

Economic Sustainability in the Post-Industrial Landscape

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The Braid

The metaphor of sustainability as a green braid conveys the crucial need for the integration of economic, cultural, and environmental sustainability. The braid's strength is derived from its weaving of the multiple strands. None of them are nearly so effective on their own and the fraying of one, weakens the whole. This metaphor clarifies the challenge to designers of synthesizing performance in these three areas and signifies a sea change away from design methodologies engineered to optimize performance of only a single variable. In theory, the three strands both enrich and constrain each other. However, their integration in practice raises numerous questions.

For instance, because common goods like social equity and the environment lack market prices, economists reduce them to externalities and have difficulty accounting for them.¹ As a consequence, contemporary development patterns are driven almost entirely by short-term economic viability with very little concern for long-term impacts, especially on the other two strands. This problem is further exacerbated in today's globalized economy where digital networks and mobile capital distance design decisions from placemaking and enable increased spatial segregation between the costs and benefits of the various strands. Instead of braided interdependence, the post-industrial economy has unsustainably widened the gap between rich and poor people and places. In the process it has largely redefined the role of the designer away from emplacing the local culture of a particular place and towards the market segmentation of global brands, chain stores, and designer labels. In other words, much architectural design has similarly shed its obligation to the externalities. How do we distinguish progressive architectural practices in this context?

Architectural discourse on sustainability stands in staunch opposition to these trends, but has been similarly lopsided. It too often reduces economic sustainability to an unconsidered, albeit desirable, byproduct. The overwhelming focus on environmental strategies has tended to reduce issues of economic sustainability to trade-offs between initial, operating, and life-cycle costs of green construction and systems. Obviously, attention to project costs is important, but so are the project's contributions to local economic development and to the larger economic system's means of sharing costs and benefits. Michael Pyatok's housing projects incorporate spaces for low-income residents to use for revenue

¹ Varied attempts to account for such "externalities" are documented in Paul Hawken, Amory Lovins, and L. Hunter Lovins, *Natural Capitalism* (Boston: Little, Brown and Company, 1999) and Robert W. Burchell, Anthony Downs, Barbara McCann, and Sahan Mukherji, *Sprawl Costs, Economic Impacts of Unchecked Development*, (Washington DC: Island Press, 2005).

generation, but this kind of programmatic invention to assist users' long-term economic sustainability is rare. So how do we sustainably integrate the strands of the braid into design while operating within the realities of an economic system that reduces "green" to a niche market?

The braid's expansion of the scope of the designer's task is matched by its simultaneous expansion of the scale. While it is possible to ask of a single building whether it is viable in the long-term, fair, and ecologically beneficial, the questions can only be answered by branching out well beyond the building into the larger communal and natural systems. This engagement with the larger place is essential to sustainability and begs greater consideration of sustainability at the urban and regional scale. Again, in theory, the strands can be more effectively interwoven at the regional scale where jobsheds, transportation systems, watersheds, and airsheds tend to align. New Urbanism and Smart Growth have offered designers and planners promising design and implementation tools at this scale. However, again in practice, the regional scale is where the unsustainability of our current development patterns are most glaring: dominated by auto-dependent, income-segregated, land-consumptive urban and exurban sprawls where buildings are treated as disposable assets more than as enduring investments. Ignored by architects, sprawl has provided more Americans with unprecedented access to the American Dream but is it viable in the long-term, fair, and ecologically beneficial?

In order to more effectively integrate the braid's strands, I will argue that architects today need to recognize and make more effective use of economic sustainability as a driver in sustainable design and to more critically position themselves relative to their role in the production of unsustainable late capitalist, post-industrial landscapes. For starters, this requires a better understanding of globalization, the landscapes of mobile capital it has produced, and architecture's ability to negotiate between these forces in the production of places capable of sustaining capitalism's relentless "creative destruction".

The Landscapes of Globalization, Post-Industrialism, and Post-Fordism

The contemporary economic system goes by many names. With reference to world trade some of the terms commonly used are globalization, late capitalism, the end of ideology, neo-liberalism, and "the Washington consensus". In reference to the most dominant economies, especially that of the U.S., prominent terms that indicate new shifts include: the service economy, the new economy, the hour-glass economy, the information age, the tech boom, the exit-ramp economy, knowledge workers, deregulation, "irrational exuberance", outsourcing and post-Fordism.

