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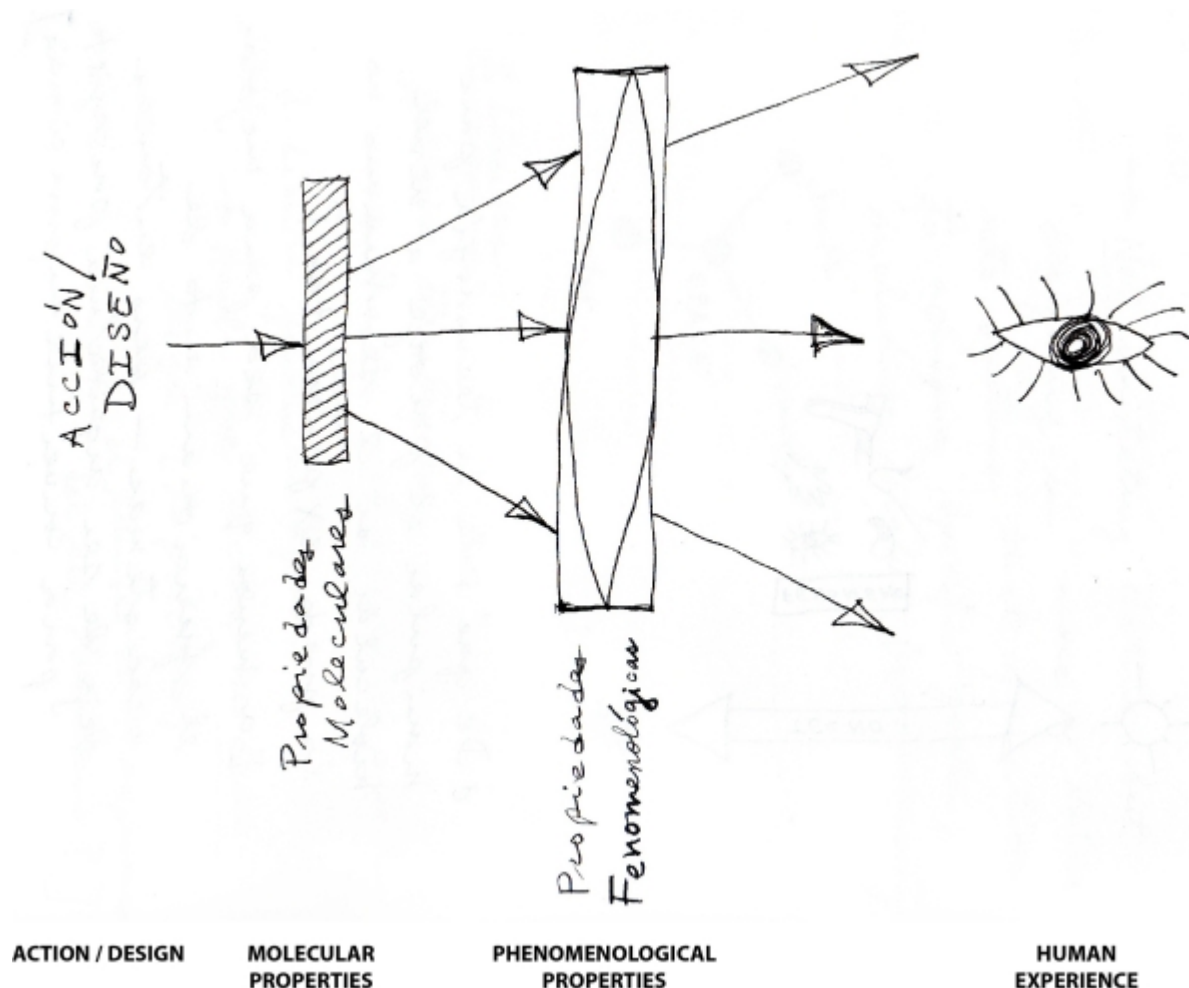
Molecular Landscape Architecture [1]

Submitted by Wilfredo Mendez Vazquez [2] on 29 May 2014 - 12:20pm

[2]

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ACTION / DESIGN   MOLECULAR PROPERTIES   PHENOMENOLOGICAL PROPERTIES   HUMAN EXPERIENCE

Landscape architect at The Office of Marvel & Marchand Architects, Jose Juan Terrasa-Soler wowed us with his essay **Molecular Landscape Architecture**. Exploring new fields of crossover between science and design, Terrasa-Soler proposes an architectural approach that embraces

genetics in order to engineer ecosystems the same way a scientist manipulates DNA.

