Free-Trade Zone Urbanism

Martin Felsen
Illinois Institute of Technology

SHRINKAGE/GROWTH

In the early 1970s, cities throughout the American Rust Belt began to shrink. Many negative forces contributed and still contribute to this shrinkage, but one force is rarely considered: the failure of long-range planning and urban design to stabilize Rust Belt cities. After all, Rust Belt cities earlier in the twentieth century developed several comprehensive urban plans designed to stimulate economic booms and weather busts, foster engaged citizenry with visionary thinking, establish public infrastructures that prop up private property values, and avoid social and natural catastrophes. "City Beautiful" design documents such as the Plan of Chicago of 1909, Cleveland's Group Plan of 1903, and the Official Plan of the City of Cincinnati of 1925 became integral long-range frameworks for rationally shaping cities. So why, then, despite this history of deliberate urban plan making, are Rust Belt cities in so much trouble?

At the same time Rust Belt cities began to shrink, Sun Belt cities began to grow at a rapid pace. As Chicago's population spiked in 1950 at 3.6 million and then dropped to 2.7 million today, Houston's population increased from a half million in 1950 to 2.1 million people today. Between the years 2000 and 2010, the U.S. Census Bureau reported that Chicago, the de facto capital of the Rust Belt and ostensibly a global city, shrank by 200,000 people (of the 15 largest cities in the United States from 2000 to 2010, Chicago was the only one that lost population). Meanwhile, the Sun Belt's population has continued to surge.

Paradoxically, and famously, Sun Belt cities experienced explosive growth while creating few long-term comprehensive plans. Cities such as Phoenix, Dallas, and Houston historically favored short-term approaches to planning largely directed by private-interest groups. These groups organized Sun Belt cities into profit-first fiefdoms. Throughout the twentieth century, most attempts made by urban designers and planners to create comprehensive city plans for Houston, the de facto capital and financial center of the Sun Belt, were consistently shot down by free-enterprise coalitions.

Resistance to planning is ideologically driven in Houston: governmental zoning—no matter the public purpose—was and is still viewed as a violation of personal property rights. A top official in Houston's historically miniscule planning department summed up the general notion by stating, "We plan for Houston's future like weathermen for the next weekend; we do short-range planning" (Feagin 1998).

Only a handful of attempts have been made to expansively master-plan Houston and its environs. In the late 1980s, for example, Houston's city council approved a significant comprehensive plan for development in and around the city. However, the plan's recommendations, which were orchestrated (and approved) by private business groups, were nonbinding (Feagin 1985). Even today, Houston's Department of Planning and Development states that its primary mission is to "partner with decision makers and the community to balance a spectrum of needs and interests" (City of Houston 2012). Contrast this mission with the Chicago Department of Housing and Economic Development's (Division of Land Use Planning and Policy) primary mission to "develop and implement citywide and neighborhood land use plans" (City of Chicago 2012). Chicago's objectives are proactively stated, while Houston's goals are passively suggested. While Chicago planners continue to develop long-range comprehensive plans, planners in Houston strive to "provide quality customer service" (City of Houston 2012) to clout-heavy interest groups.

When governmental planning is passive, private-interest consortiums are effectively handed the power and administrative authority necessary to implement *public* infrastructure. Of course, Houston's public infrastructure remains governmentally owned, but it is often designed primarily to support special-interest groups. Throughout the twentieth century, city planners in Houston operated nearly in reverse from planners in Rust Belt cities. Instead of endeavoring to envision and shape civic environments to benefit all, city planners in Houston operated as expert consultants, or "facilitators" (Burchell and Hughes 1978), for projects initiated by private developers. The planners' role was to support their "clients'" profit-oriented interests as best they could with public resources and publicly subsidized infrastructure.

The very real crises wrought by weak public planning are the largely unfunded social costs. Social costs, as theorized by social economist Karl William Kapp, are the negative effects on communities of profit-first capitalism that are created—but not paid for—by private investment and production. These negative effects such as polluted air and water, toxic brownfields, sprawl, and congestion are shifted to and paid for by third parties, typically the general public. As cities grow, negative effects are typically created, yet the community costs too often remain partially or completely uncompensated by those who originally created and profited from them. Without proper planning and design-based action, the costs of addressing needed public infrastructures (schools, parks, public transportation, water resources, etc.) to counteract the negative effects of urban growth can be extreme and out of reach of many underfunded communities, however well-organized they might be.