Because I'm principally interested in the types of development patterns, landscapes, and buildings produced by this system, I've found it most useful to employ Daniel Bell's phrase, "the post-industrial economy" to collectively

describe these new practices.² It was used in the late sixties and into the seventies both enthusiastically and with great fear and trepidation to describe a near-future technocratic society where information systems and telecommunications would lead to the replacement of “messy” constituency-oriented, participatory politics, by more rational, scientifically-based decision-making and the equitable distribution of automated and now abundant goods to a satisfied, media-saturated populace. Bell in particular, distinguished post-industrial society from pre-industrial and industrial society in terms of the centrality to the economy of processing information instead of extracting raw materials or mechanical production. While pre-industrial societies settle in proximity to natural resources and industrial societies develop around factories and transportation systems, post-industrial societies’ investments are less place-dependent. Instead of producing farms, coal mines, or cities, post-industrial societies produce highly educated, mobile people and organizations.

Globalization and computation have only further accelerated Bell’s prescient forecast of a new society dominated by mass media and telecommunications. In today’s post-industrial economy electronic access increasingly substitutes for physical access and speed, mobility and malleability are valued more than endurance and placemaking. I have argued that these values are particularly evident in several specific post-industrial landscapes: the rustbelts of former industrial areas, recent sprawls, “global city” financial cores, and the free trade zones produced by the last few decades of mobile capital.³ Interdependent economically, but spatially and socially segregated, these landscapes provide a physical means to understand the widened gap between rich and poor places. They tell the story of disinvestment in places like Flint, Michigan and re-investment in the non-unionized sweatshops of China’s Pearl River Delta. As global production increasingly shifts to such Free Trade Zones (FTZ’s or Special Economic Zones or Export Production Zones,) the goods produced increasingly feed the consumer landscape of American sprawl. Coordination of the transactions between these vast new landscapes of production and consumption has enriched transnational retailers like Wal-Mart on the one hand and financial service providers on the other. This has given rise to both the glittering new banking and luxury condo high-rise financial cores in major cities around the globe as well as the massive distribution warehouses, big-box power centers, and other suburban retail formats of the commercial strip and highway interchanges at the ever-expanding periphery. Although these landscapes are

² See Daniel Bell, *The Coming of Post-Industrial Society* (New York: Basic Books, 1973) for the more enthusiastic endorsement of post-industrialism. For the more critical view see Alain Touraine, *The Post-Industrial Society. Tomorrow’s Social History: Classes, Conflicts and Culture in the Programmed Society*, trans. Leonard F. X. Mayhew, (New York: Random House, 1971).

³ Ellen Dunham-Jones, “Capital Transformations of the Postindustrial Landscape,” *Oase*, vol. 54, “Re: Generic City/Re: Generiek ke stad,” (Winter 2001): 8-35.

highly segregated and specialized they share several less than sustainable characteristics: a privileging of speed and mobility through auto-dependency, malleability through cheap construction, and a lack of public spaces – except for shopping. Reflections of mobile capital, they can be described as market segmentation at a global scale.

Every economic system produces winners and losers, but what are the consequences of this kind of segmentation at the global scale? Many critics have decried the homogenization of landscapes of similar types. The banking centers in Pudong, Dubai, and Canary Wharf are being designed, financed, and retailed by many of the same firms and resources, resulting in tremendous similarities in the physical environments. The links between these loci of capital are such that the price of a condominium in one may have more to do with the comparable price in another city's financial district, than with the rest of that condo's local city. The placeless uniformity of building products and development patterns in sprawlsapes are similarly notorious and well-recognized. However, there has been far less attention paid to the economic development impacts of the segregation of the different landscape types from each other. What are the consequences of the post-industrial economy's tendency to distance producers, consumers, and the administrators of capital into distinct and separate landscapes? This can best be answered by examining the shift from Fordism to post-Fordism.

