NATURE AND THE CITY: CHANGES FOR THE FIRST URBAN CENTURY IN THE UNITED STATES

NATURALEZA Y CIUDAD: CAMBIOS PARA EL PRIMER SIGLO URBANO EN LOS ESTADOS UNIDOS

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ABSTRACT

This panoramic view shows how are focused today the relationships between Nature and the City by research scholars and practitioners in North America. In the American context of an "endless city", it develops four key ideas for a better approach to urban ecosystems: urban ecology, sustainability, new regionalism and landscape urbanism. Urban ecology has emerged as an interdisciplinary approach for understanding the "drivers, patterns, processes, and outcomes" associated with urban and urbanizing landscapes. With the leadership of several American cities, as New York City, Chicago, Seattle and Portland, urban greening efforts based on principles of sustainability are developed. The new perspectives on regionalism are evident in different efforts associated with the megaregion/megapolitan concept: a new geographic unit of analysis and a new scale for planning. This new regionalism represents a movement led by architects and planners involving geographers, demographers, and policy makers. Finally, landscape urbanism is a more design-based approach. Instead of viewing nature in the city, we have begun to understand the ecology of cities: the urban systems are ecosystems. As a result, "nature cannot be used as exterior decoration, but rather as integral to the health and resiliency of human settlement".
Keywords: urban ecology, regional planning, landscape architecture, sustainable urbanism, resiliency.

RESUMEN

En este artículo panorámico se muestra cómo se está abordando hoy la relación entre ciudad y naturaleza entre los estudiosos y profesionales de Estados Unidos. En el contexto de una "ciudad sin límites" se ordenan las ideas en torno a cuatro conceptos: ecología urbana, sostenibilidad, nuevo regionalismo y urbanismo del paisaje, asociados a una comprensión más abierta de los ecosistemas urbanos. La "ecología urbana" emerge como una aproximación interdisciplinar para comprender las "reglas, patrones, procesos y resultados" asociados a los paisajes urbanizados. Desde el liderazgo de algunas ciudades como Nueva York, Chicago, Seattle y Portland, se han desarrollado esfuerzos por mejorar lo elementos de la naturaleza en la ciudad desde principios de sostenibilidad. La nueva perspectiva regionalista se manifiesta en los esfuerzos asociados al concepto de mega-región y de megalópolis: una nueva unidad de análisis geográfico y una nueva escala para la planificación. Este nuevo regionalismo representa un movimiento liderado por arquitectos y urbanistas implicando a geógrafos, demógrafos y legisladores. Finalmente, el "paisajismo urbano" es un enfoque más proyectual. Frente a la naturaleza en la ciudad comenzamos a comprender la ecología de las ciudades: los sistemas urbanos son ecosistemas. Como resultado la naturaleza no puede ya utilizarse como algo decorativo sino como algo esencial que pertenece a la salud y a la resiliencia de los asentamientos humanos.
Palabras clave: ecología urbana, planificación regional, arquitectura del paisaje, urbanismo sostenible, resiliencia.

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Introduction: The First Urban City

Global climate change and dependence on fossil fuels are critical issues facing our planet and our communities. At the heart of this is a global economy that is drawing populations from smaller towns and rural communities to larger urban centers. For the first time in history, more than half of the world's population lives in these urban regions. As a result, the need for buildings and other urban infrastructure will increase. The number of buildings will double in the next 25 years in the United States alone (Nelson, 2004).

Early in the 21st century, over half the world's population became urban. The planet will continue to urbanize with up to around two-thirds of the world's people living in urban regions by mid-century. Meanwhile, the global population continues to grow. At the beginning of the 20th century, there were 2 million people living on earth. There are nearly 7 billion now, with that number expected to increase to 9 or 10 billion this century.

The United States is participating in this global urban shift. Unlike Europe, the U.S. population continues to grow, both through immigration and native births. Over 300 million people live in the United States, with the 400-million mark expected to be reached sometime in the 2040s.

In the United States, nearly half of all energy use comes from constructing and operating buildings and their technologies. When combined with transportation, approximately 75 percent of energy consumption in this country results from our built environment. We cannot double the number of buildings in the United States using the same designs in the same urban forms of the past.

Given these trends, architects, designers, and planners must focus on developing new strategies—strategies that will improve the quality of our lives while minimizing negative impacts on our planet, our environment, and the health of our communities.