LAISSEZ-FAIRE-LOOKING CITY

Even in a "laissez-faire" environment such as Houston, medium- and long-range plans are made mainly by private interests. Corporations, developers, realtors, lawyers, architects, and (private-practice) planners are continually immersed in reinvesting surplus capital on physical urban sites. Long-term plans are needed in order to coordinate and "partner" with city officials in order to unlock public funds to enable infrastructural improvements.

There exists a major discrepancy between Houston's anti-federal-government ideology image and its behind-the-scenes willingness, even eagerness, to accept federal dollars to stimulate business investments. Despite Houston's professed dislike of public involvement to plan and dispense social services to the population at large, over the decades, public spending on physical infrastructure that directly aids free enterprise has been widespread.

In this sense, the myth of Houston as the final frontier of American laissez-faire-driven (pure) capitalism is highly questionable. Many examples are available: in 1902, a coalition of business leaders and local officials lobbied the federal government to fund the Houston Ship Canal, which today is one of the busiest ports in the United States. This massive public infrastructural investment spawned whole new industries in Houston. Houston's pro-profit private/public oligarchy again successfully solicited massive funds from the federal government in the 1930s to build a range of business-oriented infrastructures as part of the New Deal. In the 1940s, additional investments by the federal government in the form of huge defense spending further accelerated Houston's growth (Feagin 1985) and set the stage for Houston to become the global center of oil- and petroleum-based technology industries in the 1960s and 1970s. Further federal assistance was funneled into Houston in the last quarter of the twentieth century as capital for the petrochemical pipeline companies, regulation of oil field competition, and construction of the NASA Johnson Space Center. Each of these federal interventions—lobbied for by local business and political leaders—significantly stimulated Houston's growth.

Despite its anti-statism rubric, free enterprise in Houston has not entailed the absence of governmental subsidization but the near-absence of governmental intervention for all activities except those involving profitable economic development. Historically, Houston officials routinely refused federal dollars to help support community development and social planning. For example, in the 1960s, Houston officials shunned all federal urban renewal programs to plan and build affordable housing, which many considered "socialist" because of government regulations (Lowe 1990). More recently, Houston officials "defunded" public health care for many low-income citizens after suing the federal government (via the state of Texas) to cease financial support for controversial neighborhood-based health care centers (George 2012).

This trade-off of minimizing expenditures for social programs in exchange for accruing dollars for a range of capital-intensive, industrial-scaled private projects underpins Houston's contemporary physique.

EXTRACTION ECONOMIES

In the same years (1901–1915) that Daniel Burnham was organizing, writing, and acting on the highly collaborative Plan of Chicago, the discovery of oil just outside of Houston set the stage for its subsequent dominance as the main oil-enabled industrial and technological capital of the Sun Belt. Both events still strongly reverberate today: the Burnham Plan remains a primary document for rallying reformers, business leaders, architects, and city planners to reimagine the catalyzing effects of public infrastructural investments, and in Houston, the energy-centered economy continues to dominate urban decision making, especially those decisions related to public infrastructural expenditures.

Today, Chicago's and Houston's economies are more similar than they might initially appear. Both economies have been and still are largely based upon natural resource extraction. From the nineteenth to the twentieth century, Chicago's economy thrived on the extraction of resources such as grain, lumber, and meat from the Midwestern landscape (Cronon 1991). And throughout the twentieth and early stages of the twenty-first century, Houston's economy has thrived on the extraction of oil and natural gas from Gulf Coast oil fields.

So, is there a viable natural resource that could be the basis of an extraction economy capable of catalyzing a resurgent Rust Belt in the twenty-first century?

