An organism is a system. (...) It is a river that flows and yet remains stable in the continual collapse of its banks and the irreversible erosion of the mountains around it. One always swims in the same river; one never sits down on the same bank. The fluvial basin is stable in its flux and the passage of its chreodes; as a system open to evaporation, rain, and clouds, it always—but stochastically—brings back the same water. What is slowly destroyed is the solid basin. The fluid is stable; the solid which wears away is unstable—Heraclitus and Parmenides were both right. Hence, the notion of homeorrhesis. The living system is homeorrhetic.

Michel Serres on the organism as an information system, Hermes, 1982

Prelude: Informed Architecture

With the advent of the modern sciences and the perception of natural phenomena in terms of indeterminacies, the discipline of architecture has marked a shift from an idealistic expression of the real world to the unleashing of performative systems that reflect its instabilities (Blackmore, 1995; Heisenberg, 1958; Prigogine I. & Stengers I., 1984).(1) This perennial interest to transform the static condition of the architectural model into a system of potentialities has generated many theoretical assumptions. Such assumptions often referred to the nature of living organisms and their ability to stream and generate information (Wiener, 1954).(2) Just to name a few, Patrick Geddes’s “Life-conserving Principles” (1915); Frederick Kiesler’s “Correalism and Biotechniques” (1939); Richard Neutra’s “Survival Through Design” (1954); Superstudio’s “Microevent/Microenvironment” (1972); and Marcos Novak’s “Transarchitecture” (1995).

As the French philosopher Michel Serres asserts, the living organism acts similarly to an open system that can only be assessed rather than defined because of its recombinant qualities (Serres, 1982).(3) It renders a reactive system in quasi-equilibrium where the intense affluence of information, influence of systemic parameters, and confluence of knowledge incessantly erode, reform, and transform its intricate nature. This consideration of the living organism as an information system provided a breeding ground, almost literally, for visionary researchers who did not hesitate to position the architectural object on the same level. In the past 30 years, architects such as John Frazer, Greg Lynn, Marcos Novak, and Karl Chu provided the research community with remarkable results on the potential to embed evolutionary principles at the core of the object. At the same time, critical theorists such as Georges Teyssot, Antoine Picon, and Peter Sloterdijk engaged with defining the consequences of the increasing influence of information technologies on the discipline of architecture. The visionary work of these practitioners and theorists prefigured the digital euphoria of the twenty-first century.

The structure and discourse of “LIFE in:Formation” aim at shedding light on Michel Serres’s three fundamental aspects regarding the nature of information, namely its affluence, influence, and confluence. These three conditions propel today’s informed architecture; a term that accentuates the prevailing role of information assets in the mutation of the architectural object into something that increasingly resembles a sensitive organism. The following introductory essay reviews critical aspects regarding these three conditions in the production of architectural organisms that are profoundly influenced by the inherent intensity, instability, and transdisciplinarity of technology (Sprecher, 2008).
1. Affluence

The accelerated “informatization” of human society and economy in the postwar period has triggered an exponential integration of information technologies in architecture (Noria & Minc, 1981). One consequence of this condition has been the emergence of an architectural production increasingly preoccupied with reaching a critical degree of morphological, structural, and material precision. Such precision reflects the ability of information to intensify its presence into the deepest structure of matter. More importantly, this intensification of information affluences has augmented the symbiotic relation between form and function in all its manifestations. Such a system is indeed increasingly specialized due to the selective processing of information that continuously modifies its very own nature and accelerates its evolution (Atlan et al., 2004). The architectural system thus conceived is endowed with an exponential capacity to absorb information assets while relentlessly combining them in order to guarantee its functional performance (Figure 1).

Yet, such an architectural system is far more than a Petri dish of information bits. It foremost operates as an open system of influences that continuously reinvents itself.

2. Influence

Considering the exponential capabilities offered by the information technologies, architecture has been engaged into redefining its modes of production and the nature of its expression. Following Michel Serres’s assertion, the architectural object increasingly resembles an organism that is responsive to its own internal nature and the external conditions of its surrounding. In this hypermediated environment, what used to be the collective gives way to the connective, the rigid structure to the open system, the condition of causality to non-linearity. Such an environment is generated by a wide range of information influences that render a reality in constant mutation, a reality shaped by potentialities, instabilities, and probabilities. Considering architecture as an expression of the human environment, the idea of a world shaped by probabilities is crucial because it implies that the architectural organism evolves in a non-linear fashion. In other words, its existence does not reflect a structure of cause and effect but rather induces complex evolutionary processes. In recent years, this consideration has triggered new modes of design thinking that share a similar objective, namely increasing the capability to reflect on a wide variety of generative influences. These new modes of design thinking include automated processes such as structural shape annealing mechanisms, genetic algorithms, and cellular automata. While considerably augmenting our perception of the real, the architectural organism renders a world of evolving phenomena shaped by instable influences (Figure 2).