These trends are receiving considerable attention by architects and urbanists internationally and in the United States. For example, the 2006 Architecture Venice Biennale focused on the future of cities worldwide (Burdett & Ichioka, 2006). Subsequently, the curator of that biennale co-edited a massive tome on the topic called «The Endless City» (Burdett & Sudjic, 2007). The Rockefeller Foundation has taken up the global urban challenge and contributed and advanced thinking on the topic (Peirce & Johnson, 2008). Several American scholars are exploring fresh ideas about urbanism. Four noteworthy areas, the focus of this paper, include urban ecology, sustainability, new regionalism, and landscape urbanism.

Urban Ecology

The U.S. National Science Foundation (NSF) supports a network of 26 Long Term Ecological Research (LTER) projects. The NSF initiated the LTER program

in 1980 to support research on long-term ecological phenomena. The LTER mission is to document, analyze, and understand ecological processes and patterns that change over long temporal and large spatial scales. Until 1997, these LTERs were located outside urban regions. After an intense competition, the NSF selected the contrasting American cities of Phoenix (http://caplter.asu.edu) and Baltimore (http://www.beslter.org) for its first urban LTERs. Baltimore has a longer European settlement history and is located in a humid, coastal region. Although there were ancient native settlements, the Phoenix region has grown rapidly since World War II and is located in an arid desert.

The Baltimore LTER aims to understand the metropolitan region as an ecological system. The Baltimore Ecosystem Study team of cross-disciplinary researchers explores complex interactions between the built and natural environments with ecological, social, economic, and hydrological processes (Pickett *et al.*, 1997, 2007; Cadenasso *et al.*, 2003; and Felson & Pickett, 2005). The Baltimore LTER attempts to advance both ecological research and environment policy. For example, "Our finding that urban riparian zones experiencing hydrologically-induced drought are not sinks for nitrate, but in fact may be nitrate sources, helped lead policy makers concerned with the water quality of the Chesapeake Bay to reduce their reliance on stream corridor tree planting as a primary mitigation strategy" (Pickett *et al.*, 2007, p. 51). In addition, the Baltimore LTER team has suggested how science can be used in urban landscape design (Cadenasso & Pickett, 2008).

The Central Arizona-Phoenix LTER also includes an interdisciplinary team of researchers. They study the interactions of ecological and socio-economic systems in a rapidly growing urban environment. They have especially advanced our understanding of land-use change on ecological patterns and processes (Grimm *et al.*, 2000, 2008; Grimm & Redman, 2004; Lewis *et al.*, 2007; Peter *et al.*, 2008). Such understanding is important as cities in the Southwest United States continue to grow rapidly in an environmentally sensitive context.

In addition to the formal NSF-backed urban LTERs, other U.S. scholars are advancing urban ecology research across disciplines, most notably in the Puget Sound of the Pacific Northwest (Alberti, 2008; Marzluff *et al.* 2008; Alberti & Marzluff, 2004; and Alberti & Waddell, 2000). The Puget Sound group from the University of Washington has contributed to our understanding of ecological resilience in urban ecosystems. For example, they observe, "In cities and urbanizing areas fragmentation of natural habitats, simplification and homogenization of species composition, disruption of hydrological systems, and alteration of energy flow and nutrient cycling reduce cross-scale resilience, leaving systems increasingly vulnerable to shifts in system control and structure" (Alberti & Marzluff, 2004, p. 241).

Resilience is useful for helping communities respond to disaster. The ability for urban areas and landscapes to rebound from disaster is termed "resilience". Resilience, from the Latin *resilire* meaning to spring back or rebound, is a concept and a theory with growing appeal in the disciplines of ecology and planning. When rising from traditional concepts in ecology, resilience emphasizes

equilibrium and stability. The United Nations defines resilience as the ability to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change.

Most recently, concepts of resilience emerge from what is called "new ecology", which focuses on non-equilibrium and the adaptability of ecological systems. The latter is appropriate "to urban ecosystems, because it suggests that spatial heterogeneity is an important component of the persistence of adaptable metropolitan regions" (Pickett & Cadenasso, 2003). Cities are anything but stable and predictable systems. Former New Orleans Mayor Marc Morial has noted, that the challenge we face "is not only about rebuilding New Orleans and the Gulf Coast, it is about rebuilding a culture, a human system."