The Rust Belt has two abundant natural resources: coal and freshwater. Extraction economies based on coal have already run their historic course, and Rust Belt cities have already boomed and busted around the price of coal. The city of Pittsburgh, for example, was planned and designed on the eastern edge of easily accessible coalfields to forge steel for the world. But once locally mined coal (and iron ore and limestone) could be shipped cheaply to many other locales, Pittsburgh eventually lost its hold on the steel industry.

Freshwater has never been the basis of any city's extraction economy, but this will likely change in the very near future. Water scarcity is one of the main threats facing cities and growing populations in the twenty-first century, including populations in the United States. The Natural Resources Defense Council forecasts that by 2050 one-third of counties in the United States, primarily in the Sun Belt and South, will be at severe water risk (NRDC 2010). In fact, much of the Sun Belt has been on drought watch for 12 years and counting. Numerous experts have predicted that freshwater is going to be more important than oil in the twenty-first century, and, as such, the price of water could bolster economies that are water (and water knowledge) rich.

Today, Houston's economy is still expanding not only because oil prices are spiking but also thanks to all the varied industrial research and technological development around oil-based products and market-driven extraction innovations. Since the 1950s, billions of dollars' worth of oil-gas planning, design, engineering, and service contracts have been made between

Houston oil companies and oil field owners throughout the world (Feagin 1985). For example, two-thirds of the world's oil tools are produced in Houston (Fisher 1989). The majority of large oil fields breaking ground within the global economy stimulate considerable new economic growth in Houston today.

With 20% of the Earth's surface freshwater in the Great Lakes and watersheds of the upper Midwestern sections, the Rust Belt's freshwater reserves are abundant.

How could a water-based extraction economy steeped in cutting-edge technological innovation throughout the Rust Belt begin? And, how might architects and urban designers envision and plan for urban revitalization and infrastructural reconstruction of huge postindustrial landscapes to help stimulate a water-based extraction economy? To do so, one must first confront a disturbing trend: *smallness*.

TACKLING TIMIDITY

Today, architects have assumed responsibility for an array of cultural and biospheric crises with the near-universal surrender: "my fault." Yet, the size and scale of proposed fixes run counter to the magnitude of the perceived and real problems. Instead of confronting massive crises with equally large design, planning, and plan-making strategies, architects typically settle on design solutions that strive to minimize, cut back, and economize. Many of today's environmental crises suffered by cities are huge and holistic, and their sheer size overwhelms the majority of contemporary architectural design strategies that favor smallness.

Smallness is a contemporary architectural phenomena that mobilizes design tactics such as reducing building mass (to avoid embodied energy in materials), decreasing reliance on resource grids (to curtail electrical and water use), truncating building envelopes (to slash long-term investments), minimizing glass (to save energy), and diminishing floor-area ratios and downzoning (to taper urban densities). These minimization tactics seek to counter a real/perceived crisis (or looming catastrophe) at the microscale with the hope that each small move will add up to make a big difference. The design process, or, really, the *decision*-making process, is often aided by a checklist of potential solutions handed down from pseudogovernmental organizations.

Why, as a discipline, do contemporary architects counter huge crises with small ideas? Architects once thought and theorized the huge (both huge problems and huge solutions). In addition to unprecedented opportunities to design large-scale public works projects in the postwar period, architects eagerly took on the large-scale cultural and environmental problems of the day. Where did the huge, audacious urban megaplan go? Today, relatively small, incremental design or, more likely, policy decisions dictate the course of contemporary cities. City design by disciplinary experts who act as long-term planners or physical plan makers seems to be (at least in Western cities) over.

Yet, 50 years ago, architects, confronting similar crises including urban pollution, crime, congestion, dysfunctional municipal infrastructures, and rampant urban flight (that threatened to unravel the viability of several Western cities), proposed the "megastructure" project. The megastructure project of the 1960s was the leveraging of predicted catastrophe to invent new urban form.

A megastructure was composed of both large structural frameworks (permanent) and many smaller, often modular (transient), units. Ideally, a megastructure contained all or most of the functions of a city. It was, as Fumihiko Maki called it, "a man-made feature of the landscape" (Maki 1976). A megastructure was designed to be a comprehensible form, capable of broad or even unlimited horizontal extension. Boundless extensibility was coupled with the aggregation and concentration of numerous urban activities and networked infrastructures. Between the sheer size of a megastructure and its ability to magnetize and assemble divergent modern urban programs, architects argued that megastructures were the perfect antidote to the chaos and disinvestment afflicting cities in the 1960s.

