Kas Oosterhuis: The Expert Formerly Known as the Architect

Interview by Daniel Opazo
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Kas Oosterhuis (Amersfoort, Netherlands, 1951) is an architect and academic whose practice and research focus on the new possibilities open to architecture by the use of digital technologies in design and fabrication. He is the founder and director of the Hyperbody research laboratory at TU Delft, as well as the principal at ONL (Oosterhuis – Lénárd). His more important books are *Hyper-bodies. Towards an e-motive Architecture* (Birkhäuser, 2003) and *Towards a New Kind of Building* (NAi Publishers, 2011). He also recently created a discussion group on Linkedin under the name of "The Expert Formerly Known as the Architect". For the present issue of *Materia Arquitectura*, Daniel Opazo conducted an e-mail interview with him, in order to discuss his views on the reconfigurations of the project and the challenges of architecture in the near future.

Let's begin with the provocative concept "The Expert Formerly Known as the Architect": does this concept attempt to address the alleged lack of influence and/or relevance of the profession in a context of ACE disciplines increasingly dominated only by an economic rationality? Is it rather an invitation to think through the specificity of the discipline?

★ Architecture-Construction-Engineering.

Since the economy has changed into a world of individual makers that constitute the "long tail" of the economy (read Chris Anderson) the role of the architect has changed. If we stubbornly try to act as architects did in the last century we are lost, we have to rethink our profession. We should just look around us, have an open eye for the revolutionary changes, and apply the new technologies one to one to revolutionize the very stuff buildings are made of.

★ Chris Anderson (1961) was chief editor of *Wired* magazine. His business model called "long tail", based on a statistical principle, intends to sell small amounts of many things.

What do you think about the idea of "the project" – understood as a long term aesthetic and/or political program – in the current context where architects often seem not to be in a position to make crucial decisions regarding the building process? Is it possible nowadays to think of the project in such a way?

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Architects and other designers / makers have the power of the proposal. My criticism on many activities I see now is that architects become surveyors rather than designers. In my Hyperbody research group at the TU Delft, in our ONL design practice in Rotterdam and in the Hyperbody masters design courses I do not stop emphasizing that we are designers in the first place, and a strong yet verifiable design concept is the strongest driver for change. Architects thus become project developers in its true sense.

★ Hyperbody is a research group directed by Kas Oosterhuis at the Faculty of Architecture at the Delft University of Technology. The goals are to explore techniques and methods for designing and building of non-standard, virtual and interactive architectures. www.hyperbody.nl

★ ONL is a multidisciplinary design office directed by architect Kas Oosterhuis and visual artist Ilona Lénárd. Architects, visual artists, web designers and programmers work together in the office, practicing the fusion of art, architecture and technique on a digital platform.

In the light of the changes the profession has undergone in the last decades due to the integration of computer technologies, how do you evaluate the changes in the project as a decision-making structure and the issue of leadership in design teams? Has technology contributed to create a more collaborative and decentered decision-making process in architecture?

There is clear necessity to design open design systems rather than fixed designs. Open design systems that are by definition parametric are an inclusive approach, allowing all participants in the design game to be truly designers in their own right. Therefore I consider the client, the laws maker, the stylist, the engineer, the climate designer, the user, the quantity surveyor, the facility manager, the recycling expert, the material designer and the interactivity designer (to name a few) as equally important designers. Anything that has a major influence on a design must be considered as a design act. These designers must act in a dynamic actor network where each of these experts at a certain moment will be in charge; together they form the swarm of experts, responding to always changing external data / info, giving shape to the swarm.

I would prefer to consider the open participatory design method to be an actor network, where all people and all things are more or less loosely linked as to form a temporary lean brain.

You have written about how you try to integrate in your work the notion of "swarm behavior", relating it to the ability of a system (an architectural project, for instance) to change and arguing for the need of non-linear software to address this challenge. Do you think that the concept of swarm behavior or maybe that of hive mid, as devised by Kevin Kelly, could be useful to rethink collective work in architecture?

The theory of the swarm forms the very basis of my thoughts on the next generation building. Basically I argue for an inclusive approach in the design process, in the manufacturing process and in the assembly process. The technology of mass customization which produces series of unique building components still includes possible series of the same. Mass production is then reduced to only one possible instance of mass customization. In the same way generative design methods are inclusive to traditional linear design processes. It is relevant to notice that the other way it is not possible: I cannot with mass production lines produce series of unique products, neither would I be reasonably able to produce a complex generative design using traditional drawing methods, there would be no way to evaluate the billions of possible instances, let alone to make meaningful design choices. Rather than a hive mind I would prefer to consider the open participatory design method to be an actor network, where all people and all things are more or less loosely linked as to form a temporary lean brain.