Building to a large extent on the global economic channels and power relationships established by various colonial regimes, today's post-Fordist business practices decentralize production and marketing around the globe, while centralizing administrative and financial power. The recessions of the 1970's prompted many American businesses to use newly available digital technologies to become far more flexible and market responsive by better tracking information on supply and demand, automating or monitoring increasingly offshore production and coordinating the inputs from increased use of outsourcing and consultants. Just as manufacturers became more reliant on information technologies, information-heavy services such as finance, banking, law, healthcare, media and entertainment, boomed in the eighties while blue collar manufacturing jobs were increasingly sent overseas. Robert Reich, former U.S. Secretary of Labor, describes this shift in terms of the pyramidal organizations of post-war corporate America being replaced by global spiderwebs.⁴ As advanced economies shifted from a basis in industrial manufacturing to post-industrial services and information, Henry Ford's unionized workers and centralized assembly-lines have been increasingly replaced by a globally dispersed system of digitally programmed small-batch production, automated or non-unionized labor, temporary contracts, and just-in-time deliveries, enabled by telecommunications and digital networks. More directed

⁴ Robert B. Reich, *The Work of Nations*, (New York, NY: Random House, 1992), p.89.

towards mass customization and varied product lines than the mass production methods of the first half of the century, post-Fordism uses advertising and styling to appeal to varied consumer niche markets and relies to a greater degree on built-in obsolescence and disposability. Its practices are intended to maximize speed, mobility and flexibility.

While substantial foreign trade existed long before telecommunications, the incomparable mobility of contemporary capital is unthinkable without digital networks to facilitate capital flows, the monitoring of investments, and coordination of global transactions.⁵ These networks also allow multinational corporations to seek profits through maintaining gross inequalities between producers' wages and consumer prices on a globally distributed basis.⁶ This is a fundamental shift. Fordism struck a balance between the employer's need to have workers show up on time to run the assembly line and the workers' right to organize a union and bargain collectively. Under these conditions Henry Ford recognized (albeit begrudgingly) that it was in his interest to pay his workers enough that they could afford to buy one of his cars, (in other words allowing his producers to also become his consumers.) Instead, post-Fordism uses global geography to segregate producers from consumers. While Fordism contributed to the substantial growth of the American middle class and arguably the most equitable distribution of wealth ever seen, post-Fordist mobility is able to keep wages low and unions out by threatening to move somewhere else.⁷ The resulting global system is politely called "uneven development" because of its maintenance of structural inequities between capital and workers, producers and consumers, developed and developing economies.

⁵ See Manuel Castells, *The Rise of The Network Society* (Malden, MA: Blackwell, 1996).

⁶ Nike sneakers are a common example used to display the gross disparities between wages and prices. In 1996, 25,000 Nike workers in Indonesia made 70 million pairs of shoes. While the shoes were sold for upwards of \$100 a piece, the workers each got \$2.23 per day. At the same time, Michael Jordan's endorsement fees were over \$20 million. Walter LaFeber, *Michael Jordan and the New Global Capitalism*, (New York, NY: Norton, 1999), p.107, 147. However, wages are not the only factor in post-Fordist industrial location strategies. Access to the host country's market is also often a significant determinant.

⁷ Real wages for Mexican workers in maquiladoras have fallen in the face of regional competition from Honduras, and Guatemala, as well as from the Export Processing Zones of Southeast Asia. See, Andrew Ross ed., *No Sweat; Fashion, Free Trade, and the Rights of Garment Workers*, (New York, NY: Verso, 1997) While labor conditions and wages remain poor for individual workers, the Export Processing Zones - especially in Southeast Asia - are credited with stimulating a tremendous investment of foreign capital and triggering substantial economic growth for the region as a whole.

This is not to say that the laborers in Mexican maquiladoras or Indonesian footwear factories are not pleased to have a job, that their countries are not benefiting from some degree of technology transfer or that the system as a whole is not economically sustainable. It is merely to point out how mobile capital's constant threat to hire someone else or move its jobs elsewhere has diminished workers' abilities to increase wages over time and move up into the middle class and become consumers. Instead, low skilled, low-wage earners increasingly compete for jobs in a global wage race to the bottom.

The flip side of uneven development is that those with unique skills are catapulted to the top. Economists Robert H. Frank and Philip J. Cook explain the asymmetry of the global economy in terms of star power. In their book, *The Winner-Take-All Society, Why the Few at the Top Get So Much More Than the Rest of Us*, they argue that markets, media, and technology have so increased the exposure of those identified as the best in their field, that they can completely dominate their markets. "Since it costs no more to stamp out compact discs from Kathleen Battle's master recording of Mozart arias than from her understudy's, most of us listen to Battle. Millions of us are each willing to pay a few cents extra to hear her rather than another singer who is only marginally less able and this enables Battle to write her own ticket."⁸ While few of us could discern the difference in quality, the availability of access to the best causes a tremendous asymmetry in the market between number one and number two.

