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Climate Change and Place Roundtable Discussion

Climate change has already started to transform the physical, ecological, and social configuration of places around the world. The meanings and experiences of place are also certain to change significantly. Given the acceleration of this issue in our day-to-day practices, Places convened a “virtual” roundtable to explore the changing reciprocity of climate and place from different disciplinary perspectives. In solicit-

ing contributions from leading thinkers on this subject, we especially seek to understand how the design of places might help communities reduce and adapt to the predicted impacts of climate change. We offer the following comments as part of our continuing analysis of the importance of place.

—The Editors

Ecological Design and the Role of Nature

Think about where you’re sitting. How would it be different if the sea were twenty meters higher? If rainfall dropped to a tenth of what’s normal? If rainfall doubled? If the summer started in the spring and lasted through the autumn? Think about what runaway climate change would mean where you live.

Imagine your life in a carbon-neutral society. Imagine burning no fossil fuels, and getting your electricity from wind, solar, hydro, and wave energy. Imagine living in a superinsulated house in a walkable community. Imagine eating less meat and more locally grown vegetables. Imagine throwing nothing away, but recycling everything.

Imagine failure, and imagine success. And imagine them right where you are now.

Alex Steffen
World Changing
Seattle, WA

Climate change is global in scale and consequence, and any solution will require sustained international political cooperation. Climate change will influence every human endeavor, and solutions will also require individual engagement and action played out at a local scale. Mitigation strategies to temper the extent of future climate change and adaptation strategies to address changes already initiated will profoundly influence where, what, and how we build.

Climate change has intensified political and public interest in environmental performance targets. “Net-zero-energy” and “carbon-neutral” buildings require radical reductions in energy demand, the use of passive strategies, and greater deployment of onsite renewable energy collection—all of which are geographic and climate dependent.

Climate change has also caused a reevaluation of more fundamental approaches to community and building

design and their relationship to natural systems. Beyond the current emphasis on greater energy self-reliance at the individual building level, there are opportunities for creative synergies with adjacent buildings and surrounding natural systems. Moreover, after a managed restoration of degraded ecosystems, permitting natural systems freedom to mature toward greater diversity and resilience according to the constraints and opportunities afforded by place is the basis of regenerative design. Within this local context, regenerative design seeks the considered co-evolution of human and natural systems, and the act of building initiates this process. A fully matured global information system will likely enable participation in a global culture in tandem with this re-establishment of regional identity and place-specific building practices.

Raymond J. Cole, Ph.D.
Professor and Director, School of Architecture and Landscape Architecture
University of British Columbia
Vancouver, B.C.

Climate change challenges the human spirit. How do we act in a world in which our very presence has created threats to our existence and that of all species? Can we summon the will to change our behavior? Perhaps most importantly, do we possess the wisdom to know what to do?

Ecology tells us that everything is connected. Ecological design renders these connections visible, reminding us of our rightful place in kinship with the natural world. Ecological designers are mindful of the impacts of our designs, looking both upstream and downstream, and considering effects over time. Ecological designers also take their cues from nature, creating artifacts and places powered by the sun, composed of safe and healthy materials in closed cycles, celebrating what we learn from nature by mirroring its wondrous diversity.

Our buildings and places can be celebrations of our reconnection to the natural world. We can imagine productive structures that create their own energy, clean their own water, create habitat for various species, and sequester carbon. We can envision buildings constructed within a coherent biological and technical framework, whose materials may eventually return safely to the soil, or be recycled. And we can imagine a building's life extended by the very flexibility and adaptability of its structure and form, allowing it to serve a variety of uses over time.

Kevin Burke, AIA

Partner, Director of Practice

William McDonough + Partners

Charlottesville, VA, and San Francisco, CA

Climate change implies the loss of something valuable. Detached from nature and ecology, our valuation of place is too often based on economics and styles of artificial complexity or simplicity. Our goals, objectives, and criteria in planning and design are skewed. Our landscapes are often ugly and ecologically dangerous. We are unable to foster healthy communities in part because we are for hire; we offer conflicting information and values, and we do not collectively own a critical mass of land, money, political clout, or other powerful resources.

Landscape is not the space left over after the construction of our infrastructures and buildings. It is the sum of the coherent, recognizable elements of the biosphere that gives us life. The planning and design professions need to reorient themselves to framing *all* questions as environmental questions, the answers to which cannot be about failure, half measures, or rhetoric. Professionals from diverse disciplines must work together to integrate narrower realms of expertise into sums better than their parts.

In the past, design schools have offered common academic stems to planning and design students. With a collective understanding of ecology, competencies, philosophical frameworks, and the sense of mission could be better shared among planners and designers and more clearly communicated to the public and our political leaders.