As a result of urban-based ecological studies, urban ecology is emerging as a field that emphasizes an interdisciplinary approach to understanding the drivers, patterns, processes, and outcomes associated with urban and urbanizing landscapes. Alberti (2008) conceives of urban ecosystems as complex coupled human-natural systems where people are the dominant modifiers of ecosystems, thus producing hybrid social-ecological landscape patterns and processes. Some urban ecology research focuses on the impacts of habitat fragmentation does to suburban and urban housing development patterns for avian species productivity (Marzluff *et al.*, 2007); other research focuses on the integration of scientific analyses into growth management strategies (Robinson *et al.*, 2005). There is an emerging emphasis in urban ecology research on the unintended social outcomes resulting from environmental planning efforts in urban places, with particular attention paid to economically vulnerable people (Dooling, 2008). These diverse research agendas are united in their recognition that urban ecosystems are characterized by complexity, heterogeneity, and hybridity, which are best analyzed within an interdisciplinary approach; and that these analyses are intended to close the gap between scientific research and policies aimed at creating sustainable urban environments.

As these more comprehensive efforts continue, urban ecology has been advanced in the U.S. through more focused research, most notably around habitat conservation plans advocated by former Secretary of the Interior Bruce Babbitt (2005). Three examples of this work include the Balcones Canyonlands Conservation Program in Austin, Texas; the Sonoran Desert Conservation Plan in Pima Country, Arizona; and San Diego Multiple Species Conservation Program (Layzer, 2008).

For example, the San Diego program resulted from cooperation between the U.S. Fish and Wildlife Service and the California Department of Fish and Game. The goal is to create a 172,000-acre (69,606-ha) preserve network of biological core areas and wildlife corridors (Layzer, 2008). The plan represents a large-scale application of landscape ecology, a field related to urban ecology that emphasizes an understanding of nodes, corridors, and matrices (Forman, 1995, Forman & Godron, 1986). As a result, the program offers an advance in large landscape-scale planning.

Sustainability

The concept of sustainable development can be traced back to the innovative American forester Giffort Pinchot, who pioneered an approach to managing natural resources based on "multiple use and sustained yield." The concept gained much broader attention after the Brundtland Commission of the United Nations issued its well-known 1987 report «Our Common Future» (United Nations World Commission on Environment and Development 1987). The Brundtland report noted that the present generation should consider the consequences of their actions on future generations and defined sustainable development as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (p. 8).

Critics argue that sustainable development goes too far or does not go far enough. Sustainable development seeks to balance the "3 E's" of environment, economics, and equity. Laissez-faire economic determinists argue that the market will create development with the greatest good. More environmentally inclined scholars argue that we must go beyond sustaining the planet, that is, maintaining what is, and create new organic forms of human settlement. For example, the late John Lyle (1994) advocated a regenerative approach to planning and design.

Still, we need to begin by sustaining what we have. The design and planning of the built environment has much to contribute to that goal. As noted by Berke, "There is a growing consensus in scientific and technical evidence that greening urban form has significant effects on advancing sustainable development" (2008, p. 404).

In a vacuum of leadership by the national government in the United States, several American cities, most prominently New York City, Chicago, Seattle, and Portland, are undertaking urban greening efforts, based on principles of sustainability (Birch & Wachter, 2008). However, local governments are not adopting sustainable development as a comprehensive framework, but rather "cities are adopting sustainability initiatives in a piecemeal, ad hoc manner" (Saha & Paterson, 2008, p. 21). Still, the mayors of several cities are providing leadership. For example, in December 2006, New York City Mayor Michael Bloomberg challenged his fellow citizens to pursue ten key goals for a sustainable future. These goals focused on land, water, transportation, energy, air, and climate change concerns (Table 1).

In 1991, Austin, Texas, initiated its Green Building Program, which evolved from its Energy Star Program that had been created in 1985. As the first comprehensive program in the U.S., the Austin program is designed to encourage sustainable building techniques in residential, multi-family, commercial, and municipal construction. Projects qualify for the program through a rating system. The city's public utility, Austin Energy, assists participants to use this program to make choices regarding building materials and systems.

Table 1. New York City's Sustainability Goals.

