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In our eagerness to save a reality that is not fictitious we invert the terms. The table, then, is a fiction or the sum of fictions. But reality resides in that other side of the table, from where fictions are projected. The table is fiction, but we, as inventors of the table, are reality. How is that, we ask, puzzled? What are we without the table – or without the equivalent of the table, without any object? Aren't we exactly that which we direct at tables? Our subjective transcendence without an object to transcend is, strictly speaking, nothing. We are only real in accordance with the table, or an equivalent object. Without any objects, we are mere fiction, mere virtuality.

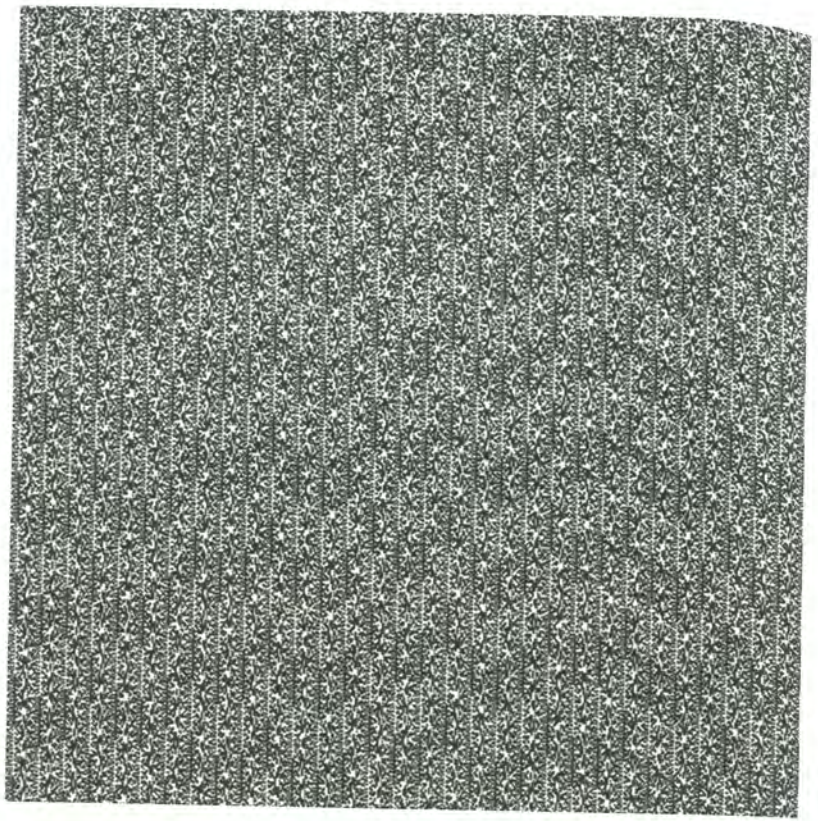
Very well, and what if reality resides neither in the object nor the subject, but perhaps is found in the relationship between the two? In bipolarity? In the predicate that unites subject and object? Thus, both subject and object are fictions. But reality is found in the relationship between both. Thus the knower and the known are fictions. But experience is reality. Very well, but then what if there are as many relationships as points of view? What if the table comprises my knowledge both as a solid board and as an empty field? Both types of knowledge are reality. They are ontologically equivalent. And this admission means, after all, the admission that reality is fiction, and fiction is reality.

This all amounts to madness. This all amounts to pretense. Our epoch pretends to be mad. Yet, deep down, it knows what reality is. The kind of reality that neither experience nor knowledge can provide, since both are misleading. The kind of reality that only faith can provide. But take good note: whoever pretends to be mad, is mad. Hamlet pretends to be mad – but his fiction is, for this very reason, reality. As a result of so much pretending to be mad, Hamlet proves he is, in fact, mad. As a result of our pretending to believe in the fiction of experience and reason, we have ended up losing our faith in reality.