Architecture in the Post-Industrial Landscape

We see uneven development play out in our discipline with star architects. Short lists for high profile commissions around the world are likely to have the same five or ten names on them at any given time. Star practitioners with global practices, such as Frank Gehry, are hired not to produce a place-based design that speaks of the particular qualities of the local architecture, but rather to deliver a high-design signature product that shows their client to be an elite global consumer. Extremely talented designers, they have become identifiable brands with particular niche markets. If the modern mass-produced *objet type* served a growing middle class, the proliferation of design choices under post-Fordism serve a more differentiated social structure where the media articulate market segments and rank desirability. Consumption choices are most uniform at the highest end of the scale where Rolexes, Rolls Royces and, increasingly, star architects are internationally recognized. A consequence of this is that in the global economy, architecture, like a watch or a car, becomes an imported, fashionable, commodity, more expressive of the promises than the performance of post-industrialism.

⁸ Robert H. Frank and Philip J. Cook, *The Winner-Take-All Society, Why the Few at the Top Get So Much More Than the Rest of Us*, (New York: Penguin, 1995), p.2.

Indeed, despite post-Fordism's low commitments to its buildings and workers, the promises of the post-industrial economy and its digital technologies are extremely seductive. A wide spectrum of authors including Bell, Marshall McLuhan, Alvin Toffler, Jeremy Rifkin, Francis Fukuyama, George Gilder, Nicholas Negroponte, William Mitchell and Thomas Friedman have variously contributed to the rosy expectations that computers, robotics and telecommunications will bring about laborless abundance, equitable access to information, self-realization, even world peace. Although white-collar workers have been working more hours not less and authors such as Benjamin Barber and Samuel Huntington argue that globalization's confrontation between "jihad and mcworld" is heightening not diminishing the "clash of civilizations," post-industrialism's liberating promises remain culturally compelling. Wired individuals, not just post-Fordist multinational corporations, are fueled by speed, mobility, and flexibility to empowered positions in the post-industrial economy. Ever since Macintosh's introduction of the personal computer in 1984, the marketing of digital hardware and software has played to the progressive promises of individual-empowerment and the democratization of power. The thriving computer engineers in Bangalore and new market capitalists in China certainly would not disagree. Friedman's thesis that digital technologies have "flattened" the playing field and made access to the global market more equitable bodes well for economic sustainability for certain sectors, but the sustainability of post-industrialism as a post-Fordist system, under even the most optimistic scenarios remains very much at question.

Under these circumstances how can architecture best promote "even" rather than "uneven" development? Which is more progressive - for architects to give expression to a radical future of laborless self-empowerment with fluid, malleable forms, (even if today such forms principally serve the elite?) Or to design place-based alternatives to the reality of wasteful, auto-dependent, socially segregated, privatized landscapes whether in Malaysia's Cyberjava or suburban Atlanta (even if the alternatives' neo-traditional styling does not appear progressive?) The dichotomy is unnecessary, but because contemporary architectural discourse and publications have been so dominated by assumptions that progressive architecture is principally a matter of representation, the less visible aspects of reform and economic impact often go under-recognized and under-appreciated. For example, if one looks at the generation of non-placebased logics, global production methods, and the cutting edge use of digital technology, the radically different but equally post-industrial architectures produced by Wal-Mart and by Frank O. Gehry and Associates have more in common than one would suppose.

Both Gehry's office and Wal-Mart have pioneered innovative uses of digital technologies, (from CATIA software to the universal barcode pricing and inventory system, the world's first private satellite system.) Gehry uses digital networks to produce one-of-a-kind masterworks from components custom-produced in various parts of the world. While Wal-Mart's prototypical box stores,

(many designed for a lifespan of only five years,) couldn't be more different from Gehry's buildings, they're stocked with goods produced and delivered from various Free Trade Zones with similarly digitally coordinated precision and custom arrangements. Exemplifying post-Fordist production, Wal-Mart has been charged with bringing down wages and triggering outsourcing industry-wide.⁹ If Wal-Mart's seductive low prices are a result of both ever-lower wages and retail's speediest, most efficient distribution system, Gehry's seductive digitally-milled, compound curves erase the hand of the worker and can be read as representing the post-industrial promise of flexible, seemingly instantaneous, laborless abundance. Gehry's mastery of new technologies and his star status have resulted in his reproducing his signature forms and materials in project after project such that he too almost seems to be franchising. Like Wal-Mart, Gehry has become a brand. His buildings, like Wal-Marts, have little to do with the particularities of places. They perform within a global system where cities seek icons by star architects to emulate the Bilbao-effect and announce their presence in the global economy. Instead of representing what is unique about a particular local culture, both Gehry and Wal-Mart are more expressive of a global consumerist culture – a culture that values speed, mobility, and flexibility and whose networks allow for both Wal-Mart's highly successful bottom-feeding as well as Gehry's *haute cuisine*. The problem is that for all that we may admire Gehry's evocation of the progressive promises of speed, mobility and flexibility, their regressive reality in Wal-Mart is far more pervasive in our society and upon our landscape. This brings us to a discussion of sprawl.