Concurrently, in the late 1960s, the United Nations renewed an urban template for another large-scale, stand-alone megaform: the free-trade zone. The United Nations envisioned prescribing these repeatable forms to cities throughout the world as an economic cure to poverty.

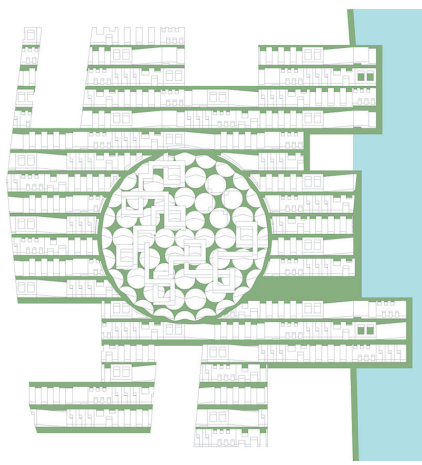
Free-trade zones have their historic origins in the free ports of Europe such as Venice, Porto, and Copenhagen. Today, free-trade zones are specially designed and designated areas—networked around the globe—within which goods can be imported, manufactured, reconfigured, and reexported without the intervention of most governmental authorities. Corporations setting up in a zone will likely be incentivized with tax breaks, loose regulations on land development, and few legal restrictions on economic and environmental activities.

Houston's free-enterprise, low-tax disposition has allowed it to operate more like a free-trade zone than any other city in the United States. Although all cities have elite private-interest groups that shape the futures of their respective cities, Houston's capitalists have distinguished themselves as uniquely unrestrained by local governmental and site-based regulatory constraints (Feagin 1998).

Much like Houston, free-trade zones are publically subsidized to encourage and expedite private economic activity and local jobs. These investments stimulate effective infrastructures and lead to heterogeneous and complimentary land uses to strengthen shared economic interests among participating (corporate) entities. But, unlike Houston, free-trade zones are purposely planned and spatially organized by governmental sponsors: they have a definitive physical size and contained shape.

Free-trade zones maximize economic activity by establishing physical autonomy. Formal insularity, highly articulated edges, and growth boundaries are essential formal components to zone design. In a similar way that

01



02

Figure 1: Free Water Zone. New factories built around a research university are adjacent to several communities stocked with blue-collar workers.

Figure 2: Factory buildings containing water-intensive industries aggregate around the central dot. The central dot provides activities for the surrounding community and conceals NIMBY (not in my backyard) programs.

embassies enjoy significant extraterritorial status as sovereign territories of a represented state, free-trade zones are designed as enclaves within foreign sites. As such, free-trade zones are planned and designed as self-sufficient, comprehensible forms. When a "critical mass" of clustered business activities is achieved, zones effectively become self-determined megaforms. The planning of free-trade zones is a highly formal exercise of clearly mapping urban limits that frame and counter the infinity of sprawl with shape.

The vital difference between the megaforms sponsored by the United Nations and the architectural project of the 1960s was in the hierarchy of urban components. For the United Nations, infrastructure—as opposed to architecture—was the primary component. In fact, the zones were little more than a series of transactions and protocols that congealed into shared networks of infrastructure. Streets, air/cargo ports, rail, container yards, multimodal exchange points/lines, long-term storage/distribution space, parking lots, material handling/recycling centers (stacks and piles), secure water supplies and solid waste disposal, power supply and backup generators, fire safety equipment and emergency shelters, 24-7 security, temporary service spaces, medical care and learning pods, and growth boundaries (e.g., walls, fences, and gates) composed the zones. Buildings were more like conveyance-based *utilities* rather than monumental backbones for staging dynamic activities or multiuse programs. The most vital aspect of these big-box sheds was their connectedness to modern infrastructure systems.