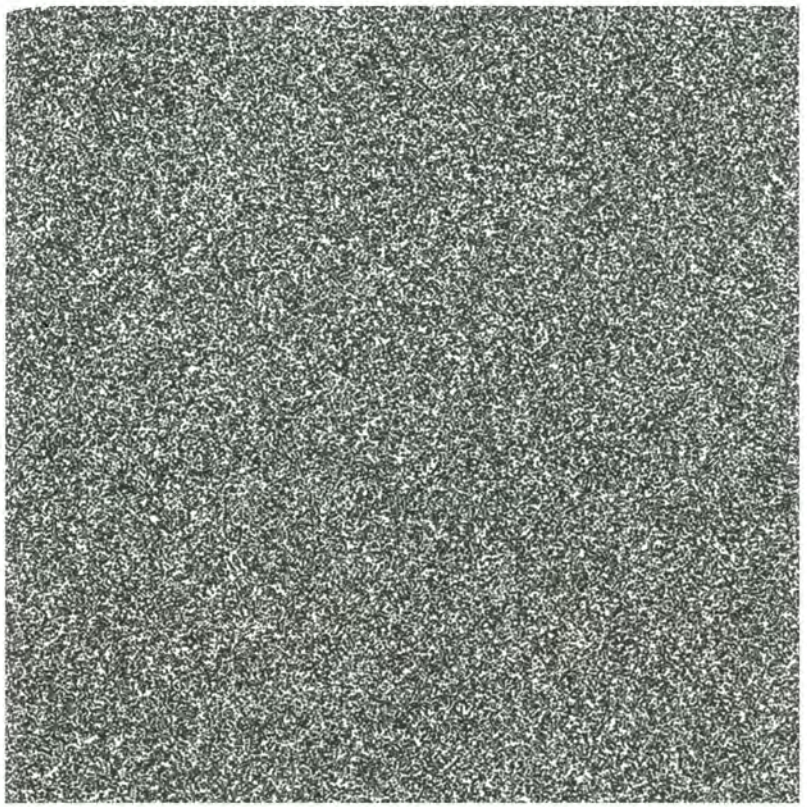
The sense of the absurd and the atomic mushroom are there to prove it.

ON ON ON COMPUTA– TIONALISM

PHILIPPE MOREL & BENJAMIN REYNOLDS & VALLE MEDINA



Philippe Morel,
Pseudo-randomness ...



... vs. Randomness generated
by a quantum random-number
generator, 2015.

Philippe Morel interviewed by Benjamin Reynolds and Valle Medina

Benjamin Reynolds: We're primarily interested in your notion of computationalism and its relationship to fiction as a strategy within architectural design. How does fiction exist in such a solution-oriented context and how does this take shape in your work?

Philippe Morel: What I'm interested in is the relationship between anticipations and the moment they ultimately become real, especially when they don't try to project into a very distant future. They just try to analyze what is happening now using very classical avant-garde strategies – by just radicalizing the discourse a bit, let's say – in order to make it both polemical and real before it is supposed to be. This is how I work. If you go back to '68 and *Strutture in liquefazione* by Archizoom, it definitely anticipated the destruction that Charles Jencks made known as the end of modernity – that modern architecture died in '72 at Pruitt-Igoe.

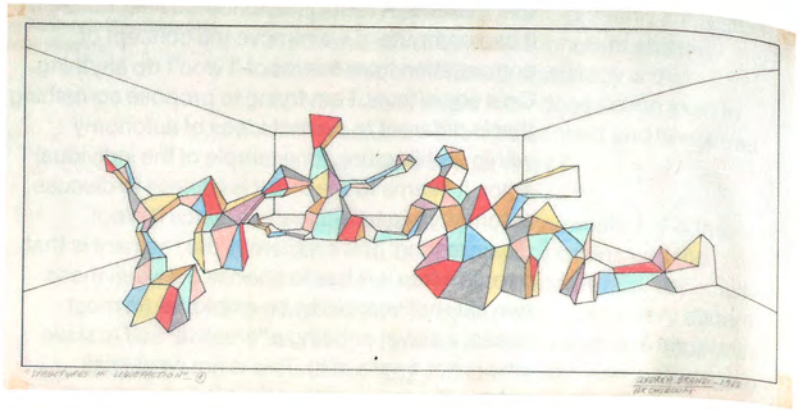
Computationalism has nothing to do with the discourse on information generated in the 1990s, or with a kind of political interpretation of that by, say, Italian theorists like Antonio Negri, or neo-operaist thinkers. With computationalism I'm speaking about something that is nonsocial. I'm really interested in a systemic analysis of what comes from the machine and what is given back to the machine; it is basically a large technological entity that's working by itself and needs very little human intervention.