To Richard T. T. Forman [3], with great admiration and respect.

Even though during the last 200 years the visual aspects of the design and construction of landscape have predominated, that definitively had not been the case during the rest of human history. Landscape has a utilitarian dimension that, while not completely absent at any time in history, only recently has it been recovered and reinterpreted. Perhaps this has to do with new definitions of landscape and the new spheres of influence of landscape architects. The utilitarian, however, does not have to be at odds with the beautiful, and even a utilitarian landscape such as a vineyard has a great potential for beauty and cultural expression. This reinterpretation of the utilitarian in landscape is at the heart of the recent transformation of the discipline.

The transformation of landscape architecture, which has been from the inside out through the reflection and writings of James Corner, Elizabeth Meyer, and George Descombes, among many others, is also about the response of the discipline to new technologies and cultural demands. A discipline that originated professionally as a calling to "humanize" cities, is now called back to do the same 200 years later, as the world's population increasingly moves to the cities. These cities are now much denser hi-tech conurbations that must be continuously more efficient and in harmony with their natural context.

Greater understanding of how ecosystems work and how human activities affect them is also a great influencer of contemporary landscape architecture. Ecologists teaching at design schools, such as my mentor Richard T. T. Forman, have influenced the recent generations of landscape architects and have convinced them that landscape architecture must move beyond the purely visual result and towards a complex experience of the phenomenological. It is not that the discipline must abandon its visual methods and traditions, but that the outcome of design must have import beyond the visual experience by truly embracing the complexity of systemic processes, including sociological ones.

As we understand better the immense complexities of urban ecosystems, where natural, built, and social systems interact in myriad ways, the landscape architect must handle new technologies and new meanings, far beyond the ones learned at their old design school.

The increasing availability of information, complex models, and analysis of urban ecosystems and urban sites will make possible in the near future a never before seen sophistication in the design of urban landscapes. One way to look at it is as if the palette of the landscape architect is continuously expanding. This palette increasingly includes non-visual elements and abstractions of processes that will have an enormous impact on the quality of human space in future cities.

Perhaps it is time to develop a Molecular Landscape Architecture – a landscape architecture that can predict the impact of soil selection on a future plaza, and derive a perfect recipe for this new soil, down to the molecular level. A landscape architecture that can predict the successional path of a group of plants, selected by their genetics, such that in 25 years the ecological services of

that particular urban forest patch can be maximized. A landscape architecture that can foresee the effects of global climate change such that a new *malecón* can be designed to last at least a 100 years. A landscape architecture that explores and takes advantage of new, synthetic, "intelligent" materials. A landscape architecture that can design better and better green infrastructure, cyborgs that harmoniously combine the biological and the mechanical, such that energy can be harvested, polluted rainwater can be cleaned, and the heat island effect can be mitigated in our cities.

Nature is always greater than us because we are just a tiny part of it, although, as we now know, we can shake the rudder of this boat in more than one way. Molecular Landscape Architecture is not about "controlling" nature; that is a futile enterprise. It is about utilizing new technology to design better, both for humans and for the rest of nature, by taking into account the fundamental ecological patterns and processes of the landscape, even in our urban landscapes. It is about taking advantage of the microscopic and molecular properties of landscape materials, and understanding how they affect the phenomenological scale. It is about recognizing that the microbial flora in the soil might have as much an impact on the beauty and functionality of a landscape as the pavers that are chosen for it. It is about understanding that by prescribing a particular soil mix and particular construction and installation requirements, among other things, microbial flora in the soil can be predicted and the initial conditions of a successful landscape can be specified.