Land	
	HOUSING Create homes for almost a million more New Yorkers, while making housing more affordable and sustainable OPEN SPACE Ensure that all New Yorkers live within a 10-minute walk of a park BROWNFIELDS Clean up all contaminated land in New York
Water	
	WATER QUALITY Open 90% of our waterways for recreation by reducing water pollution and preserving our natural areas WATER NETWORK Develop critical back-up systems for our aging water network to ensure long-term reliability
Transportation	
	CONGESTION Improve travel times by adding transit capacity for millions more residents STATE OF GOOD REPAIR Reach a full "state of good repair" on New York City's roads, subways and rails for the first time in history
Energy	
	ENERGY Provide cleaner, more reliable power for every New Yorker by upgrading our energy infrastructure
Air	
	AIR QUALITY Achieve the cleanest air of any big city in America
Climate Change	
	CLIMATE CHANGE Reduce global warming emissions by more than 30%

Austin's program influenced the development of the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Program. The Natural Resources Defense Council initiated the development of LEED in 1994, involving a broad group of environmentalists, architects, engineers, developers, builders, and product manufacturers. LEED provides a system of standards for environmentally sustainable construction. LEED addresses six major areas:

- Sustainable sites.
- Water efficiency.
- Energy and atmosphere.
- Materials and resources.

- Indoor environmental quality.
- Innovation and design process.

These six areas continue to evolve but form the basis to certify buildings for energy and environmental efficiency based on a scoring system consisting of required prerequisite standards and additional credits. New construction and existing building renovations are eligible for LEED certification, which occur at four levels depending on the number of points achieved by the project: certified, silver, gold, and platinum. In addition to certifying buildings, the USGBC also accredits individuals who are qualified to help with the LEED rating of buildings.

LEED is an evolving system, which the USGBC continues to improve. Although it has done much to advance green building in the U.S., there are gaps in its scope. For example, for sites surrounding buildings, the use of native plants and water conservation is encouraged by LEED. While a good start, much more can be done to improve design at the site scale. In response, the Sustainable Sites Initiative was launched (Steiner, 2008a) (www.sustainablesites.org). This initiative addresses areas outside buildings and considers the impact of developments on soils, hydrology, plants, materials, and human well-being.

The Trust for Public Land created a tool to balance conservation and development at a larger landscape scale, called Greenprinting. This tool was developed to assist community leaders to identify the most important areas for conservation. Greenprinting uses Geographic Information System (GIS) technology to map and to rank lands for conservation based on local priorities (Figure 1). The resulting GIS-based greenprints can be used in growth-management plans and for open space purchase efforts. Greenprinting allows local decision–makers to consider important sustainability concerns, such as social equity, in addition to environmental factors. For example, the distribution of open space and recreational areas can be considered so that all income groups have equal access. In general, much work needs to be done in the U.S. to advance the equity “e” of sustainable development.

New Regionalism

The well-known new urbanist architect Peter Calthorpe (1993, with Fulton 2001) has also advanced new perspectives on regionalism. With the planner John Fregonese, Calthorpe put his theories into practice first in Portland, Oregon, then in Salt Lake City, Utah. Through their leadership in Envision Utah, Calthorpe and Fregonese developed new tools for scenario planning.

The success of Envision Utah spawned similar efforts across the United States, including Envision Central Texas (www.envisioncentraltexas.org). Initiated in 2001, the effort created a common vision for progressive Austin and its more politically conservative surrounding jurisdictions. Five rapidly growing counties comprise the Envision Central Texas region. Fregonese-Calthorpe Associates led the visioning exercise, which extensively involved the community through public workshops, test-site charrettes, a regional survey, and leadership

training. Four growth scenarios were designed using GIS technology, which combined public preferences with land-use and transportation models. Over 12,500 local citizens responded to the survey that detailed these scenarios.