The architectural organism thus conceived does not simply imply that new modes of production have emerged. It foremost implies that the discipline of architecture has marked an epistemological shift prompted by the current technological confluence of knowledge.
3. Confluence

In today's architecture studio, designers continuously acquire terms and languages that are borrowed from the sciences. This change in practice does not imply that architecture has turned into a new science but rather that its tools have become increasingly scientific. These scientific procedures have gradually transformed the deceiving nature of diagrams into computational codes that stem from the confluence of a wide range of disciplines. By associating the notion of confluence of knowledge to the design activity suggests that architecture can no longer remain an autonomous discipline. It now embraces the immensity of information networks. One of the consequences of this transdisciplinary condition is expressed by the current proliferation of new design activities in emerging fields such as material and fabrication research, interactive and immersive media, and most noticeably, biologically-inspired modeling (Linder, 2005). In other words, the expansion of information assets implies that architecture is increasingly influenced by other fields of knowledge (Figure 3). Its concerns are no longer constrained to a particular dimension but, instead, extend at all scales simultaneously, from the intrinsic structures of material to the macro-scale of environmental phenomena. Architecture stands now at the confluence of informational streams that generate a continuum of knowledge across all disciplines.

Figure 3. Confluence: Fiber-based prototype developed at the crossing of multiple computational platforms (Mathematica © and McNeel Rhino ©). Such engineered prototype epitomizes the current confluence of knowledge between multiple disciplines; in this case, mathematics (Dr. Edward Mosteig, Loyola Marymount University), design, material research and fabrication (Open Source Architecture and John Bohn Associates), n-Natures exhibition, Rhode Island School of Architecture, 2009.

Informed Architecture: Sensitive Organism

In the past 50 years, roughly since the advent of the information sciences and technologies, architecture has undergone a profound transformation of its disciplinary status and the nature of its production. And yet, from Viollet le Duc's organic models (Bressani 1999) to François Dallegret's Environment-Bubble (Banham, 1965), Superstudio's Microevent/Microenvironment (Superstudio, 1972) and today's morphogenetic desires, architects have always been fascinated with fostering the influential conditions that propel human life, nature, and complexity (Sprecher, 2009). The intensive affluence of information, the evolving influence of environmental conditions, and the transdisciplinary confluence of knowledge are among the prevailing conditions that stand at the core of this architectural anxiety (Figure 4). These conditions act in the most profound structures of today's informed architecture. They have gradually transformed the object into a sensitive organism that has the potential of being mutative to its own existence and environment. The architectural organism thus conceived is now ready to embrace the “ambient spheres” of life (Sloterdijk, 2000).

Figure 4. Informed Architecture: Phototaxic installation featuring 80 proposals on the future of the city. Open Source Architecture, ParaSolar, an installation celebrating the Centennial anniversary of Tel Aviv, built in 2009.
References


Banham R. illustrated by Dallegret F. (1965), A home is not a house, in Art in America, New York: Volume 2, pp. 70-79


Credits

Figure 1: Simulations, illustrations and research by Benjamin Mitchell, McGill University, 2010

Figure 2: Illustrations and research by Emily Baxter and Rebecca Taylor, McGill University, 2010

Figure 3: Photos by Kevin Deabler, RoDE architects inc. Project by Open Source Architecture (Chandler Ahrens, Eran Neuman and Aaron Sprecher), John Bohn Associates and Dr. Edward Mosteig, Rhode Island School of Design, Providence, 2009

Figure 4: Photos by Yaron Kanor. Project by Open Source Architecture: Chandler Ahrens, Eran Neuman and Aaron Sprecher, Tel Aviv, 2009

Endnotes

(1) Consider for instance Ludwig Boltzmann’s “Maxwell-Boltzmann’s distribution” (1871), Werner Heisenberg’s “Uncertainty Principle” (1927), and Ilya Prigogine’s “Principle of Irreversibility and Instability” (1980).

(2) We follow here Norbert Wiener’s definition of information that is “the content of what is exchanged with the outer world as we adjust to it, and make our adjustment felt upon it.”

(3) Michel Serres opposes the term “defined” to the idea of an open system.

(4) The term “informatization” was first introduced by the Simon Nora and Alain Minc in a report to the French President in 1980.

(5) Here, “matter” refers to any kind of substance present in nature and reality.

(6) This notion of the accelerated evolution induced by technology has been at the center of the inspiring debate between the French mathematician Roland Omnes and the French physician Georges Charpak at the 39th “Rencontres Internationales de Genève” in 2003.