Sprawl, the Dominant Post-Industrial Landscape

Most of the research on the impact of the global economy on urbanization has focused on global cities and their relations with subordinate regional and/or post-colonial hubs. Dividing the world into Immanuel Wallerstein's core, semi-peripheral and peripheral economies, and then re-linking them through a network of urban nodes, this model of interconnected cores of graduated significance effectively illustrates the capital flows and communications infrastructure between administrative and banking centers throughout the world-economy. However, because the work of Anthony King, Saskia Sassen, Manuel Castells and others focuses so much on banking, finance, administration, and communication, it retains a focus on urban centers and financial districts as hubs that neglects the far larger proportion of urban development outside the centers, the variously described landscape of Edge Cities, Edgeless Cities, technoburbs and urban sprawl. Since the 1970s suburban development in the U.S. has outpaced central

⁹ There are many sources of varying credibility for discussions of Wal-Mart. One of the best reviewed is by Charles Fishman, a senior editor of *Fast Company*, entitled *The Wal-Mart Effect: How the World's Most Powerful Company Really Works—and How it's Transforming the American Economy* (New York: Penguin Press, 2006).

cities threefold.¹⁰ For example, despite a significant boom in medium to high-density in-town construction in recent years, metropolitan Atlanta is chopping down 54 acres of trees a day, for ever-lower-density subdivisions and ever-greater auto-dependency at the ever-expanding edge.¹¹ Architecture schools have similarly tended to ignore this development, giving far more pedagogical emphasis to how to relate architecture to either culturally rich, urban contexts or biologically rich, natural ones, than to the ambiguous *terrain vague* of the suburbs.

If cities are the principal urban form identified with industrialism, urban sprawl is the principal urban form of post-industrialism. Coincident with the advances in telecommunications and economic restructuring beginning in the 1970's and continuing today, urban sprawl exemplifies the decentralization, dispersion, and disconnection from local conditions that is characteristic of digital media and the global economy. Not unlike the spiderwebs of the global economy, sprawl's chain stores and franchises are local manifestations of much larger, globally networked enterprises. Its office parks tend to be occupied by businesses that are regional exporters. As the global economy reproduces interchangeable labor pools in its relentless search for cheap labor, urban sprawl reproduces interchangeable places in its search for cheap land. Designed to attract mobile capital through real estate investment trusts (REITs) traded on Wall Street the developments conform to formulaic, single-use, auto-dependent typologies: malls, strip malls, office parks, garden apartments, and residential subdivisions.¹² Wall Street values short-term predictability more than long-term financial performance (let alone long-term environmental or social sustainability.) As a result, most of these product types are built ever-more cheaply since the investment will be treated as a disposable asset, amortized in as little as seven years. In an unsustainable cycle, their value quickly diminishes as they are leapfrogged by newer versions further out. Within this system, varied uses are configured more in relationship to highway exits and perceptions of mobility and speed than to each other and the result is a landscape largely bereft of public spaces devoted to democratic ideals of civic or communal activity. Instead, what serves as public space is predominantly oriented to shopping. Meanwhile the private spaces of sprawl, especially the subdivisions, tend to be highly economically stratified. Like the global differentiation of landscapes, zoning regulations with lot-size minimums perform significant market segmentation, segregating those with different incomes and exacerbating jobs-housing imbalances. Finally, the generic aspect

¹⁰ See Ellen Dunham-Jones, "Seventy-Five Percent", *Harvard Design Magazine*, no.12, (Fall 2000).

¹¹ This statistic is based on analysis of Landsat Satellite data as reported by Stacy Shelton, "Study: 54 Acres of Trees Lost Daily", *Atlanta Journal-Constitution*, April 15, 2005.