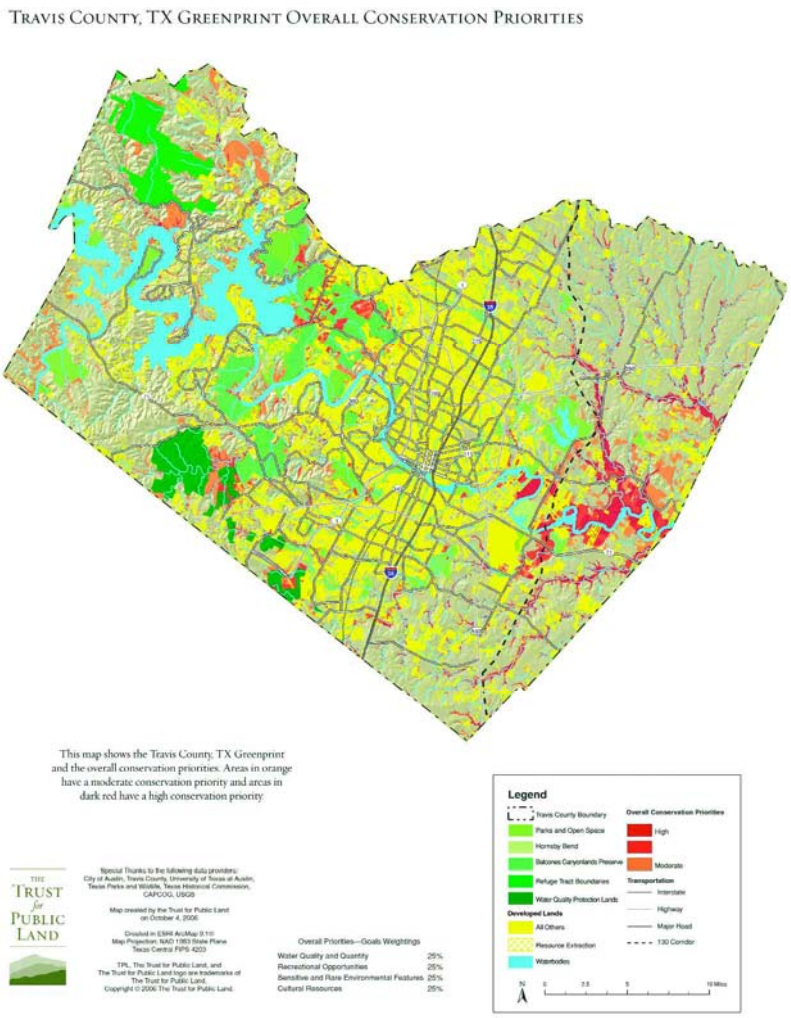

Fig. 1. Greenprint for Travis County, Texas; Overall Conservation Policies.

Based on the survey and other research, a preferred vision was released in May 2004. Implementation of the vision has occurred since then and focused on seven critical issues areas:

- Transportation and land use integration.
- Economic development coordination.

- Housing and jobs balance.
- Density and mixed-uses.
- Open space funding plan.
- Social equity.
- Recognition of best practices.

Envision Central Texas has contributed to the approval of a new commuter rail line, municipal bond approvals for new open space and affordable housing, and a regional Greenprint with the Trust for Public Land (see above). In partnership with the School of Architecture of the University of Texas at Austin, Envision Central Texas developed a web-based Quality Growth Toolbox. This online interactive toolbox consists of more than 100 planning techniques to assist public officials and the private sector to use the best practices to manage growth.

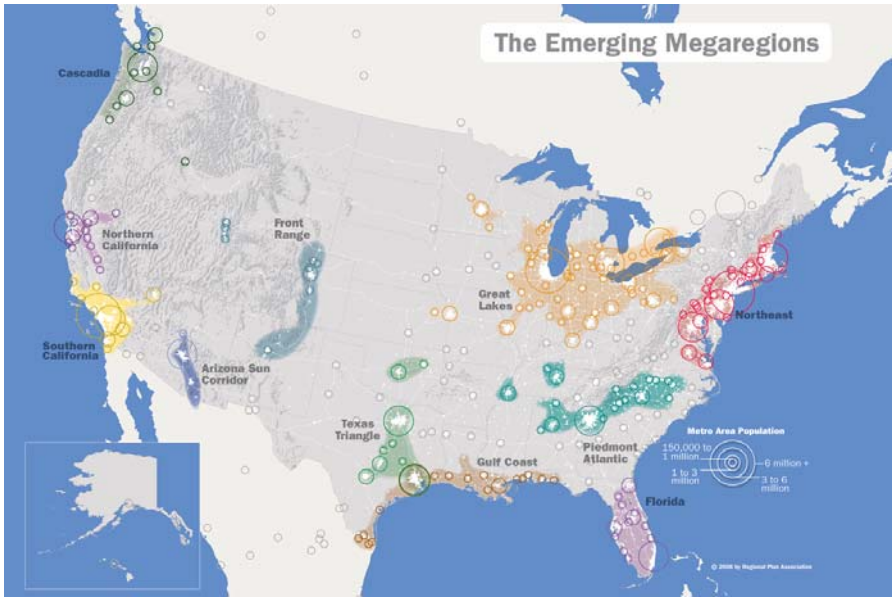

Fig. 2. Emerging Megaregions in the United States.

