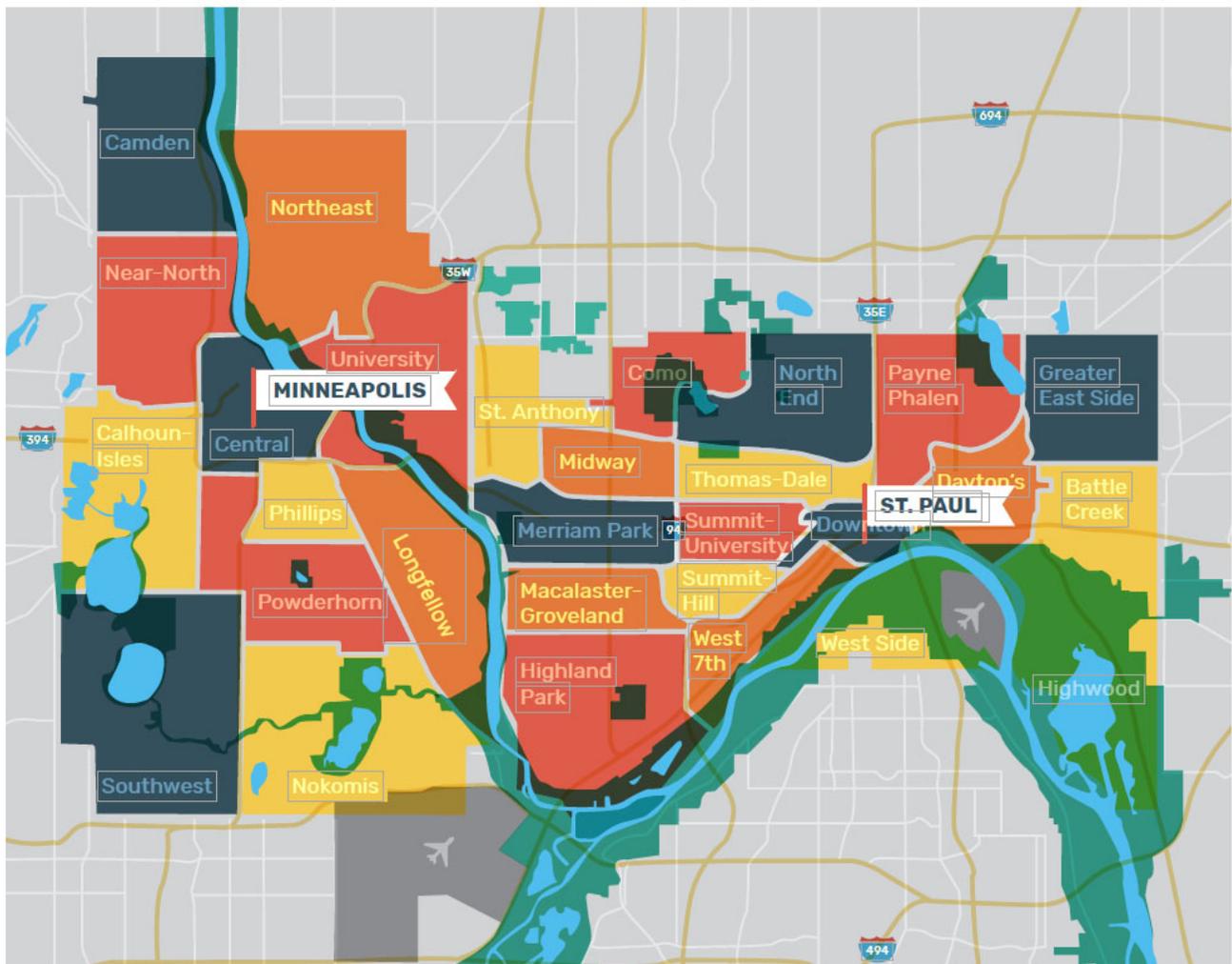




## IMPACT DESIGN HUB CITY SERIES

# TWIN CITIES

The CITYSeries is IDH's endeavor to uncover and highlight a diverse range of the best in impact design on a city by city scale.



# Academic Impact Design: Part II

**MAY 18, 2017**

*By: Bruce N. Wright*

Institutions that work in academic impact design in the Twin Cities are making use of and sharing the research and methodologies inherent to the academic world. Bridging the pure research world and the nitty-gritty of public policy making, these social design projects are creating high value for improving the environment, for improving public health, and reducing civic discord wherever possible, especially beyond the Twin Cities purview.