Unfortunately, and unlike the United Nation's sponsored megaforms, the raw ambition and monumental scope of the architecture-driven megastructure project too often led to the impossibility of implementation: megastructures promised to renew almost everything while contextually engaging almost nothing. About Yona Friedman's Urbansime Spatiale megastructure project, Rem Koolhaas commented that it "never lands, never confronts, never claims its rightful place—criticism as decoration" (Koolhaas 1995). Massive, costly, and permanent concrete and glass shells, the favorite material choice of architects engaged in the 1960s megastructure project, had little place in the United Nations–sponsored infrastructure-driven megaform projects. In the UN projects, concrete was mostly used to seal mud from the streets, and buildings were made from the most utilitarian and dispensable materials available.

FREE WATER ZONES

As contemporary culture has renewed its interest in the city and in infrastructure, it is time for architects to recuperate some of the underlying ideas that spawned the megaplan and megastructure projects in order to consider how city-scaled megaforms can become an updated architecture-based urbanism: a conjecture of what a comprehensible city could be to combat large-scale (real and predicted) crises. Through the filter of productive contemporary catastrophes, architects can redefine the megastructure projects of the 1960s to engage and exploit existing infrastructural conditions as a catalyst for urban invention.

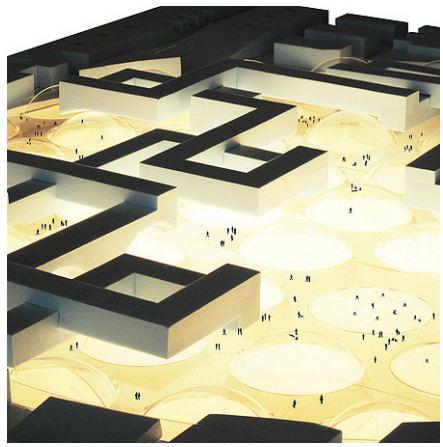
A speculative project named Free Water Zones by UrbanLab demonstrates how urban crises can be used productively as a springboard for ideas. Combining the Rust Belt's loss of population with its abundance of freshwater, the proposal outlines a strategy for redensification of underutilized postindustrial landscapes. *Free water* is used as a catalyst for attracting water-intensive industries to relocate from areas such as the Sun Belt—where water is scarce—to the Great Lakes Rust Belt region, where water is abundant.

Nearly all industries, whether small or large, utilize water in the production of their products and services. The amount of water usage varies across economic sector. For many industries, water is crucial in the manufacturing or development process. For others, water is a primary resource in the supply chain. As global supplies of freshwater become more contested, water-intensive businesses (representing millions of jobs) are beginning to scramble to secure long-term water resources. For example, the solar panel industry requires 2,380 gallons of potable water to manufacture a 1-watt photovoltaic panel. And it takes 6,600 gallons of potable water to manufacture an average-sized laptop computer. Companies around the globe—especially many in the Sun Belt—are at risk of losing their water resources as a result of such factors as urbanization and population growth, increasing food production, changing consumption patterns, industrialization, water pollution, and climate change.

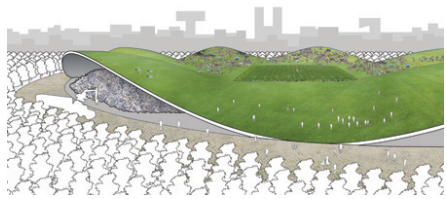
The free water zones are designed to follow a growth template established by Houston's oil-extraction economy. The objective of the zones is to become the global economic hub for developing goods and services centered on freshwater-related technologies and innovations. Like free-trade zones, free water zones are planned to be sponsored and initially subsidized by local Rust Belt cities/states to stimulate economic activity and population growth. Subsidized infrastructures include a range of water conveyance, sequestration, and filtration infrastructural systems within a closed-loop environment.

In exchange for free water to run their factories, companies opening or relocating to the free water zones will be asked to play by a series of closed-loop water rules. The main rule: every factory must ultimately return all nonembedded water used in their production and manufacturing processes to the Great Lakes.

