Harvard. At present, CTFS (rebranded as ForestGEO to reflect its broadened research scope) is probably the most successful ecological research collaboration in the world. It monitors 6 million trees from 10,000 species and is expanding to temperate forests and in new research directions, such as monitoring insect communities on trees.

In a rare case of having an inspirational idea at an airport, A. P. Smith realized that a standard construction tower crane erected in a rainforest could bring researchers to the forest canopy, "the last biological frontier." The world's first canopy crane was erected by STRI in the Panama City's Metropolitan Park in 1990 as another pioneering act that started a global ecological network. In 1997 another crane was installed, also in Panama, in the San Lorenzo rainforest on the Caribbean coast. However, it took years for even basic accommodation to be built next to the crane, and to this day the crane operators drive daily back and forth between the crane and Panama City, limiting the time available to scientists for work on the crane. Employees' comfort, regrettably, wins over research efficiency, in sharp contrast to the 1920s, when the crucial decision was made to build a basic field station on BCI, where the biological action was, rather than a much more comfortable facility in Panama City.

The fate of the International Canopy Crane Network was unfortunately very different from that of CTFS. There has never been any significant collaboration among the crane projects in different countries. The dynamics of the crane network expansion slowed down after the first enthusiastic decade, and no cranes were built from 2002 to 2013. The recent revival of crane construction, particularly in China, may offer the global crane network a second chance (Nakamura et al. 2017).

Although the forest plots, cranes, and other field methods continued to generate large data sets on rainforest vegetation and its consumers, the debate on the determinants of tropical biodiversity has been progressing slowly. The Janzen-Connell hypothesis, which contends that high plant diversity in rainforests is due to the effects of specialized natural enemies on plant population dynamics, has been examined since its inception in 1970. Interestingly, there were initially no attempts to test the hypothesis experimentally, in contrast to testing of the theory of island biogeography (Wilson & Simberloff 1969). We had to wait 40 years and to the penultimate chapter of *Coexistence* to learn the results of such experiments. They will probably feature much more prominently in the next volume, hopefully describing the travails of tropical ecology and the BCI research station in the 21st century.

Tropical ecology has been driven mostly by scientists from temperate latitudes, which made their field research stations often socially and intellectually awkward foreign elements in tropical locations. The life span of such stations tends to be rather short, but there is little doubt that STRI will live to see its 100th birthday. Its history illustrates the crucial role of longevity, made possible by reliable and predictable financial support of field research stations in the tropics.

Vojtech Novotny and Katerina Sam

Biology Center of the Academy of Sciences of the Czech Republic & University of South Bohemia, Branisovska 31, 370 05 Ceske Budejovice, Czech Republic, email novotny@entu.cas.cz

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Ecological Design to Shape New Urbanities

Wild by Design: Strategies for Creating Life-Enhancing Landscapes. Ruddick, M. 2016. Island Press, Washington, D.C. 243 pp. US$45.00 (paperback). ISBN 978-1-61091-5984.

Restoring Neighborhood Streams: Planning, Design, and Construction. Riley, A. L. 2016. Island Press, Washington, D.C. 288 pp. US$35.00 (paperback). ISBN 978-1-61091-740-7.

By 2020, 66% of the world population, 6.3 billion people, will live in urban areas (UN DESA 2014). In migrating toward cities *Homo sapiens* "urbanum" (Williams 2007) occupied natural and seminatural lands, converting them into new settlements, strategic infrastructure, and productive areas. This often happened at the expense of vulnerable habitats such as rivers, deltas, and coasts, that is, biodiversity hotspots, where human population growth is higher than in other landscape types (Cincotta et al. 2000; Kühn et al. 2004). As this human migration toward cities increases so does the need to conserve biodiversity in anthropogenic areas (Müller & Werner 2010; Kowarik 2011). The reasons are multiple: to preserve local biodiversity, to create stepping stones and corridors to improve habitat connectivity, to provide ecosystem services that improve human well-being, and to increase awareness and promote environmental education (Dearborn & Kark 2010). Cities are important arenas for experimenting and finding solutions to global challenges (Grimm et al. 2008) such as implementing the targets set in the Convention on Biology Diversity (de Oliveira et al. 2011).