Another new regional vision evolved from a planning studio at the University of Pennsylvania (Penn) taught by Bob Yaro, Armando Carbonell, and Jonathan Barnett (Lincoln Institute of Land Policy, Regional Plan Association, and University of Pennsylvania, 2004). The Penn studio identified ten megaregions that will receive approximately 80 percent of the population and economic growth in the U.S. by 2040 (Fig. 2). The Penn studio was inspired by large-scale thinking in the European Union, such as the "Blue Banana," as well as the Northeast Megalopolis identified in 1961 by geographer Jean Gottman.

The Blue Banana concept was developed in 1989 by a team of French geographers led by Roger Brunet. It refers to a corridor of Western European cities from Liverpool to Milan (with Paris located centrally) that forms the

industrial backbone of the continent and provides home to some 90 million people. The Blue Banana influenced how development and planning is perceived by European policy-makers. Yaro, Carbonell, and Barnett found the concept helpful for their teaching as they sought to adapt it for North America while updating Gottman's Megalopolis.

In addition to teaching at Penn, Yaro directs the Regional Plan Association (RPA) and Carbonell chairs the Department of Planning and Urban Form for the Lincoln Institute of Land Policy. Together, they and others continue to refine and expand the megaregion concept through the America 2050 project (Regional Plan Association, 2006) (www.rpa.org). According to the RPA, the five major categories of relationships that define megaregions are:

- Environmental systems and topography.
- Infrastructure systems.
- Economic linkages.
- Settlement patterns and land use.
- Shared culture and history.

As Yaro, Carbonnel, and others advance megaregions, scholars at Virginia Tech's Metropolitan Institute are refining the "megapolitan" scale (Lang & Dhavale, 2005, Lang & LeFurgy, 2007, Lang & Nelson, 2007a, 2007b, Lang & Knox, 2008). Robert Lang has introduced a scale between traditional metropolitan areas and megaregion that he calls "megapolitans." According to Lang (with Dhavale, 2005), a "megapolitan area" combines at least two existing metropolitan areas, totals more than 10 million residents by 2040, derives from contiguous metropolitan and micropolitan areas, constitutes an organic cultural region with a distinct history and identity, occupies a similar physical environment, links centers through major transportation infrastructure, forms an urban network via goods and service flows, creates usable geography that is suitable for large-scale regional planning, lies within the United States, and consists of counties as the most basic unit.

Lang, with several Arizona State University (ASU) researchers, pursued a more detailed assessment of one megapolitan-megaregion: the Arizona Sun Corridor, stretching from the Mexico-U.S. border on the south northwest to Nevada (Gammage at al., 2008). Centered in the Tucson-Phoenix metropolitan area, this megaregion is likely to double in population from 5 million to 10 million by 2040. The ASU team noted that the Sun Corridor needed to be viewed as a place and planned in a coordinated fashion. They also observed that "the Sun Corridor can become a world leader in understanding the challenges of sustainability faced by humankind." To do so, the ASU team concluded, required a "bold willingness to face climatic challenges" (Gammage *et al.*, 2008, p. 50).

The Brooking Institute also has promoted megapolitan and megaregional research, most notably in its Mountain Mega study (Lang *et al.*, 2008) (Fig. 3). Led by Lang, the Brookings researchers noted that states in the southern Intermountain West (Arizona, Colorado, Nevada, New Mexico, and Utah) are

experiencing the fastest population growth in the nation. In fact, "the southern Intermountain West has grown nearly three times faster than the United States as a whole over the past two decades" (Lang *et al.*, 2008, p. 11). As a result, the Brookings researchers proposed five megapolitan areas to coordinate planning for this growth. In addition to the Arizona Sun Corridor, the Colorado Front Range, Utah's Wasatch Front, Greater Las Vegas, and Northern New Mexico were put forth as "Mountain Megas." The megaregion/megapolitan concept offers a new geographic unit of analysis and a new scale for planning.

