



Alexis Meier :author

University of Strasbourg :organization

France :country

Computation against design ? Toward a new *logocentrism* in architecture

The purpose of this paper is to make apparent critical and theoretical aspects of the instrumentation of new technologies inside architectural processes. After twenty five years of “Choral Work” between architecture and post-structuralist philosophy superimposed together inside architectural processes, we now face a new technological era which seems to provide a new figure of authority by replacing logocentrism to mathematical logocentrism. Everywhere, the “insemination” of computer by biogenetic algorithms and codification processes transform matter into a zoocentric paradigmatic system, which is supposed, by its internal “modulation,” to extend our potential of social dynamics into space. The goal of our demonstration will then be to examine new technical and theoretical strategies, in a way that the positivistic structure of computation can avoid a totalizing effect (that leading architecture under technological domination), but open up to an un-programmable (emergent) future far above “weaving” and calculated design.

There are at least two types of codifications related to architecture. One concern the direct reading of a building shape as a message, that is an architectural set of « sign » that must be a symbol or an image of something that has to be read. The second type, more subtle, which will be our concern, regarding computation process, is related to the structure of the conception process of the architectural object, its way to be “coded” if we prefer. According to Jean-François Lyotard’s language theory, when a creative phase, defined as “figural,” is submitted to any codification system, it loses its innovative and “original” feature, and leads to a communication phase that is a period dominated by the fulfilment of some conventional codes. Lyotard called, ironically but not innocently, this period of respect, a “scripting surface.” Lyotard spoke about code as a representational convention as we found for example through a stylistic figure as in Painting; here we will talk about another codification process. Not a codification related to the first alienation degree, i.e., a coded message in a shape (a logos), but a codification at a deeper level, at a genetic level of the shape, i.e., at its syntactic and structural dimension (its internal logic related to its potential of expression).

What does this mean with regard to the problematic of computation?

It means that if we only reduce the architectural conception to a programmed algorithm, by some way, we may risk reducing architectural expression to a new conventional codification system like a mathematical syntax. This may produce an architectural object that is the result of formal or technical operation, for example a direct consequence of a script protocol. Thus, reducing architectural creation as an operational technique, as geneticists do in their scientific experience, disqualifies automatically all metaphysical speculation through architectural processes and puts

architecturally creative systems on a neo-positivistic structure. That is the very possibility, to produce only what it is related to a formal reasoning, here, as mathematical (Scripting) reasoning. Regarding this possible evolution, I then ask: do we face a shift from our old logocentric domination system to a logicocentric domination, therefore reducing our architecture syntax under mathematics or an informational science structure?

Let's be clear, the problem is not that architecture is related to science more than art (architecture can feed itself from everywhere), the problem is that mathematics "believes" it may become the new reason of architecture. For example, some may consider an architectural apparatus as the solution of a mathematical problem, related for instance to the "Set theory." This has nothing to do with the issue of "being and living together" that architectural systems have to solve. And why is mathematics useless here? It is useless because architectural perception has nothing to do with computer syntax. It has to do with a cognitive and sensible system which is far above our computer logic and much more metaphysical than the new computer technique would believe. On the other hand, it is true that computation has a lot to do with the performance of robotic fabrication like mass customization. That is why architecture, if not exactly an art, is not a science either, as positivist would regret it. No need then to read Heidegger's critique of technology to understand that once you reduce the design process to a codification technique (as Lyotard identify under conventional phase), you risk, first, to make the architectural designer no more than a digital technician, and second, maybe more important by its potential of reproducibility, you risk to open the door to an unchained globalization effect into architectural expression that alienates social relation by a mathematical reason. That is the fear of a global design as a kind of super "international style" driven by digital codes.

Computation against design?

After this preliminary warning, a difficult question arises: how can we integrate digital techniques as powerful as computation, without integrating formatting and some "alienation" effect?

The first answer is that we can program various "accidents" in the computation scripting matrix; in this way, we can avoid standard repetition of shapes (serialization and stratification). The answer is yes, but the issue is not the "parametric" performance of the process, but rather relational properties related to it. Consequently, another question appears: when a scripting accident becomes an architectural accident instead of a formal design accident? Why, a script "accident" would be more architectural than the same one used by a designer, a sculptor, or cartoonist? What makes a simulated topological singularity, such as a fold, more relevant at the architectural scale than at the object scale? What gives to an ornamental singularity a critical tectonic dimension?



Artist Eva Hild - Anna Sigge photographer



Artist Eva Hild - Anna Sigge photographer

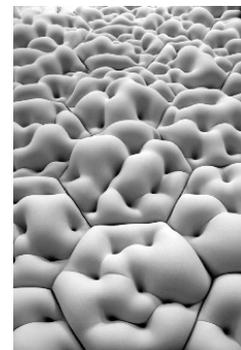


Figure 3. P wall by Matsys (2006) - project for San Francisco's MoMA



We can for example observe the work of the Swedish Sculptor Eva Hild (Figure 1 & 2) and some digital models by Karl Chu or Matsys Architecture (Figure 3).