Framing questions and intentions in terms of the impact of our actions should be fundamental to the way we sustain life in this most rare of locations—Earth. If we can do that, we can find beauty in the complexities of ecological functions, appreciate our human roles in abetting those functions, and see genuine beauty in the rhythmic and arrhythmic changes in our biosphere.

Emanuel Carter

*Associate Professor, Department of Landscape Architecture
SUNY College of Environmental Science and Forestry
Syracuse, NY*

Ecologists now agree that steady-state ecosystems are more the exception than the norm. Disruption is common and instrumental in the evolution of resilient ecosystems, from fire-based forest ecologies to our carbon-based atmosphere. Disruption is productive for resilient systems, but human economies reliant on fossil fuels are not resilient.

Indeed, fossil-fuel based economies have allowed us to momentarily exceed the carrying capacities of local environments to support human life, while irrevocably altering life-affirming biogeochemical processes that sustain healthy ecosystems. Our imprint is everywhere. The greatest challenge to planning is the design of place within human-dominated ecosystems. Successful place-building efforts have to address the delivery of ecological services beyond the urban services by which projects are conventionally judged.

Consider the architect N. John Habraken's assertion that modern design traditions removed the designer from an organic union of culture, city, and landscape that had evolved over time.

...the entirety of the ordinary built field where form, inhabitant and maker are functionally integrated and semantically joined—has remained obscure or self-evident. This has inevitably led to the emancipation—and the isolation—of an entire professional culture from the integrated field of form and people.

Regardless of bioregion, the path to resiliency will involve localization of food supply chains, intermodal transportation systems, closed-loop energy systems, and recombinant urban ecosystem planning. The design professions must recoup the visions, policies, and scalar design grammars inherent in the language of context-production, different from the discrete thinking surrounding the project that dominates our current methodologies.

Stephen Luoni

*Steven L. Anderson Chair in Architecture and Urban Studies
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Urban and Cultural Impacts

Undoubtedly, the most profound implication of climate change for place is the geographic distribution of impacts. Today, clear evidence of warming in polar regions is perhaps the most widely recognized physical manifestation of a rapidly changing climate, an observation made ever more apparent this year by the projected disappearance of polar ice in northern latitudes. Other significant dichotomies of place and climate change are those between coastal and inland zones and between the most and least economically advantaged societies.

Yet, perhaps the most significant spatial dimension of climate change is revealing itself along the continuum of rural to urban. Today, most large cities around the globe experience temperatures many degrees higher than proximate rural areas. A product of the urban-heat-island phenomenon, increased urban temperatures result from the displacement of natural land covers by the materials of urban construction, as well as from waste heat emissions from buildings and urban fuel combustion. While the global greenhouse effect is increasing temperatures in both rural and urbanized zones, the urban heat island effect is further amplifying this warming trend in cities alone. A recent study of fifty of the most populous cities in the United States found the rate of warming in the majority of these cities to be more than twice that of proximate rural areas.¹ The continuation of this trend will subject urban populations—now the majority of the global population—to significantly higher temperatures than those experienced by rural populations, with troubling implications for public health and urban infrastructure. As a result, the dichotomy of urban and rural places will become a defining dimension of the global climate problem.

Brian Stone

*Associate Professor of City and Regional Planning
Georgia Tech
Atlanta, GA*

The high cost of carbon fuels and the rapid depletion of finite natural resources suggest that drawing less on these resources is a good idea. On the other hand, solar “fuel” costs more than oil, and while decreased consumption is a desirable environmental goal, decreased consumer spending may contribute to economic collapse.

How can an architect design places for people in anticipation of climate change and limited access to resources?

- Improve, repair, infill or extend an existing place.
- Provide shelters that efficiently keep out rain, that are warm in winter and cool in summer.
- Maintain access to landscapes and daylight.
- Welcome and celebrate human interaction.
- Provide flexibility to encourage occupant control of the environment.
- Minimize dependence on machines and computers.
- Build places to last.

The rules for coping with global warming may thus be much the same as the rules for addressing global cooling.

Frances Halsband, FAIA

*Kliment Halsband Architects
New York, NY*

The design challenges of climate change are enormous. If hydrologic patterns change as predicted, producing less frequent but more intense rains, more than one hundred U.S. cities, already struggling to manage combined sewer systems, will see increased flooding and pollution problems associated with infrastructure. If sea levels rise three feet by 2100 or sooner—and continue to rise thereafter—most of the cities along the Gulf and Atlantic coastlines will need major upgrades in their transportation and sewer systems. Hundreds of thousands of people may need to be relocated. Cities will need new hurricane evacuation strategies. Massive flood barriers like those already in place in Europe may be built to protect downtown areas.