¹² See Christopher B. Leinberger, "Retrofitting Real Estate Finance: Alternatives to the Nineteen Standard Product Types," in *Places 17*, no. 2, "Retrofitting Suburbia", Ellen Dunham-Jones and June Williamson eds., (Summer 2005).

of so many of the places and buildings in sprawl's vast landscapes reflect the general placelessness of the post-industrial economy.

It is perhaps no surprise that this quintessential post-industrial landscape is aesthetically, environmentally, economically, and socially unsustainable.¹³ Or is it? A few arguments have emerged refuting the litany of criticism against sprawl. Historian Robert Bruegmann defends sprawl's social sustainability by arguing that its undeniable popularity is due to its provision of the American Dream to more and more Americans. He is dismissive of sprawl's critics as mostly elite snobs disdainful of the middle class. Less convincingly, libertarians like Randall O'Toole have questioned sprawl's poor environmental performance by pointing out the advantages of open space in low density development and dismissing concerns over land consumption by pointing out the country's enormous reserves of unbuilt land.¹⁴ Such defenses of sprawl and generally ignore the multiple negative impacts of auto-dependent lifestyles and pit those advocating free markets and unhindered private property rights against zoning, planning, and environmental protections as big government solutions.

Development patterns and the provision of roads are central to all of these debates. They constitute the biggest local government expenditure and are one of the most effective tools the state has for fostering either sprawl or more compact growth. Using conservative forecasts, a recent book by Bob Burchell, Anthony Downs, Barbara McCann and Sahan Mukherji on the economic cost of sprawl argues that Americans can no longer afford to pay the infrastructure, land depletion, and disinvestment costs of leapfrog development. In one telling example, they write:

In South Carolina, if sprawl continues unchecked, statewide infrastructure costs for the period 1995 to 2015 are projected to be more than \$56 billion or \$750 per citizen per year for these twenty years. Roads would cost 2.5 times what would be spent on primary, secondary and higher education infrastructure; three times what would be spent on health infrastructure, including all hospitals, institutions, and water-sewer treatment systems; ten times what would be spent on public safety, administration, and justice infrastructure; and twenty-five times what would be spent on all cultural and recreational infrastructure.¹⁵

¹³ See F. Kaid Benfield, Matthew D. Raimi, and Donald D. T. Chen, *Once There Were Greenfields, How Urban Sprawl is Undermining America's Environment, Economy, and Social Fabric*, (New York, NY: National Resource Defense Council, 1999).

¹⁴ See Robert Bruegmann, *Sprawl, A Compact History* (Chicago: University of Chicago Press, 2005) and Randal O'Toole, *The Vanishing Automobile and Other Urban Myths: How Smart Growth Will Harm American Cities*, (Oregon: Thoreau Institute, 1996.)

¹⁵ Burchell, *ibid.* p.4.

Alex Krieger argues that what has gotten us into this situation is that the benefits of sprawl (increased privacy, mobility, and access to nature) have accrued to individuals, while the costs of sprawl (degraded air and water quality, traffic, social segregation, land consumption and disinvestment) have been born by society as a whole.¹⁶ Although new research points to the growing transportation and health costs of sprawl to individuals and growing market dissatisfaction with sprawl's limited housing types, the legal, financial, and development systems remain oriented to reproducing this form of accounting and its built consequences. This lack of sustainable sharing of costs and benefits between individuals and society is not only endemic to sprawl, but to the difficulties of weaving the green braid at all scales. How do we shift to a more interdependent sharing of costs and benefits? Is this a matter solely of public policy or can it be reconsidered as a design problem?

New Urbanism

Architects naturally tend to focus on the design of individual buildings and immediate spatial relationships rather than less visible, less physical impacts. However, so much of the lesson of sustainability is the need to better understand the impact of individual projects on larger systems. William McDonough's attention to systems performance rather than the design of a product has helped to establish his leadership in sustainable design. By treating waste as food, whether at the level of the molecule, the lifecycle, or the ecosystem, he redefines individual design commissions as opportunities for long-term sustainable economic development.

