term nature protection." [10] His articulation of a 'road-effect zone' extends the narrow focus of transportation planners (which might include consideration of pavement, drainage, grading, and durability) to the broader ecological impact of the road. According to Forman, just beyond the freeway shoulder lies an important living edge, one that affords a "spatial perspective that provides both the ecological and engineering objectives of society."[11]

Today, the freeway system is typically buffered and surrounded by planted grassy corridors that are routinely mowed--- an astonishingly wasteful practice in terms of squandered human energy, habitat depletion, and fossil fuel consumption. A plan for green infrastructure with local food or fuel production---a photosynthetic infrastructure---would strengthen communities, sequester carbon, and support biodiversity. This is the image that new urbanist Andres Duany has popularized as 'Agrarian Urbanism,' or the pervasive and interconnected food system supporting urban areas.[12] The land around roads could supplement traditional farms and urban gardens, characterizing a new agricultural typology built upon the woefully underused ribbons of public land throughout the American landscape.

New proposals for freeway corridors must acknowledge that this road system has already dramatically altered the landscape, and "despite the very real regional consequences of such accidental ecologies, and their negative perceptions, we need to come to terms with their benefits, so that they may be better understood, protected, and enhanced."[13] Urbanist David Fletcher recognizes that "many of these infrastructural freakologies serve as green infrastructures, cleansing and processing excess nutrients, controlling erosion, and providing habitat which survives independent of human agency."[14] The freeway system will need to be evaluated in terms of productive capacity, rejecting outdated binary notions of nature and wilderness. Those elements of the system that support community and biodiversity will be strengthened while those characteristics that reduce these aims will be minimized or eliminated.

Unlike the processes that characterized its genesis, the reinvention of the freeway system in a post-oil environment could be powered by the people. Like the spontaneous urbanism identified by Reyner Banham as the "Non-Plan," this reengagement with the road offers people an opportunity to relate to infrastructure on their own terms.[15] In the mythology of the American frontier, farming became a visible and physical means of claiming space. Even today, food production remains a "clear way to emphasize one's right to have a say in planning."[16] Guerrilla gardening, by city dwellers adopting forgotten urban spaces, has become a means of place-based action and civic involvement, and this kind of space hijacking fits squarely into the American ethic, specifically when it comes to converting underused land into a more productive capacity. (Figure 1)

FROM VISION TO ACTION

While unsolicited engagement with the landscape often reveals unexpected adjacencies or efficiencies, many would-be guerilla growers lack information about how and where to plant crops. Regional data, such as growing seasons, soil types and drainage, air and water quality, and solar access may not be obvious to a new farmer. Serving as an intermediary between data collection sources and the public, farming support groups have developed open-source online toolkits for new farmers. One of these sources, called the New Orleans Urban Farming Toolkit, creates a visual portal for budding growers (Figure 2).

Regional gardening clubs have also self-organized in order to improve their access to roadside foodsheds. At the New Orleans Food and Farm Network, growers host workshops and field visits to share knowledge and techniques (Figure 3). Across the United States, urban gatherers have finally eschewed the rural abundance that Euell Gibbons' promised in *Stalking the Wild Asparagus* in favor of yields from hyper-urban contexts. These foragers share maps of fruit-bearing street trees, bountiful vacant lots, and free, found offerings on other public lands.

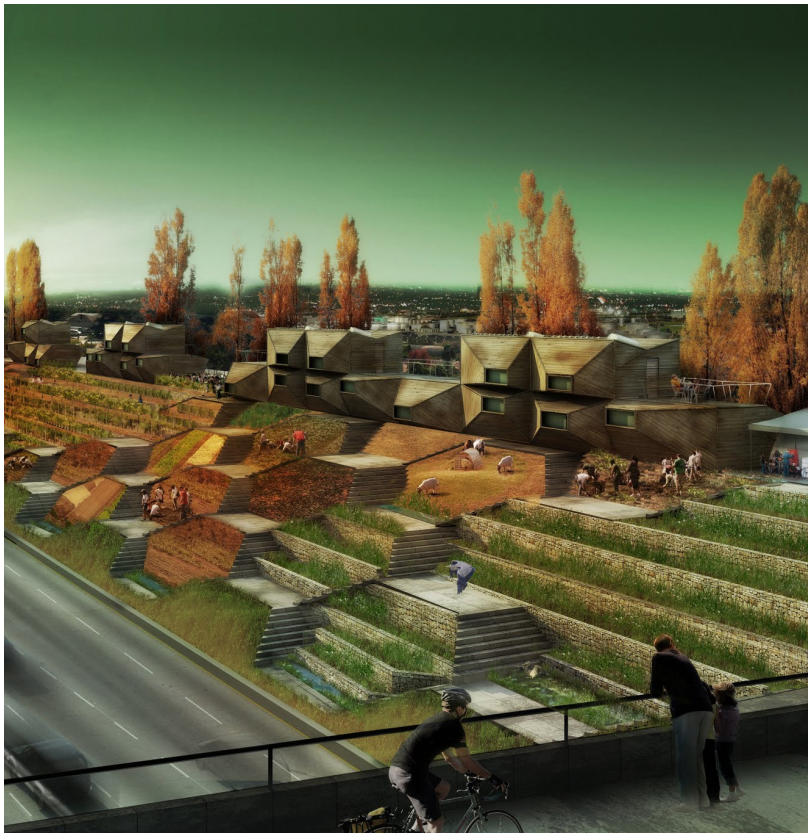
In what may be the most striking example of freeway farming, the 2010 Hayes Valley Farm in San Francisco appropriated an obsolete section of Highway 101 for a community garden (Figure 4). Neighboring residents, local school groups, and volunteers have converted this roadbed into productive agricultural space for fruit trees and container plantings at a large scale. While the group lacks long-term access to the property, they do have the support of the local government.