Sustainable design that leads to sustainable biodiversity in towns, cities, and megacities is crucial. *Restoring Neighborhood Streams: Planning, Design, and Construction* and *Wild by Design: Strategies for Creating Life-Enhancing Landscapes* can be seen as an imaginary dialogue between a landscape architect and a hydrologist settled in a world where a code common to both

disciplines exists. Luckily, such a dialogue can exist without discipline territorialism and is supported by the rise of the biophilic movement (Ignatieva & Ahrné 2013).

The question, what are we doing here anyway kept humming in my head as I read *Wild by Design*. Margie Ruddick presents her story in 5 chapters focusing on different scales. Her garden, the laboratory for *Wild by Design*, is the microscale. In small-scale reinvention, the appearance and the functionality of a place could change completely (the Queen Plaza in New York). In medium-scale restoration, one should decide whether to restore a prior natural state or certain ecological functions that have been lost (the Living Water Park in Chengdu, China). In big-scale conservation, the necessity to act has to account for delicate ecosystems, where the "less [action] is more [conservation]" (Shillim Retreat and Institute in India). In large-scale regeneration, actions create self-sustaining systems that eventually activate a cascade of other events in equilibrium between nature and people. Finally, the scale of expression is the one of the designer (or of a group of) who will fix one thing at a time.

The author brings readers, be they students of landscape architecture, ecologists, or skeptical, conservative landscape architects, behind the scenes of ecological design, with all its emotions, controversies, fights, successes, fears, relationships, dialogue, multidisciplinary thinking, and experimentation. The book shows it is feasible to "design with nature" (McHarg 1969), that collaborative work between ecologists and designers is possible, and scientific knowledge and creative intuition can be combined to good effect. However, it seems landscape architects may focus too much on individual artistic expression and use it to justify, for instance, the planting of exotic species. Guidelines and checklists may shackle creativity and the mystification of beauty, but disdaining them may prevent the design of well-functioning ecosystems. From a conservation viewpoint, while reading Margie Ruddick, some doubts remain: Are people ready to enjoy and live in a less-domesticated nature? Are landscape architects ready to embrace landscape ecology, partially waiving their need for personal expression? Should not landscape architects in this second wave of ecological design also be ecologists in order to combine the ways of nature and the ways of humans?

Although there is no explicit mantra in Ann Riley's book, it could be yes, we can; restoring neighborhood streams is not only possible but worth it. The first thing to do when going against the grain (e.g., encasing channels in concrete and creating culverts) is to believe that the proposed ideas are actually feasible (e.g., river daylighting [i.e., bringing a river that was previously culverted back above ground]). The second is to put them into practice. The third is to monitor and learn lessons from their implementation. The final steps are to draw conclusions, spread the knowledge, and develop new ideas (or give the tools to someone else to do so). This is what Ann Riley has done with her work over 30 years and with this publication, in which she presents 10 study cases of river restoration at different extents (reaches from 0.1 to 1.5 km) and periods (from 1980s to 2010s) in northern California.

The book has 4 chapters. The first 2 define restoration and provide historical background on urban stream restoration and different schools of restoration (e.g., focused on hydrology, geomorphology, native plants, and fish biology). The third is the most practical because it meticulously describes the study cases (project history, project design and construction, landscaping and maintenance, related projects, project lessons and significance) to defend the main thesis (i.e., yes, we can). The fourth chapter draws conclusions and summarizes lessons learned from past and recent projects that follow different schools of restoration and have contributed to the evolution of the applied approaches and methods. Besides the latest definition of restoration, what is important is to consider humans part of the ecosystem dynamic and thus of recovery. This means framing the recovery of human communities as reconciliation with nature that provides a sense of the place (genus loci) and reestablishes social and historical identity. This means, for instance, that daylighting should not solely aim to bring back urban rivers literally into the light but also to restore their ecological function and processes. For this reason, it is possible to work at restoration levels from the highest to the lowest: historical, ecological, functional restoration, and enhancement of controlled channels. However, considering the land-use changes and high disturbance levels that characterize metropolitan areas, it is impossible to restore historic environments, but it is very important that restoration not be confused with beautification. I recommend Riley's book to landscape architects who have not widened their horizons beyond functionality so they can familiarize themselves with alternative approaches to urban greening project. Teachers, ecological engineering, and design students and practitioners will benefit from it. However, I pose here some questions: Is the rigorous scientific method constraining too much the creative process? Is it really possible to make these 2 worlds, that of science and of design, speak to each other and understand each other's reasoning?