Such thinking applied to sprawl suggests that rather than simply designing a single, green project or building what is needed is an overhaul of the very systems by which sprawl is reproduced. This is in fact the agenda of the CNU (Congress for the New Urbanism.) Instead of assessing new urbanism based on the virtues or vices of the 700 or so individual new urbanist projects or their designers (as has been the tendency in architectural discourse,) if one looks at the work of CNU as an organization, the radicality of this larger re-design project becomes more evident.¹⁷ Like its predecessor, CIAM (*Congres Internationale d'Architecture Moderne*,) CNU produced a Charter of principles that clearly lays out the organization's reformist ambitions. Over the past fourteen years, it has fundamentally redesigned the systems of development by strategically building alliances and new tools and standards to allow for the implementation of the Charter's principles. While academic discourse focused on theory and maintaining autonomous critical distance, the new urbanists collaborated with EPA, HUD, ULI, APA, AIA, Fannie Mae, NAHB, ITE, the RWJ Foundation and

¹⁶ Alex Krieger, "The Costs – and Benefits? – of Sprawl" *Harvard Design Magazine* 19, (Fall 2003/Winter 2004).

¹⁷ My observations (and biases) are based on my attendance at 12 of the 14 congresses, four years as a task force chair and my position since 2005 as a member of CNU's Board of Directors.

most recently, the USGBC, to intertwine more sustainable practices into, and to change the rules of the game of, development.

While CIAM-influenced single-use zoning reflected a legitimate need to separate noxious industrial uses from housing in the early twentieth century, CNU recognizes how out of date such prohibitions against mixed-use are in the American post-industrial landscape and has redesigned the zoning codes of numerous towns and cities and triggered updates in countless more. Through model ordinances of zoning overlay districts, locally specific Form Based Codes, Pattern Books and Andres Duany's Smart Code, CNU has provided new tools to promote more urban and more place-based development patterns and buildings. Based on a transect of six different zones that go from most urban to most rural, these new codes replace the relatively crude and monolithic land-use designations of sprawl with finer grained differentiations between more dense, walkable, mixed-use urban cores and protected rural preserves. Integrated with masterplans in most cases, the codes link varied lot sizes with specific building types and specific street types so as to design in a variety of choices for different incomes and needs. Instead of a typical subdivision of cookie-cutter homes at uniform price points, CNU uses design to integrate diverse households into mixed-income communities.¹⁸ The finer grain of the Smart Code also allows for designed transitions from the building to the street, from the center to edge of a neighborhood and between neighborhoods.

Just as sprawl separates uses, it separates decisions about transportation design from land use and relies on mid-century street design principles. The AASHTO manual on street design bases all fundamental decisions on only two conditions: mobility and access. The base assumption is that rural roads between cities are designed for high speed and maximum mobility while urban roads within cities are designed for slow speeds, multiple curb cuts, signals, and turn lanes to provide maximum access. Unfortunately, suburban conditions are not addressed and arterials are designed for a level of service consistent with mobility even though they are inevitably rezoned for commercial and retail – albeit significantly spaced apart because of the curb cut limitations. As a result, suburban commercial strips end up providing neither convenient access or mobility. Instead, CNU has led interdisciplinary efforts with the Institute of Transportation Engineers to redesign street standards that promote a much wider array of context-sensitive designs that correspond to the transect zones of the Smart Code. In addition to linking land use and transportation for the first time, the new standards recognize that in addition to accommodating cars, streets need to be designed for multiple modes including pedestrians, biking, light rail, etc. The

¹⁸ HUD's Hope VI housing program has replaced approximately one hundred of the country's most blighted public housing projects with new urbanist mixed-income communities. However, despite mixed-income intentions, many new urbanist projects have been forced by NIMBY-influenced local planning boards to eliminate the lowest-end units and increase the number of single-family homes.

multi-year effort is moving towards national adoption and will provide designers with significant opportunities to integrate more sustainable compact, planning with more sustainable transportation modes and build on CNU's successes with transit-oriented-development.

This integration is especially significant at the scale of the region. In association with various Smart Growth organizations, CNU has advanced strategies for designing regions to perform more sustainably. Developed by EPA, Smart Growth recognizes that environmentally-friendly "no-growth" positions are futile in high growth areas and tend to increase housing costs. Instead, Smart Growth links and balances the conservation of natural areas to the identification of targeted growth areas within a region. The latter may be existing areas in need of redevelopment or new areas already well-served by infrastructure. Smart Growth policies limit government funds for new roads, schools, or other infrastructure to only be expended in the identified growth areas. Criticized by some as allowing government to overly interfere with the free market, Smart Growth policies have nonetheless been adopted by republican and democratic governors as a means of promoting sustainable economic development. For regional designers, these policies are tools that can redirect growth back into existing nodes and corridors so as to assist in less-auto-dependent redevelopment and, where possible, to make transit feasible. The admittedly ambitious goal is to retrofit sprawl into healthy polycentric regions.