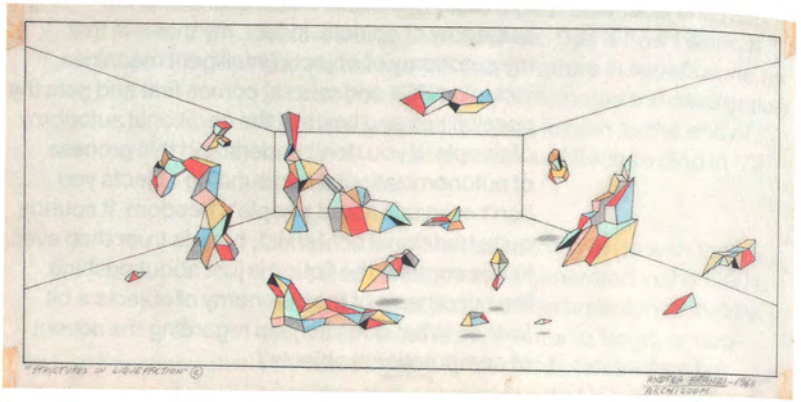
The root of everything we experience today is really based on this concept of computation. The main difference between a robot and a classical machine is that a robot is intelligent. Let us not question the kind of ontological definition of the word "intelligence," and just take for granted that robots are intelligent in practice, as it is all

that matters. A robot is autonomous because it can compute. If we remove the concept of computation from the robot it won't do anything. On a social level, I am trying to propose something that is different to current ideas of autonomy within architecture, for example of the individual actor. It seems to me that it is useless to discuss autonomy in a traditional way since it is not disappearing. The problem at the moment is that people's free will has to choose between these two alternatives: being an employee (in most cases, a slave) or being a "creative" self (a slave who is not aware of it). This is not what I call autonomy, as nowadays the kind of autonomy that really has social consequences is the autonomy of objects. In fact, my thesis is that the autonomy of objects (intelligent machines, including PCs and robots) comes first and sets the possibilities and limits of the traditional autonomy of people. If you don't understand this process of autonomization of surrounding objects you can't even talk about people's freedom. It sounds quite traditional or Marxist, but it is truer than ever. In this context, the fiction is just about pushing the hypothesis of the autonomy of objects a bit further. What does it mean regarding the advent of computational objects?

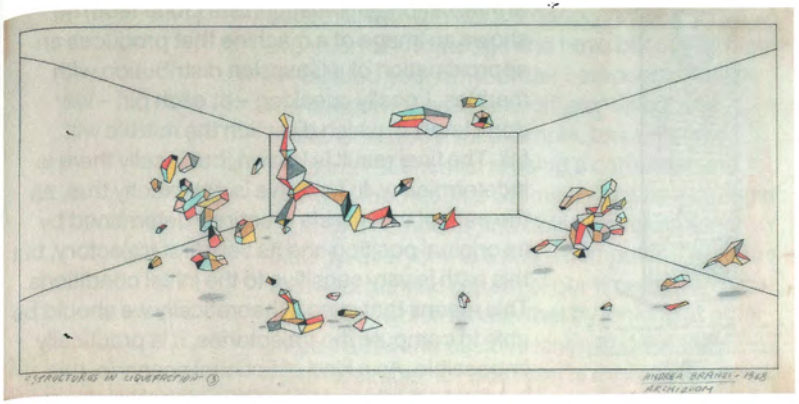
Valle Medina: What about forms of fiction? If human-written algorithms define what computable objects do, where does fiction exist in this process? Is the human-generated domain of fiction now mediated by computation? Or is this the same as when we translate nature to mathematics – that we always have to "hypothesize" and that there are indeterminacies? Are indeterminacies the same as fictions?