3

4

Figure 3: Students participate in a chicken coop building workshop sponsored by the New Orleans Food and Farm Network. Photo: Carey Clouse

Figure 4: Moving mulch on the old Central Freeway on-ramp that is becoming Hayes Valley Farm. Photo: Matthew Roth



5

Figure 5: TERRABANK Los Angeles. Image: Fletcher Studio

Design firms have also worked to develop this concept, most notably by designing and drawing productive freeway landscapes and thereby helping to make this proposal visible. In the 2009 Other New Urbanisms symposium sponsored by Sci-Arc, The Fletcher Studio unveiled a proposal for productive terraced freeway embankments. In TERRABANK, the designers demonstrated that along L.A.'s 527 miles of freeway, 960 acres could be readily converted (Figure 5).[17]

PHASING

As with other roads, replanting the freeway corridor involves conceptualizing landscape change in terms of distinct phases. Roadside pollution caused by leaded gasoline and other heavy metals washed from the roads over generations have fouled adjacent soil; the initial phases of this conversion might best be used for phytoremediation, biofuel production, and the creation of wildlife habitat. Future phases could incorporate shade trees and non-bioaccumulating edibles, followed by more traditional garden plots of fruit trees and edible perennials.

Like the apple orchards planted by opportunistic settlers in the early expansion of the American West, freeway food corridors could continue to serve future generations for years. Enduring edible freeways would demand sustainable planting strategies, suggesting long-term, hardy, and low-maintenance plants. Conveniently, the grading of roadbeds support water drainage to the adjacent landscapes and therefore most of this land could be planted for seasonal self-watering. As a grassroots movement, the creation of agricultural freeway landscapes would require minimal tools, material, time and capital. Gardeners would supply their own seeds, starts, and shovels.

INSURGENT CITIZENSHIP

The formalization of the freeway planting program would act as a suggestion, an invitation, and a physical backdrop against which guerilla gardeners can make their own mark. Every guerilla gardener would respond to the unique needs of a given location, and adjust planting suggestions accordingly. Because each section of the roadside ultimately would be planted out according to the vision of that community's gardeners, each segment would become a unique, place-based phenomenon. Growers along the routes would intuitively identify and plant the species that best matched their own needs.[18]

Much as successional dynamics define the evolution of species relative to their habitats, the planted roadways, as unique human ecologies, would become dynamic, ever-changing landscapes. And unlike the processes engendered by top-down planning efforts, the development of the planted roadway would be driven by personal engagement with the physical space of the landscape.

As designers visualize a world beyond oil, their ideas have the power to catalyze the regeneration of the built environment by creating an open invitation to plant along public road networks. While the transformation of millions of miles of barren highways into productive landscape may seem an insurmountable task, the success of a farmed freeway system requires only the participation of the growers nearby. Indeed, these rogue gardeners will become the true architects of this photosynthetic infrastructure.

ENDNOTES

1. Tatom, Jacqueline. "Urban Highways and the Reluctant Public Realm." In *The Landscape Urbanism Reader,* edited by Charles Waldheim, 181. New York: Princeton Architectural Press, 2006.
2. Ibid., 181.
3. Amidon, Jane. *Radical Landscapes, Reinventing Outdoor Space.* Thames & Hudson: New York, 2001. 108.
4. The ratio between embodied energy and caloric value grows when transportation is involved, leading Thomas Starrs to estimate that Americans use nearly as much energy for food as that for houses or cars. Thomas Starrs, "The SUV in our Pantry," Solar Today, *July/August 2005.*
5. In 2008, the Community Food Security Coalition reported that seventy-seven of these councils already exist across the North America.
6. Gorgolewski, Mark, June Komisar and Joe Nasr. *Carrot City: Creating Places for Urban Agriculture.* Monacelli Press: New York City, 2011. 15.
7. Newman, Peter, Timothy Beatley and Heather Boyer. *Resilient Cities: Responding to Peak Oil.* Island Press: Washington D.C., 2009. 104-5.
8. Forman, Richard T.T. "Estimate of the Area Affected Ecologically by the Road System in the United States." *Conservation Biology,* Vol. 14, No. 1 (Feb., 2000), 31.
9. Coolidge, Matt. "Gravel: Margins in our Midst." In *The Infrastructural City,* edited by Kazys Varnelis. Actar: Barcelona, 2008. 70.
10. Forman, 32.
11. Ibid., 32.
12. Duany, Andres. *Garden Cities: Theory and Practice of Agrarian Urbanism.* The Prince's Foundation: London, 2011. 9.
13. Fletcher, David. "Los Angeles River Watershed: Flood Control Freakology." In *The Infrastructural City,* edited by Kazys Varnelis. Actar: Barcelona, 2008. 46.
14. Ibid., 46.
15. According to Kazys Varnelis, "Banham valorized this bottom up action, which he called "Non-Plan," as a critical counter to modernism." Banham also wrote that the freeway system was one of the four ecologies of LA, giving the city its shape. Varnelis, Kazys. "Networked Ecologies." In *The Infrastructural City,* edited by Kazys Varnelis. Actar: Barcelona, 2008. 12.
16. Vetter, Ingo. "Urban Agriculture." In *Shrinking Cities, volume 1,* edited by Philipp Oswalt. Hatje Cantz: Verlag, 2006. 493.
17. Christian, Adam. "Urban Freeway Farming for LA?" In *Urban Insights L.A.* 11.16.2009. Accessed June 13, 2013: http://www.adamchristian.us/2009/11/16/urban-freeway-farming/
18. Carrot City suggests farming as a new use for underutilized urban infrastructure sites. Gorgolewski, 18-19.