Additional tools that CNU has developed or promoted to advance economic, social, and environmental sustainability include; the development of alternative financing models and means to assess mixed-use investments; Location Efficient Mortgages which allow homebuyers near transit to qualify for \$60 – \$90,000 more in a mortgage if they own one less car than would otherwise be expected given the size of the unit; guidelines for greyfield redevelopment; guidelines for replacement of elevated highways with surface boulevards; the reliance upon charrettes to involve stakeholders in the design (as in the post-Katrina charrette for the towns of the Mississippi coast); collaboration with public health officials to promote walkability as a tool to fight obesity and other health risks; and current collaboration with the USGBC and the Natural Resources Defense Council to develop LEED-ND, a new Leadership in Energy and Environmental Design designation for projects at the scale of neighborhood design. All told, this extensive toolkit picks up CIAM's reformist torch and applies it towards alternatives to sprawl. Its strategies are intended to equip designers and planners to operate within the existing market structure of the economy to design places that consumers willingly choose for their long-term viability, fairness and ecological benefits.¹⁹

¹⁹ Although New Urbanism regularly receives criticism from architects for its predominantly neo-traditionally styled buildings, I have argued that this use of popular styles is a strategic attempt to seduce the market into accepting the otherwise unmarketable public goods of higher density, mixed-use, mixed-

New urbanism is far from perfect or from living up to all of its principles and goals. But the CNU has been remarkably effective at drawing attention to both the need and the market for alternatives to sprawl and the value of the slow, the in-place, and the fixed within our speedy, mobile, and flexible lives.

Architects and Economic Sustainability

The global post-industrial economy integrates diverse parts of the world economically, but at the local level produces landscapes based only on short-term profits. They unsustainably increase the segregation of rich and poor and are highly auto-dependent and land consumptive. However, precisely because post-industrial landscapes have been so placeless, dominated by generic buildings and non-place-based market logics, the uniqueness of place and placemaking matter more than ever. Within the sea of placeless sameness design becomes the prime tool for adding value and economic sustainability to places. Because mobile capital allows locational flexibility, those with the most choices, the retiring baby boomers and the young mobile knowledge workers can – and are – choosing to locate in attractive, distinctive, diverse places.

This market for well-designed places provides the opportunity for architects to weave the green braid. Architects and architecture cannot reform the economic system to make it more sustainable. But at the local level they can resist its pernicious effects and exploit its support for placemaking. The challenge for architects is to use design –both at the urban and architectural scale - to counter the post-industrial landscapes with places that sustain value, diversity, and environmental quality over time.

The ability of places to endure, thrive and evolve over time is crucial to their ability to intertwine the braid's strands. The more we re-use existing buildings and infrastructure, the less natural resources we have to consume and the more opportunities we have for meeting a broad spectrum of social and cultural needs.²⁰ Yesterday's less sustainable suburban development types – the malls, office parks, and commercial strips – are increasingly being retrofitted into more sustainable, more urban places with buildings and spaces that foster communal support, diversity, and reduced vehicle-miles-traveled. Revitalizing existing places is extremely important, but so is designing new places that can survive the opening of a new mall, subdivision, or office park ten miles away. This is where the current post-industrial landscapes have most failed.

income, public space, and public transit. See Ellen Dunham-Jones, "New Urbanism's Subversive Marketing", Michael Shamiyeh ed., *What People Want, Populism in Architecture and Design* (Basel: Birkhauser, 2005).

²⁰ Jane Jacobs writes of the importance of older buildings with low rents to house the non-profits, artists, and other community-serving uses that can rarely afford to locate in new construction in *The Death and Life of Great American Cities* (New York: Random House, 1961).

The value of placemaking is a lesson not lost on the new urbanists' attention to improving the standards and practices that give value to the everyday landscape. Nor is it lost on Frank Gehry, who since Bilbao has been the go-to guy for an urban shot-in-the-arm. These strategies, the making of enduring economically diverse neighborhoods and the making of timely icons, complement each other well as they use design to give identity to place and promote their long-term sustainability.

Illustrations:

Figure 1: China's entry into the post-industrial economy has resulted in massive replacement of traditional hutong housing by new, generic mid-rise housing, as in this image of Chunshu, Xuanwu District, Beijing from 2004. Photograph credit: Sze Tsung Leong.