Many public organizations and local governments are beginning to recognize the value of impact design methodologies to solving critical social and environmental issues. They take to heart the unique spirit of collaboration and different points of view that Twin Cities university professors and local designers bring to bear on these complex problems.

A major concern for several University of Minnesota research centers is the impact of climate change on how populations adapt to these changes. Both on a micro scale—such as neighborhoods and cities—and at the macro scale—such as regional and continental ecosystems—researchers are using integrated approaches (tapping expertise from across the University broadly diverse fields of study) to solving the big social challenges of our time.

## **Tackling Global Challenges in the Midwest**

The University of Minnesota's Institute on the Environment (IonE) is perhaps the main research center that generates the most studies and new research addressing climate at the university. This is where resident fellow Peter Reich, a Distinguished McKnight University Professor in the College of Food, Agricultural and Natural Resource Sciences, has been studying plant biodiversity and its role in ecosystem services. Reich's research examines, in detail, such topics as carbon sequestration, productivity (the production of plant biomass), and resilience to disease.

In a series of studies he co-authored, Reich found that humans and their activities clearly are threatening ecosystem stability. Of particular note is his third such study, published in 2015 in *Nature Climate Change*, that "showed that climate warming reduces the growth and competitive abilities of boreal conifers like spruce and fir in the southern part of the boreal forest that stretches across the Great Lakes region and further east and west." Minnesota sits in the middle of this region. "Their reduced abundance would diminish the diversity of these forests, which are likely to become

increasingly dominated by broad-leafed species, including invading oaks and maples, as well as the native aspen and birch that are more tolerant of warming than spruce and fir.”

Reich and his co-authors argue that diminished diversity is likely to result in the kinds of negative impacts discovered in two other papers they produced documenting climate change impacts (nitrogen pollution and land use changes that reduce stability by reducing biodiversity). These studies prove it is “imperative that we manage forests and grasslands with diversity in mind,” says Reich.

The IonE funds many intensive research programs, including the Global Adaptation Initiative, which studies ways to measure climate change risk and vulnerability around the world, both at the country level via the Global Adaptation Index and within urban centers in the U.S. Jessica Hellmann, the director of the IonE, describes how the institute’s work contributes to the discussion on impact design and society in the Twin Cities. “We are committed to science communications and how academe can contribute to society. One of the main research areas within IonE that addresses impact design is in adaptation (by people and societies) in reaction to climate change and specifically in two areas: ecosystems and species (or managing natural systems), and adaptive strategies for people,” Hellmann explained.

“For example,” she continues, “we can take an idea like migration based on the impact of climate change, and imagine... what if we can ‘manage’ the relocation of these people and examine both the positives and negatives? Some might be able to adjust to relocation, some not; but there is a lot of stuff in the way. Is intervention (by humans) a good idea or bad? How do we figure this out? Just as we have learned over time with chemotherapy or geoengineering, these are not necessarily good ideas. We need to figure out the ethics and economics (and philosophy) of intervention on behalf of migration/relocation of species.”

The scaling up of research is not a simple process, says Hellmann. It isn’t simply multiplying what is found in finite samples or experiments, like industrial manufacturing, to get large volume production. “Ecology typically has focused on the ‘closed system’, but now we are having to deal with much larger frames of reference and thinking. For example, in our invasive species study (see Reich above), will the systems approach lead to a negative outcome? The risk, we think on average is most likely low. But it is hard to predict absolutely, and when something related to this effort turns out bad, the consequences could be significant.”

“Our research is focusing on these issues and the possible outcomes,” says Hellmann, “so that we create a network of natural resource managers—part of a toolbox of actions—so that we are actually ‘designing’ an ecosystem of the future. If we think

carefully going forward, we should not just replicate the past (in terms of approach or tactics); we must truly be aware that we will be shaping the ecosystems and their possible outcomes. What is justified by the action we recommend? How does this fit into a larger framework? These are the kinds of questions that must be asked by us with recommendation to the states and federal agencies that support and commission this research.”

IonE’s use of the Global Adaptation Index (developed in collaboration with Notre Dame, but administered by ND) measures ecosystem vulnerability with indicators such as projected biome threat, dependency by a community on natural capital and involvement (by people) in international environmental conventions. When people begin to notice changes in the environment around them, when it starts to inhibit their normal behavior or access to natural resources, their interest in ecological issues rises and participation in environmentally-themed events and conventions increases. “Ecosystems include natural resources that are at the foundation of almost all product value chains. Shifting geoclimates due to changed temperature and precipitation cause stress within ecosystems unable to respond as quickly as these shifts require.”