In the same line, Peter Eisenman asks of Greg Lynn's work: "I found myself facing the work of a paperless studio at Columbia University [...] The studio project proposed a spatial theory that moves the virtual world closer to something that resembles a "jungle," [...] Finally I realized that using the jungle as a spatial concept of reference for the virtual seemed a useful metaphor. The students thought they were dealing with a benevolent jungle and were completely enthusiastic about it, but they had not considered the jungle in terms of a type or a set of principles. They did not attempt to define a virtual jungle; they never questioned the value of their concept, what might have created it, and how this new jungle might be organized" (Eisenman, 2003).

This means that the Metaphor of accident, even correctly *scripted*, gives a kind of "digital jungle," maybe interesting from a mathematics standpoint, but also useless from the architectural standpoint, as long as the morphological process has not proven (above its operating capacity regarding to computation) its relevance in terms of dynamic relation into space. In other words, the task of Architectural design, even computational, is not only to improve matter through technical, structural or practical performances, but also to perform critical-aesthetic aspects, i.e to expand more complex relational systems, new perceptive and affective apparatus between subject and object, and subject to subject into space. Thus, the question of the implication of computational science within the architectural process has probably to solve the relationship between the social morphodynamics and the spatial morphogenetic process.

This leads us to clarify the relationship that may exist between the spatial perception and the environmental structure, as emphasized by Deleuze, "under original relations" and to modify, according to him, the relation to our environment. Under this new technology, it is true that space may become an experimental playground continuously adapted to our atmospheric and ambiance mutations. This requires first to understand first how the use of digital prosthesis in our space can transform our world conditions and secondly, to study, on a perception side, some phenomenological aspects of spatial "notation." What, for example, can guarantee that once the digital traces become material, the structural organization of matter (regularity and continuity in the repetition and organization of spatial sequences) produces a specific experiment, in such a way that our condition to our environment would be re-actualized.

Let us remind that we faced the same problem with disjunctive diagram matrix ten years ago. A question was to know when a diagram becomes architectural. Precisely, answered Eisenman, when you let open the diagram process to an incalculable dimension and refer to anteriority of architecture to produce new architectural environment. But here we face another issue: could we program this "perceptive" effect in a diagram or script matrix? That is why, for example, some argue concerning the Eisenman's Berlin Holocaust Memorial does not work because the spatial environment does not provoke any new mental-perceptive experience to them.

In summary, Architectural strategies with computation are then the possibility to create new dynamic properties for the environment and not only new accidental shapes. Conversely, the danger of creating new shapes without interrogate them architecturally (scale, tectonics, social-dynamics) is that there is a risk to produce objects as designers, sculptors can do, but also to produce some architectural space like crockery (tea-pot), furniture object (chair, carpet, ..), or any (virtual jungle) design object without any critical and political relevance. On the contrary, the possibility to program a new "structure of perception" with scientific tools is not so simple. It would mean that you can inseminate computer, in a literal sense, with bio-genetic algorithms in order to create architectural entities as you could create life, which seems to be a very positivistic mystification of controlling the world.

Therefore, this means that the issue of the architectural perception cannot be totally solved by using calculation methods. As a result, relation between visible and invisible, shape and syntax, between what it appears and what it appearing are immanent and continual. The “perceptive structure” is to some extent “mutant.” It does not belong to any pre-establish rationality like computational logic. It is an experiment of the space that will open, as Young French Philosophers François-David Sebbah demonstrated few years ago, a new condition of the subject to its environment. And this experiment isn’t based on any programmed logic. The world is an incalculable invention and cannot be restricted to a re-presentation of the mathematic rationality as was the “functional” rationality, in the structure of the shape.

Finally, using mathematics scripts of computation one can model accidents on computers that provide you infinitely varied shapes but with our current knowledge, it seems problematic to program the aesthetic effect that leads to re-open the environment to new dynamics. “Coup de dés” said Eisenman, about the diagram process. Thus, computational “scripting” is like all other creative processes that are in some way limited to our cognitive logic, which is fortunately not yet fully programmable. Without this effect one will produce objects, nice objects, but not nice enough to modify deeply the environmental properties. As for the diagram matrix, computation has to go further than designing parametric shapes.

To quote Heidegger again, world must be part of a born process and not the result of an operating process, i.e., a calculation even imitated from life paradigmatic system as biogenetic algorithm can do. Let’s try then not to totally ge-stell, (hail) architecture by the technique even powerful as computation can be, and postpone integral simulation to the benefit of more “un-knowledge” Ethics. At last, algorithms always live, by substitute through our body filters.

References

Eisenman, P. (2003). *A matrix in a jungle*, in *The Charter for Zurich*, Basel: Birkhäuser, Ed. Furio Barzon et al., pp. 28-37.

Heidegger, M. (1954). *La question de la technique in Essais et conférences*, Paris: Gallimard.

Lenay, C., & Sebbah, F.-D. (2001). *La constitution de la perception spatiale: Approches phénoménologique et expérimentale*, *Intellectica*, 1, n°32, pp.45-85.

Lyotard, J.-F. (1971). *Discours, figure*, Paris: Klincksieck.