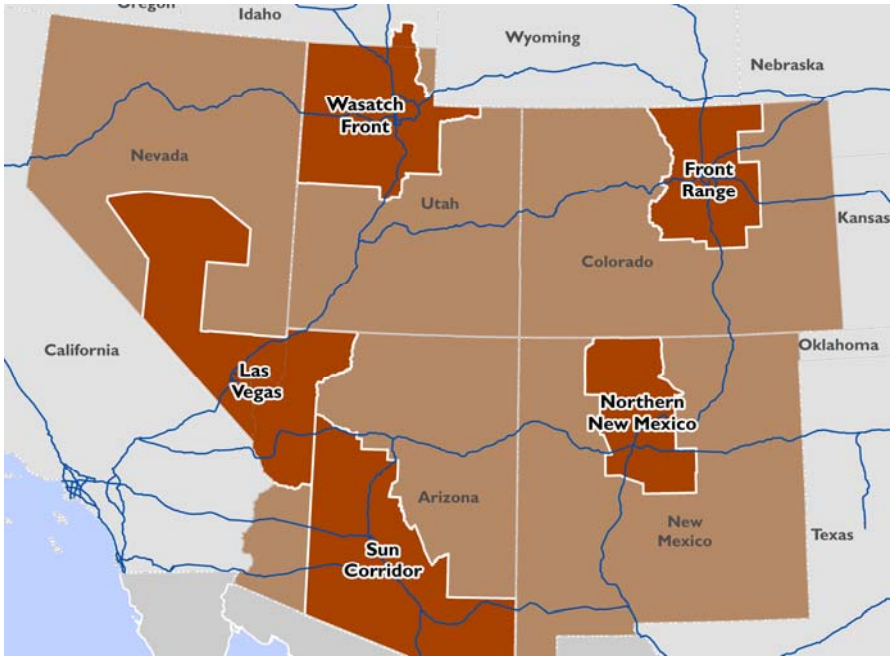

Fig. 3. Mountain Megas.

Landscape Urbanism

New regionalism represents a movement led by architects and planners involving geographers, demographers, and policy makers. Landscape urbanism is a more design-based approach, which, like new regionalism, has its origins at Penn. The term was coined by Charles Waldheim (2006) who, as a Penn architecture student in the 1990s, was influenced by landscape architecture professors Ian McHarg (1969, 1996, with Steiner, 1998) and James Corner (with MacLean, 1996). (See also Almy, 2007 and Steiner, 2008b). Landscape urbanists' most prominent advocates (e.g., Charles Waldheim, James Corner, and Chris Reed) are former students of McHarg's at Penn, but from his later years.

This final generation of students was more critical than those who flocked to Penn after the first Earth Day in 1970. Still, McHarg encouraged these young

architects and landscape architects to take on urban design as a project in human ecology. However, this younger generation sought a more urban design-based approach than their mentor. They focus more on the "design" than the "nature" of McHarg's theory. Landscape urbanists suggest that landscape should replace buildings and transportation systems as the principal organizing structure in urban design. Networks and complexity are emphasized in order to establish frameworks for urban change. But what came with this was the transformation of urban natural systems to entirely artificial systems, and former urban parks as urban theme parks.

Landscape urbanism blurs disciplinary boundaries—architecture, landscape architecture, planning, civil engineering, law, historic preservation, and real estate all intermingle. It is possible to see landscape urbanism as a dynamic outcome of ecological determinism plus economic determinism.

Landscape urbanism remains a relatively new concept with few realized works. Fresh Kills provides an example of a project moving toward realization (Fig. 4). A key innovation is that James Corner and his Field Operations colleagues embraced long-term change in their design, eschewing a set end state for a more dynamic, flexible framework of possibilities grounded in an initial "seeding." Located in the New York City borough of Staten Island, Fresh Kills covers some 2200 acres (890 ha) and was formerly the largest landfill in the world. Much of the debris resulting from the September 11, 2001, terrorist attacks on the World Trade Center was deposited there. The Field Operations plan suggests how the landfill can be converted into a park three times larger than Central Park. The 30-year plan involves the restoration of a large landscape, and includes reclaiming much of the toxic wetlands that surround and penetrate the former landfill. In addition to landscape architecture, the 'master plan' required the expertise of architects, planners, ecologists, traffic engineers, soil scientists, and hydrologists.

Fig. 4. Fresh Kills, New York.