How will we support low-income families and elderly citizens who have the least ability to relocate? How will we maintain coastal ecosystems that provide us with our healthiest food sources?

The practical and political challenges of these hydrologic climate change trends will be significant, and will need to be addressed quickly once new patterns begin to emerge. How will we pay for design solutions? Who will bear the brunt of the costs and risks? Will we continue to value biodiversity, or will we simply give it up? These ethical and strategic design questions will be more difficult to resolve when decisions must be made quickly, unless we study them carefully today and make a commitment to act with equity tomorrow.

Kristina Hill, Ph.D.

*Associate Professor and Director, Dept. of Landscape Architecture
University of Virginia
Charlottesville, VA*



New Approaches

Understanding how to design places and communities to reduce the impacts of climate change—as well as adapt to them—will take nothing less than a renaissance in town planning. While profound new urban forms are likely to result, the substance of this renaissance is about bringing an integrated systems-based approach to the planning and design of places, neighborhoods, and cities.

We can look at the transformation of the practice of architecture over the past decade for a model of change. Sustainable design has refocused attention beyond aesthetics to a building's performance and impacts on the environment. This approach requires collaboration between designers and engineers from the onset, so that systems—energy, water, waste, and materials—inform the design of buildings from the earliest stages of conceptualization.

The good news is that the town-planning renaissance is dawning as this systems approach is being linked to larger planning initiatives. Recent collaborations by integrated planning teams demonstrate a willingness to allow site systems to inform the organization of communities. We are equally excited by the growing appreciation of Cradle-

to-Cradle design approaches. This is all new, and there are no easy answers. There is a great deal of work to do to ensure this rebirth takes place. [mixed metaphor otherwise]

Diane M. Dale, ASLA, JD

Director of Community Design

William McDonough + Partners

Charlottesville, VA, and San Francisco, CA

Climate helps define place: San Francisco's fog, Seattle's rain, Phoenix's heat, Minneapolis's winter, Chicago's wind, and Buffalo's snow. Our built environments provide shelter from the elements. Through central heating and air-conditioning, we have become more effective in shielding ourselves from the daily fluctuations in weather. In the process, our society largely overlooked the value of designing with climate.

Above: A pathway within a conservation area on the site of UniverCity (see article pp. 26-29). The community is characterized by an urban "front" and a natural "back," particularly where it meets the Burnaby Mountain Conservation Area. Photo by Cynthia Girling.

The bill for divorce from nature is now coming due. We are increasingly aware of how much energy our buildings and transportation systems consume and the amounts of greenhouse gases we produce in the process. As a result, we need to relearn how to build in ways compatible with local climate. The past and vernacular building techniques provide many lessons. But we must also go beyond history and local cultures to sculpt new forms of environmentally sustainable built environment for our time and for the future.

If we think globally and act locally, we might start with parking lots. Black asphalt contributes much to urban heat islands because it absorbs and stores warmth. We can cool cities simply by changing the material and color of pavement and creating more shade through trees and structures. Parking lots illustrate that climate is but one environmental phenomenon that needs to be considered in the renewed design of our built environment. The hydrological cycle is also interrupted by impervious surfaces, which increase run-off and hamper groundwater recharge. Pollutants that collect on paved surfaces also affect water quality. If we completely reconsider parking lot design, then we can mitigate climate extremes while improving water quality and quantity and create more pleasant places in the process. Parking lots are but one component of the built environment that must be rethought and redesigned with climate and nature in mind. The future of the planet requires such consideration and transformation.

Fritz Steiner, Ph.D.

*Dean, School of Architecture and Henry M. Rockwell
Chair in Architecture
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Austin, TX*

Remember the brothers George and Harry in the film *It's a Wonderful Life*? Harry escaped provincial Bedford Falls and became a celebrated war hero while George got stuck at home taking care of the family business. We admire George's commitment to family and community. But in this culture of greener pastures and quick fortunes, his commitment to place was a quaint anachronism, and it almost killed him.

We get teary when the townsfolk come to George's rescue in the final scene...but we see ourselves in Harry, high-tailing it for something bigger and better.

We're a country full of Harrys. We're the ones who got fed up or kicked out or underwhelmed with the old country and its stodgy limits. We are the ones who left.

To reduce the causes of climate disruption and deal with

its effects, we'll need to rediscover George. We'll need to run less and invest more, finding greater satisfaction in dwelling than fleeing freely.

I once read a defense of the space program based on the theory that sooner or later we're going to destroy this planet, so we need to find a "Planet B." This is about the spot in our movie where we could really use old George. Our challenge, as climate disruption accelerates, is to get better attached to "Planet A."