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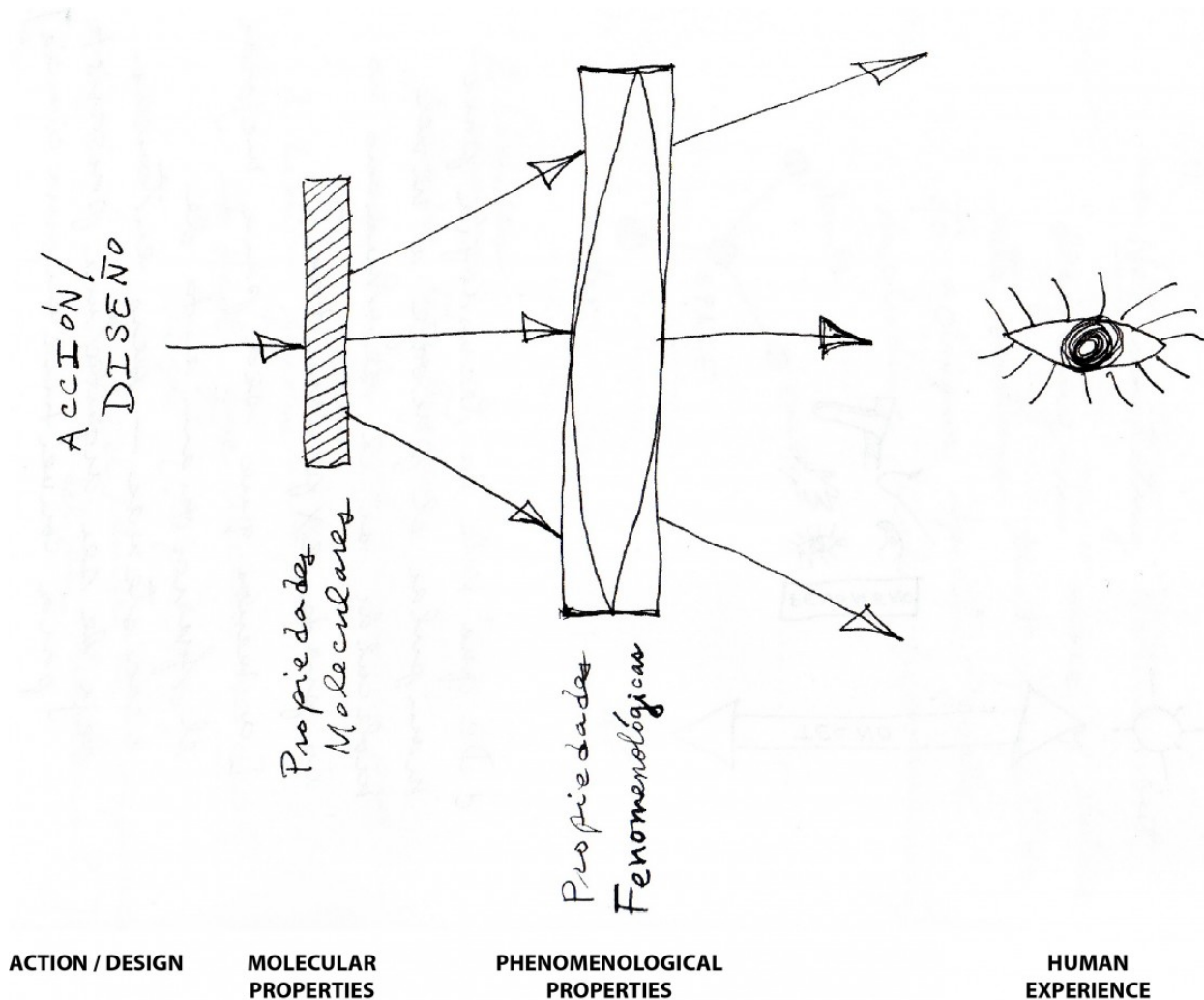
Our current ability to manipulate molecules and DNA is the same ability to steer whole ecosystems, one molecule at a time. A Molecular Landscape Architecture is the same old art-and-science that we were taught in design school but with additional tools to better predict future outcomes that depend on the performance of complex systems; to better design the initial landscape conditions that will result in a better investment; to better respond to current cultural values and demands; to better express the current understanding of "nature" as something we are inextricably connected to; and so on. Our drawings and models are no longer sufficient. We are in the midst of expanding our horizon as designers because we have new analytical tools and an expanded palette of design elements to choose from.

However, we have to team up with other professionals and take the lead. If we lock ourselves up in our studios, some other profession will take our future. We need to be talking to ecologists that work on applied research and urban ecology; we need to talk to hydrologists; we need to talk to materials scientists, soil scientists, and plant geneticists; we need to talk to sociologists and social psychologists; and so on. We need to look at design interventions not as final conditions but as experiments in prescribing initial conditions. We need models that we can test experimentally. And as experiments, we need to look at the results from design interventions and learn from those results.

Molecular Landscape Architecture might be the future, the not too distant future, of our discipline. But we need to embrace a systems approach to design that goes well beyond lip service and that dives deep into the

complexity of an experimental design culture. We have eager partners waiting at the door; some of them have been with us all along. Just ask Richard T. T.

The essay was originally published here [4]

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