José Juan Terrasa: Architect and Ecologist [1]

Submitted by Wilfredo Mendez Vazquez [2] on 29 May 2014 - 2:47pm

 [2]

Architect Terrasa-Soler

In addition to his essay, Molecular Landscape [3], we spoke to Architect Terrasa-Sole, who is also a professor at the Polytechnic University of Puerto Rico [4], about the implications of this proposed paradigm. He offers a more in-depth look into the concepts and benefits of his theory as well as the scope of the research.

Why "Molecular Landscape Architecture" is important now? Why is so important for present cities to embrace "Molecular Landscape Architecture"? What are the critical needs that this solution seeks to address?

The development of a Molecular Landscape Architecture depends fundamentally on the collaboration between science and design. I think the time is ripe for a greater and mutually transformative collaboration between the sciences and the design of human environments (landscape architecture and architecture). We designers are trained to test our ideas in the studio and we do that in great detail and depth, but not necessarily taking into account the full complexity of natural systems and usually not taking into account the opportunities for positive interactions between natural and built systems. This is crucial now, particularly in dense cities. We have had the discipline of urban ecology develop for the past 15-20 years and advances there are significant.

Designers traditionally avoid the scientific aspects of human environments. In part this has been the case because designers often do not have the time, resources, or the training to delve deep into the scientific aspects of their designs. Today, however, there are many tools, such as Geographic Information Systems (GIS) that can help to pull together tons of scientific data and make them relevant to design. The collaboration between science and design will provide for better human environments for all citizens and will reduce the environmental footprints of cities, eventually leading to truly sustainable urban environments.

What are the critical elements that must be in place in order to put in practice "Molecular Landscape Architecture"?

The most important is a change in the paradigm of how design is taught. Design schools, for the most part, are still operating in the old model of the art studio. But design, particularly the design of human environments, is as much the application of art as it is the application of science. There should be laboratories in design schools as much as there are in biology departments. Experimentation needs to be part of design education. We must strive to build an experimental design culture in our design schools. I always ask my students, “If your design is built, what would you measure to determine if it was successful?”

Landscape architecture and urban design today are nothing if not the application of knowledge about complex, interacting systems. A culture of scientific discovery has to flourish in our design schools for a Molecular Landscape Architecture to be possible. And we are trying. Just last week we submitted a proposal to NSF to develop a 5-year project that, together with the Faculty of Natural Sciences at the University of Puerto Rico, the School of Planning there, and the International Institute of Tropical Forestry, among other partners, will look at ecology and design in the city of San Juan; one of five cities in a North American research network about sustainable urban design. If we receive the award from NSF, it will definitively help transform our paradigm of design teaching in Puerto Rico and put us at the forefront of design education globally.

What are the current biggest barriers for the development of this philosophy?

Other than changing the paradigm of design teaching, which I just mentioned, there is a need to build robust computer models that are capable of integrating disparate and complex information regarding landscapes. We need a LIM, or Landscape Information Model, parallel to what BIM (Building Information Modeling) is for buildings. Of course, a landscape is a much more complex bundle of systems than a building could

ever be, but the concept is the same. We are not there yet, but we will be soon.

What are the priority milestones that must be addressed through this landscape architecture model in the near future?

The education landscape architects receive about soils is appallingly deficient, even at Harvard. And it is precisely in the soil matrix where many important ecological processes occur that can make or break a designed landscape. Landscape architects wanting to develop a Molecular Landscape Architecture must work with soil scientists first and understand the implications of specifying soils, down to a molecular level. This is a priority area.

Another priority area is working with ecologists, hydrologists, materials scientists, computer scientists, and others to develop a LIM. The LIM will help in design *per se*, of course, but it will also generate hypotheses about landscape interventions that can then be tested experimentally.

A third priority area is working with geneticists, horticulturalists, and population ecologists to understand how different genetic assemblages, specified by a landscape architect, impact the performance of a landscape in terms of long-term ecological services.

How scientists like Grizelle González will contribute to achieve those priority milestones?

Immensely. Designing a landscape without specifying appropriate soils is like making a cake without flour. It is possible, but you will not get the best result. We are eager to start the discussion with people like Prof. González because the possibility of a Molecular Landscape Architecture depends on collaboration with professionals like her in interdisciplinary teams. The landscape architect, after all, is a generalist, but they must be capable of talking intelligently to people like Prof. González. If landscape architects do not take the lead and reach out to other professionals in the pursuit of an experimental, model-driven, design practice, a great opportunity might be missed to make of this earth a home where both humans and the rest of nature can thrive together in harmony.

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