Despite the 2 authors coming from different disciplines, they agree that restoration projects have to be resilient both ecologically and economically: after completion, maintenance should be minimal and the system should be able to adjust itself to environmental changes. With that, it is implicit that they both consider it more important to restore certain environmental processes than to go back to a specific historical moment.

On the one hand, I consider Ann Riley's work science-based design that still pays close attention to social aspects, as in the case of the large trees saved in the daylighting project of Blackberry Creek in Berkeley

because of Tai Chi students training under their foliage. Citizen involvement is for her the keystone to watershed restoration. On the other hand, Margie Ruddick's work offers life-supporting design able to conjugate creatively cultural and natural elements (Lister 2007). Also for her, the social aspect is important because designing wild landscape will help shape needed future stewardship.

A nice symbolic parallel between the stories in these 2 books is the creative reuse of concrete structures and paving necessitated by budget limitations. In the Queen Plaza project in New York (2003 Long Island), the old concrete roadbeds and sidewalks where transformed from a meaningless slabs of concrete to functional pieces with a simple but masterful action: they were rotated from a horizontal to a vertical position, one close to the other, in between plants. In this way, people were discouraged from walking through that part of the square. The brutal concrete kept its hostile connotation but helped people orient themselves through the garden infrastructure. In the Strawberry Creek daylighting project (1983 Berkeley), one of the first of the genre, the demolished culvert parts were piled horizontally to stabilize the riversides and placed between plants. At that time, this approach was innovative and thrifty. Today, one would look at this differently; the concrete rigidity (the same would happen with stones) will prevent the natural development of the river (erosion and deposition) from reducing ecosystem services (water quality and habitat provision).

Even if the 2 books refer only to U.S. study cases and design schools of thought, both are globally applicable because overall there is skepticism for new ideas based on previous knowledge. This skepticism is valid for the mainstream actions of channelizing rivers and installing culverts to constrain their natural and unpredictable flow (flood control projects) and for the picturesque and romantic-gardening approach still in vogue in the small flowerbed and in big urban parks.

For the architect, the landscape architect, and the planner, ecology has to become a model for creating projects that are part of a greater spatial network. Ecologists, in contrast, have to operate in a relatively new arena, the built environment, and have to work from their side to reveal the ecological patterns and processes existing in urban environments. Finally, all of them have to work together with the aim of incorporating ecology into urban development and planning (Niemelä 1999) because this will be crucial to protecting "endangered life-supporting system[s]" (Odum 1993).

Chiara Catalano

Institute of Natural Resource Sciences, Zurich University of Applied Science, Grüentalstrasse 14, Postfach 8820 Wädenswil, Switzerland, email chiara.catalano@zhaw.ch

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Noted with Interest

Long-Term Ecological Research. Changing the Nature of Scientists.

Willig, M. R., and L. R. Walker, editors. 2015. Oxford University Press, Oxford, U.K. 442 pp. £45.99 (hardcover). ISBN 978-0-19-938021-3.

The way of making science changes quickly: networking, multi-, inter-, and transdisciplinary studies, big-data processing, building science–policy interface, organizing citizen science, social networking, outreach, etc. In the field of ecology, the long-term ecological research network (LTER) of the United States has been a major worldwide promoter of those changes for decades. The scientists of LTER have been both actors and subjects of those changes. In this book, LTER scientists share their stories, experiences, challenges, and achievements in 44 chapters organized into 21 parts. Parts 1 and 21 provide a general scope and the other 19 are dedicated to particular LTER sites. All the chapters have the same basic structure: short summary, extended summary or personal overview, and conclusions. In part 1, the editors briefly describe the network. From this part, the