K. C. Golden

*Policy Director, Climate Solutions
Seattle, WA*

Smart-growth strategies have been used by communities for years to protect open space, use infrastructure more efficiently, reduce air pollution, improve water quality, and enhance quality of life. However, growing public concern over climate change and rising energy prices have focused new attention on such strategies. Several studies have confirmed that smart growth development produces lower greenhouse gas emissions and reduces household transportation costs. Critical policy questions are:

- How significant are the reductions that can be achieved?
- What are the costs of achieving them?
- What other benefits do such strategies produce?

The research report "Growing Cooler" provides an answer to the first question. The study reviewed existing research and concluded that if 60 percent of future growth were accommodated through more compact development, carbon dioxide could be reduced by 7 to 10 percent by 2050, roughly equivalent to raising average fuel economy to 32 miles per gallon.²

Smart growth approaches may achieve emissions reductions more cost effectively than some other reduction strategies under consideration. Key policy elements of smarter growth, including flexible regulations and expedited development review, cost local governments little, leverage private sector money, and can generate new revenue.

Smart growth techniques produce other climate-related benefits. Convenient transportation choices allow communities to be resilient in the face of uncertain energy prices. Smart growth strategies can help communities re-evaluate where to build given the changes in sea level, precipitation, floods, and storm surges that climate scientists conclude are likely even if we reduce emissions.

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New Tools for American Cities

American cities, suffering the silent disease of economic decline and de-settlement, produced sprawl and increased carbon footprints in response.

In the dawn of a growing awakening to issues of climate and environment, energy, housing stability, and an unanswered hunger for community, cities are poised to benefit from the growing demand for affordable urban housing. The land of opportunity now comprises abandoned parcels and blocks in urban neighborhoods.

Kansas City, Missouri, has suffered through fifty years of measurable urban erosion. Every important indicator of urban community health and prosperity suffered. Population density declined by two-thirds, public rail transit disappeared, the major urban school district shrank, retail stores and jobs moved away, and the urban tax base eroded.

Beautiful streets lined with mature trees and stately homes have been abandoned. Once blight, now opportunity; what remains is the foundation for a new Kansas City. Initiatives are under way for the renaissance. Integrated transit planning will likely lead to light rail in a few years. A massive plan for storm and sanitary sewer replacement utilizing green technologies is imminent. A new development code embracing green principles is before the City Council. Various education initiatives are seeking better education options for the inner city.

We are at a crossroads. It is not a time to rationalize or be overly scientific. Families need affordable neighborhoods, the best schools, and good-quality housing. The car is becoming unaffordable. The city requires a sustainable economy. People and the planet demand a reduced carbon diet. It is a time to pioneer real new urbanism based on the triple bottom line, economics, environment, and social equity. It is time to resettle.

Steve McDowell, FAIA, LEED AP
Principal
 BNIM Architects
 Kansas City, MO

Consider a draft legislative proposal that would support the planning and reward the development of climate-friendly urbanism—cool places that are compact, complete, and connected. The Climate Benefit District (CBD) would do just that: spur implementation and capture synergies made possible by the integration of high-performing buildings with district-level power and green infrastructure in walkable, transit-focused communities. A low per-capita carbon footprint would be but one of many benefits of this urban condition, not the least of which includes creating market value in a future that is monetized according to effects on the carbon cycle. The CBD also describes an intentional set of future-proofing policies, aligned public and private investments, and creation of “safe harbors” as we begin adapting cities to climate change, energy, water, food, and other resource price shocks and supply constraints.

Working with municipal and land-use attorneys, Seattle architects have been testing this idea in association with representatives of various environmental, development, green-energy, and local-government organizations in response to opportunities presented by the Washington governor’s Climate Action Team. We are addressing intervention at the neighborhood scale by developing qualifying criteria and identifying locations, statutory and regulatory hurdles, market-based and public-private partnerships, and incentives for climate-friendly development and redevelopment. The first—and dauntingly opaque—design challenge this initiative faces is authorizing a new institutional construct to initiate, finance, plan, execute, and manage these integrated neighborhood-scale systems. The Climate Benefit District would be just such an innovation.

Stephen Antupit
Senior Associate, Mithun
 Seattle, WA

Notes

1. Brian Stone, Jr., “Urban and Rural Temperature Trends in Proximity to Large U.S. Cities: 1951-2000,” *International Journal of Climatology*, 27 (2007), pp. 1801-07.
2. The Urban Land Institute, Smart Growth America, the Center for Clean Air Policy, and the National Center for Smart Growth Research and Education, “Growing Cooler: The Evidence of Urban Development and Climate Change,” 2007. The full report is available from the Urban Land Institute bookstore (Washington, D.C.); www.uli.org.