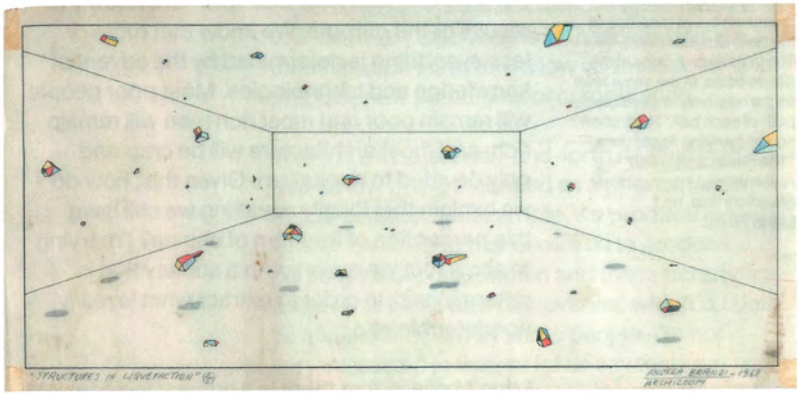
PM: I believe that fiction enters the scene through tiny holes or small doors. In Asger Jorn's essay on Situationism and automation in the first issue





Andrea Branzi / Archizoom Associati, *Strutture in liquefazione*, 1968. Ink and colored pencil on tracing paper, each 33 x 67 cm. Photos by François Lauginie. Collection FRAC Centre, Orléans. (c) FRAC Centre.





"This device allows for the automatic generation of a Gaussian curve (position of the balls at the bottom). The artistic problems of the dérive occur at the same level as the relatively unpredictable path of each ball." Illustration accompanying Asger Jorn, "The Situationists and Automation," *Internationale Situationniste*, no.1 (June 1958).

of *Internationale Situationniste* (June 1958) he shows an image of a machine that produces an approximation of a Gaussian distribution with marbles. Locally speaking – at each pin – we don't know in which direction the marble will fall. The final result is known, but locally there is indeterminacy. In fact, this is not exactly true, as the path of the marble is entirely determined by its original position and its very first trajectory, but this path is very sensitive to the initial conditions. This means that even if theoretically we should be able to compute the trajectories, it is practically impossible. As a kind of fictional scenario, this is what I am interested in. On a global level – on the level of society, for example – we know the results or the outputs. We know that more or less everything is determined by the advent of knowledge and technologies. Most poor people will remain poor and most rich men will remain rich, and most architecture will be crap and only devoted to capitalism. Given this, how do we explain that locally speaking we still have this perception of freedom of choice? I'm trying to show that we really live in a society that is deterministic, in order to extract what is *really* nondeterministic.

I don't believe that there is a cultural logic to capitalism now, as first proposed by Fredric Jameson in the 1980s. In fact it is a computational logic that drives things; culture is just determined by technology and not the other way around. Jameson's work was also an analysis of late capitalism and it gave the impression that something was ending.

As a classical system, capitalism was based on rationalism, and for the last four centuries, from the late Renaissance onward, we have seen the emergence of different fields of knowledge – biology, chemistry, linguistics, semiotics, and

so on. All these fields are deeply related to the evolution of knowledge and have become a highly articulated economy. Under computationalism it is almost impossible to differentiate these fields. Chemistry, for example, has very little meaning – a chemist is using a computer and doing computational chemistry just as a biologist is using a computer and doing computational biology. Everyone is using a computer. Therefore the most generic aspect of our time is the computer, which means that by looking at other more visible and obvious kinds of genericity, Rem Koolhaas, for example, is missing the point. The intelligence coming from the machine is so important that we cannot remove it. So it helps us to make more discoveries in these disciplines, and these disciplines in turn allow us to discover and produce new paradigms of computation.