Another recent landscape urbanist example is the High Line Project in Manhattan (Fig. 5). The Friends of the High Line advocated that an abandoned rail

line weaving through 22 blocks in New York City be converted into a 6.7-acre (2.7 ha) park. They promote the 1.45-mile (2.33-km) long corridor as a recreational amenity, a tourist attraction, and a generator of economic development. In 2004, the Friends of the High Line and the City of New York selected Field Operations and Diller Scofidio + Renfro to design the project. They proposed a linear walkway which blurred the boundaries between paved and planted surfaces while suggesting evolutions in human use plus plant and bird life. The High Line design suggests a model for how abandoned urban territories can be transformed into community assets and follows directly on the worldwide redevelopment of brownfields associated with the 1980s and 1990s (Field Operations, Diller Scofidio + Renfro, Friends of the High Line, and City of New York, 2008).

Fig. 5. High Line Project, New York.

As Field Operations advances landscape urbanism on the ground, others continue to refine the concept theoretically through competitions and proposals. For instance, Chris Reed and his Stoss Landscape Urbanism colleagues presented many fresh ideas in their proposal for the Lower Don Lands invited design competition organized by the Toronto Waterfront Revitalization Corporation in 2007 (Fig. 6). The site covers 300 acres (121.4 ha) of mostly vacated, former port lands, just east of downtown Toronto. Stoss' approach considered flood protection, habitat restoration, and the naturalization of the Don River mouth. They also proposed new development areas and an integrated transportation system. The Canadian ecologist Nina-Marie Lister joined the Stoss team and her contribution is evident in proposals for restoring the fish ecology, part of a broader strategy to "re-ignite dynamic ecologies" (Reed, 2007, p. 198). The approach suggested restoration and renewal strategies for both the Don River and Lake Ontario. The river marsh was envisioned as a breeding ground (or "sex park") for fish. The Stoss team followed McHarg's strategy by including knowledgeable environmental scientists from the region and they incorporated current urban ecological knowledge within the overall plan. A key gesture in such projects, today, is the inclusion of large-scale development as a means of paying for the project.

Fig. 6. Lower Don River, Toronto, Canada.

Chris Reed observes that the broader regional planning lessons of McHarg are at the base of all of what Stoss does. They look to understand large-scale systems first and allow them to inform and even structure proposals, in order to develop schemes that engage and inaugurate ecological and social dynamics. However, Stoss departs from McHarg in the ways they allow multiple functions to be hybridized or to occupy the same territory simultaneously. McHarg's approaches brought people closer to nature. For example, McHarg's plan for The Woodlands, a new town in Texas, successfully used storm drainage systems to structure the master plan making water an organizing principle (McHarg, 1996, McHarg & Steiner, 1998, Steiner, 2006). Protected hydrologic corridors form green ribbons weaving through the urban fabric of The Woodlands. In contrast, Stoss and other landscape urbanists are interested in having people and nature occupy the same space – and to construct new urban ecologies that tap into social, cultural, and environmental dynamics that play off one another. This is E. O. Wilson's concept of 'consilience' (1998), insofar as urban natural systems and human systems interact and alter one another, producing an energetic synthesis in the process. Landscape urbanism adds to this the often unfathomable flows and

data of cultural and economic data, updating if not negating McHarg's original vision.

Conclusions

Many new urban visions have emerged in this first decade of the first urban century in the U.S., from Mike Davis' bleak views (2006) to Nan Ellin's more hopeful ideas about integral urbanism (2006). Others are presenting urban views for traditionally rural areas, such as the Sun Corridor (Gammage *et al.*, 2008) and the Texas Triangle (Black *et al.*, 2008). The Catalan architect Joan Busquets (2006) and his Harvard urban design students provide a helpful synthesis of ten contemporary approaches to urbanism. The approaches they document range from new urbanism to landscape urbanism. Busquets and his students provide helpful precedents for each, as well as current examples.

If new regionalism could more clearly be integrated with landscape urbanism, then new contributions would result. Advances at both the regional planning and urban design scales rely in part on new understandings of ecology. We have moved beyond conceiving of nature "in the city". Ecologists now seek to better understand the nature "of the city". There are consequences for how we plan regions and design cities. We move from using natural elements for exterior decoration and toward a new synthesis of people and nature.

As we move ahead through this new urban age, we need to take heed of new ideas, new knowledge being generated around urban ecology, sustainability, new regionalism, and landscape urbanism. A key change in thinking has occurred as a result of these new ideas. Instead of viewing nature in the city, we have begun to understand the ecology of cities. Urban systems are ecosystems. As a result, nature cannot be used as exterior decoration, but rather as integral to the health and resiliency of human settlement.

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