In order to be able to work with concepts like actor-network or distributed cognition, which methods or procedures do you use to foster the engagement of users in the design process? This question focuses on the possibility of "the client" not being a government agency or a corporation but instead a local community, for instance.

We typically describe the interaction between users and environment as the Internet of things and people. To facilitate such interaction all players, including all things and people, are actors reading, processing and sending information. In principle we choose as the basic condition a radically distributed, bidirectional relationship between the nodes / components / actors, meaning that they act locally, in the first place with their immediate neighbors, one by one propagating information through the swarm of components / actors. Each component tells the other information on their actual state. One of the reasons we take this as a basic condition is that only in this way we can achieve truly local working / living conditions, local climatic conditions, customized to the preferences of each individual person. Information can be retrieved from the flock of nodes, and information can be transferred to this flock as well, in order to create a balance between the swarm and its environment.

In the last decades the term "architecture" has been borrowed by disciplines such as computer science – i.e. "software architecture" – and engineering – i.e. "architectural innovation" – as in the influential paper by Henderson & Clark (1990). In both cases, architecture is meant as a comprehensive or general organization of a series of specific processes or machines. Also, you have written about the idea of a top-down geometrical scheme imposed on the bottom-up parametric design process. How could you explain – in the context of your own work – the generation of this "architectural idea" and how does this general organization interact with the specific design processes?

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Rebecca Henderson and Kim Clark are authors of the article "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms" (*Administrative Science Quarterly* *35*(1) March, 1990).

We consider the architecture of the built environment to be a balance between internal driving forces and top-down imposed information. The internal forces are organized to be an open design system, parametric in its nature. We typically introduce the external information that informs the system in the form of powerlines that attract, effectively acting as linear attractors, the nearest points of the point cloud of reference points. Between the powerlines doubly curved surfaces are constructed which then are populated by the remaining reference points. In our architecture this is a semi-automated process, where modeling and scripting go hand-in-hand.

Our architectural production is data rather than drawings.

You have stated that it is a waste of time to delay design software training in architectural students and that they should be immersed in a sort of digital environment from the very beginning. What is your view on traditional drawing methods and their contribution in the contemporary architectural project?

We draw like a three year old, using our fingers to finger-paint on the iPAD. These sketches are used to organize our thoughts, to be transcribed into well-defined 3D curves later. My sketches are conceptual diagrams rather than foreshadows of a future 3D model. Ilona's sketches typically are impulsive intuitive gestures. We have experimented with sketching in the 3D digitizer and use these 3D sketches directly for modeling our powerlines. Otherwise we re-model the sketches in software like ProEngineer, Rhino or 3D Max, depending on the mathematical precision that is needed. Indeed for the most advanced situation where we need to have precise tangential relations and proper 3D curves, we use ProEngineer. But we only model the basic curves, all the rest is scripting in Virtools, 3D Max, Grasshopper or Processing. Earlier we used AutoLISP routines and Visual Basic. In our ONL office we are beyond BIM, we do not just model a building, we only model the driving forces and script the relations between the components, and we specify the details using scripting as well. One of the big reasons to do so is that this is the way to form the optimal basis for a direct export of data to the CNC machines, manufacturing the nonstandard industrially customized components. So our architectural production is data rather than drawings.

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Ilona Lénárd (1948) is a visual artist born in Hungary. In addition to directing ONL studio, she has realized a number of art projects in public space, as Swinging Lights, Musicsculpture and TT Monument.

One of our concerns in this issue of Materia Arquitectura has to do with the project understood in a cross-disciplinary context. How have your work and your views on architecture and the city been influenced / changed by working with a visual artist as Ilona Lénárd?

Ilona brings a form of immediacy into the design concept that we could never have imagined to have otherwise. Her intuitive energetic gestures are executed faster than one can think. We found out that this actually nicely resonates with the calculation speed of the computer. This design method may be adequately described as a critical paranoid method, idiot savant style, meaning that we herewith create a direct link from imagination to data. In similar idiot savant style fashion we establish a direct link from data to production, from production to assembly, from assembly to interactive usage. After so many years of collaborating we can conclude that the decision we took back in early nineties, as to fuse art and architecture on a digital platform, has been a most challenging one, without which decision we would never have imagined to develop the design methods that have led to the design of the Waterpavilion, the iWEB, the Cockpit in the Soundbarrier, the CET, the LIWA Tower or the Climbing Walls. ▣

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