IonE’s deep data on the impact of climate change on human behavior provides a valuable tool for local, regional and multi-state policy makers when it comes to making informed decisions that affect millions of people. The take away here is found in the high-level collaborations between academic departments that normally never cross paths. Without this co-operative nature, which seems innately Minnesotan, little could be accomplished.

### **Resilience: The Ability to Recover Quickly**

A term used quite often in design circles, especially with regard to city design or neighborhood design, is “resilience.” As older inner-city neighborhoods experience gentrification, or communities undergo changes in demographics, or states and nations sustain natural disasters, social groups are stressed and resources taxed, sometimes catastrophically. The ability of a community to adapt to these stressful conditions is a factor in its resilience and sustainability.

Resilience is, unsurprisingly, at the core of the Resilient Communities Project (RCP). The RCP is an award winning, cross-disciplinary program that was initially supported by a two-year start-up grant from the IonE, and is currently housed at the Center for Urban and Regional Affairs (CURA). A simple idea drives the RCP: “Connect the students and faculty at a world-class teaching and research institution with local communities to address economic, social, and environmental issues, needs, and opportunities and make the world a better place.”

Mike Greco, the co-founder and director of the RCP, admits that while what the program produces may not ostensibly be considered design work, he subscribes to the impact design concept of using design thinking to solve social and environmental problems.

“RCP helps to broaden the point of view on many community issues by recognizing that understanding a problem using design strategies can help to identify opportunities for solutions. By bringing students into this process, their inherent creativity brings fresh ideas and approaches to RCP projects and our community collaborations.”

Take for example the program’s most recent community partnership with the city of Brooklyn Park, a northwest suburb of Minneapolis. Brooklyn Park has the most diverse demographics of any city surrounding the Twin Cities and is experiencing a steady growth of new residents, many new to the United States. Consequently, many of the neighborhoods within Brooklyn Park are changing and the city is running up against issues never before dealt with. “The city’s park and recreation department has not quite caught up with the changed demographics,” says Greco. “For example, there is a growing cohort of residents who are new immigrants and who are trying to find places to play the very British game of cricket, and not finding enough suitable space within city parks. Several RCP projects this year are focused on helping the city evaluate scheduling and usage of all its parks, and in some cases reconsidering how city services are provided. This includes rethinking playgrounds and other play areas to incorporate nature-based recreation opportunities that connect kids with natural elements like water, plants, and animal life in city parks”

Each year the RCP selects one community to partner with student and faculty researchers through a competitive RFP process. Graduate students, professionals, and advanced undergraduate students participate in RCP by taking an RCP-affiliated course in their own majors, or by connecting their individual thesis, capstone, field experience, or directed study to the RCP community of the year. If, for example, a student in landscape architecture is interested in exploring a design-related project identified by this year’s partner, Brooklyn Park, RCP (serving as a sort of “matchmaker”) would then connect that student with local government staff and stakeholders in the partner city, who can help provide local knowledge, deeper insight and relevance to the issues that the project addresses. The goal for students is to engage in real-world issues and problem-solving; for the RCP it is to advance local sustainability and resilience.

Although Twin Citians are often portrayed as modest compared to people from larger metropolises, the important work being done here in academic research centers like CURA, with its Resilient Communities Project, is far from modest in its impact. Not only does this improve local communities, it has the potential to effectively transfer to equivalent communities in need across the globe. And that’s by design.

**Bruce N. Wright**, AIA, is an architect, writer, and editor with a long standing interest in all issues of design, culture and technology and their impact on society. Wright was editor of the international design journal *Fabric Architecture* for 16 years, and before that managing editor of *Architecture Minnesota*, the magazine of AIA Minnesota. His writing on design has appeared in *I.D.* magazine, *Inland Architect*, *Progressive Architecture*, *SKYLINE* and the *AIA Journal*, among others. He regularly contributes to *Advance Textiles Source*, the online journal about new developments in materials and technical textiles published by the *Industrial Fabrics Association International*.

### INSTITUTE ON THE ENVIRONMENT



**JESSICA  
HELLMANN**  
DIRECTOR



Hellmann is the Director of the Institute on the Environment at the University of Minnesota where she provides overall strategic leadership for the Institute, an internationally recognized organization working to solve grand environmental challenges. Her research focuses on global change ecology and climate adaptation.

### RESILIENT COMMUNITIES PROJECT



**MIKE  
GRECO**  
CO-FOUNDER,  
DIRECTOR



Greco is the co-founder and Director of the Resilient Communities Project (RCP), which provides research and technical assistance to communities in Minnesota to advance local sustainability and resilience.