The closed-loop water system in the zone is driven by a distributed water infrastructure embedded in a series of publically subsidized biostreets connected to the lake and organized by a center flood control plain (or "dot") that is itself several layers thick with building, landscape, and infrastructure programs. Integrated in this central dot landscape is a research university; factory buildings ultimately cluster around the university and central dot. The factories recycle "wastewater" from their operations through a series of building-integrated filtration systems. After the recycled water is cleaned to specific standards, the water is released into a series of biostreets and constructed wetlands in order to slowly remediate the surrounding postindustrial landscape. Biostreets and wetlands are designed as ecological



03



04

05

Figure 3: The central dot undulates to house and conceal NIMBY programs such as material recycling and waste/water management.

Figure 4: Storm water is visibly conveyed to a centralized flood control plain that is itself several layers thick.

Figure 5: "Mounds" act as a rainwater movement system and lift research buildings above flood (datum) lines.

treatment systems that make use of natural bioremediation processes to remove contaminants from wastewater sources. Once treated, water is again carried through the biostreets, floodplain, and wetlands to recharge the Great Lakes.

Here, the megastructure "claims its rightful place" (Koolhaas 1995), nesting seamlessly in the inevitable schedule of infrastructural and urban reconstruction. Individual factories share the responsibility of working together in a megastructure-scaled public/private land/water partnership with a broad commitment to accelerate the revitalization of the postindustrial landscape of the Great Lakes Rust Belt region. The zone utilizes a campus park model to host the free trade of invention and knowledge between public, private, and academic partners. Ultimately, a network of free water zones connected to Great Lakes Rust Belt cities is envisioned to grow. ◆

REFERENCES

Burchell, R.W., and Hughes, J.W., "Introduction: Planning Theory in the 1980s—a Search for Future Directions," in R.W. Burchell and G. SternLieb, editors, *Planning Theory in the 1980s*, Center for Urban Policy Research, Rutgers University (Rutgers, NJ), 1978.

City of Chicago, Department of Housing and Economic Development website.

City of Houston, Department of Planning and Development website.

Cronon, William, "Nature's Metropolis: Chicago and the Great West," W.W. Norton (New York), 1991.

Easterling, Keller, "Zone: The Spatial Softwares of Extrastatecraft," *Places*, posted June 11, 2012.

Feagin, Joe R., "Are Planners Collective Capitalists?" in *The New Urban Paradigm*, Rowman & Littlefield (Lanham), 1998, p. 234.

Feagin, Joe R., "The Global Context of Metropolitan Growth: Houston and the Oil Industry," *American Journal of Sociology*, Vol. 90, No. 6, May 1985, pp. 1204-1230.

Fisher, Robert, "Urban Policy in Houston, Texas," *Urban Studies*, Vol. 26, 1989, p. 146.

Foreign-Trade Zone Resource Center website, "A Brief History of the U.S. Foreign-Trade Zones Program," 2012.

George, Cindy, "Court Refuses Planned Parenthood Request in Texas," *Houston Chronicle*, October 25, 2012.

Koolhaas, Rem, *S, M, L, XL*, 010 Publishers (Rotterdam), 1995, p. 504.

Lowe, John, Review of "Free Enterprise City: Houston in Political and Economic Perspective" by Joe R. Feagin, *Economic Geography*, Vol. 66, No. 1, January 1990, pp. 88-89.

Maki, Fumihiko, as quoted in "Appendix: Maki on Megastructure" in Reyner Banham's *Megastructure: Urban Futures of the Recent Past*, Harper & Rowe (New York), 1976, p. 217.

NRDC (National Resources Defense Council) website, "Climate Change, Water and Risk: Current Water Demands Are Not Sustainable," July 2010.

Sanborn, Kimball, Lew, Solak, Zarzuelo, eds., "Growing up in Houston, Assessing the Quality of Life of Our Children," Children at Risk, 2012.

U.S. Customs and Border Protection website, Office of Field Operations, Cargo and Conveyance Security, U.S. Customs and Border Protection Regulations, 19 CFR Part 146, 2012.

Walsh, Mary Williams, "Illinois Debt Takes Toll, Study Finds," *New York Times*, October 24, 2012.