There is a kind of back-and-forth relationship that is now being theorized as a phenomenon of acceleration: for example, we produce a new kind of knowledge that allows us to produce paradigms of computation and these paradigms allow us to make new discoveries, which is taken as accelerationism by some people. I'm not very interested in that, or let us say that I am not interested only in that. What I am interested in are the relationships between theory and practice, especially between theoretical knowledge in science and their practical consequences. If I have to take an example, I would say that some people who were interested in the machinic age were looking at the aesthetics of motors, and some others were looking to understand their laws of thermodynamics. I feel I am part of the second family.

VM: But I also wonder how you think computation or the incomputable has any meaning for architecture and contributes to the profession?

Demolition of Pruitt-Igoe apartment block, St. Louis, Missouri, April 1972.
(c) US Department of Housing and Urban Development.

PM: Computation doesn't govern architecture like it does in other disciplines. In the relationship between computation and money we have almost a reversal of the famous quote by Marx, "Logic is the money of the mind." Today, according to what happens at the stock exchange, I would say that "computation is the mind of money." Computation and capitalism are one and the same. Humans can no longer compute the complexity of the stock market, with billions of dollars of financial products constantly circulating. As Marshall McLuhan once said, "The computer is the LSD of the business world."

At the moment, investment banks are using algorithms that program in real time the logic circuitry of CPUs, and in order to choose the best circuitry, they are using algorithms that are themselves choosing the best circuitry-design algorithms among a family. This is more than fiction ... it is reality. The link with architecture is that in order to transform this virtual money into being "real," you build cities. In the same way that narco-dollars built Miami and petro-dollars built skyscrapers in the Gulf, "computo-dollars" are building the world around us. It is less impressive but probably more radical, as, contrary to oil, we'll never lack computation. The limits are the limits of physics and knowledge, which basically means there are no limits. This is what I spoke about almost fifteen years ago in my work about "integral capitalism."

Against this situation, my hypothesis is that we should use computation as a power in itself to address the question Charles Babbage posed in "On the Economy of Machinery and Manufactures" (1832). For Babbage, the word calculation means computation. He says: "We must remember that another and a higher science, itself still more boundless" – this

adjective is so important, when he says that something is "boundless" he means it cannot be stopped; we cannot stop this big machine that constantly reinforces itself – so high science is "also advancing with a giant's stride, and having grasped the mightier masses of the universe, and reduced their wanderings to laws, has given to us in its own condensed language" – condensed language means here that this is the language of mathematics and, more precisely, the future language of logic and set theory – "expressions, which are to the past as history, to the future as prophecy. [...] It is the science of *calculation* – which becomes continually more necessary at each step of our progress, and which must ultimately govern the whole of the applications of science to the arts of life."

Knowing that computation is governing the whole stock exchange, all stock markets, Google algorithms, etc., and that it is also programming airplane routes, car traffic, and robots, why shouldn't computation govern politics as well? It makes no sense to keep those politicians who L. B. Alberti was already calling "animals." It also makes no sense to see architects defend politics and politicians. There can be no other politics than a computational politics, as there can be no contemporary biology that is not a computational biology. It is not a matter of choice but a matter of knowledge. This depends on the state of our technologies and the complexity of contemporary societies. Architects have to understand these technological conditions because the first thing you have to do if you want to have a positive influence on a situation is to understand it. Once we have a better understanding of it we need to identify what happens if we let computation govern politics. It goes back to the beautiful image shown by Asger Jorn in *Internationale Situationniste*. On the level of society we can see

regularities, but on the level of the individual we can't.

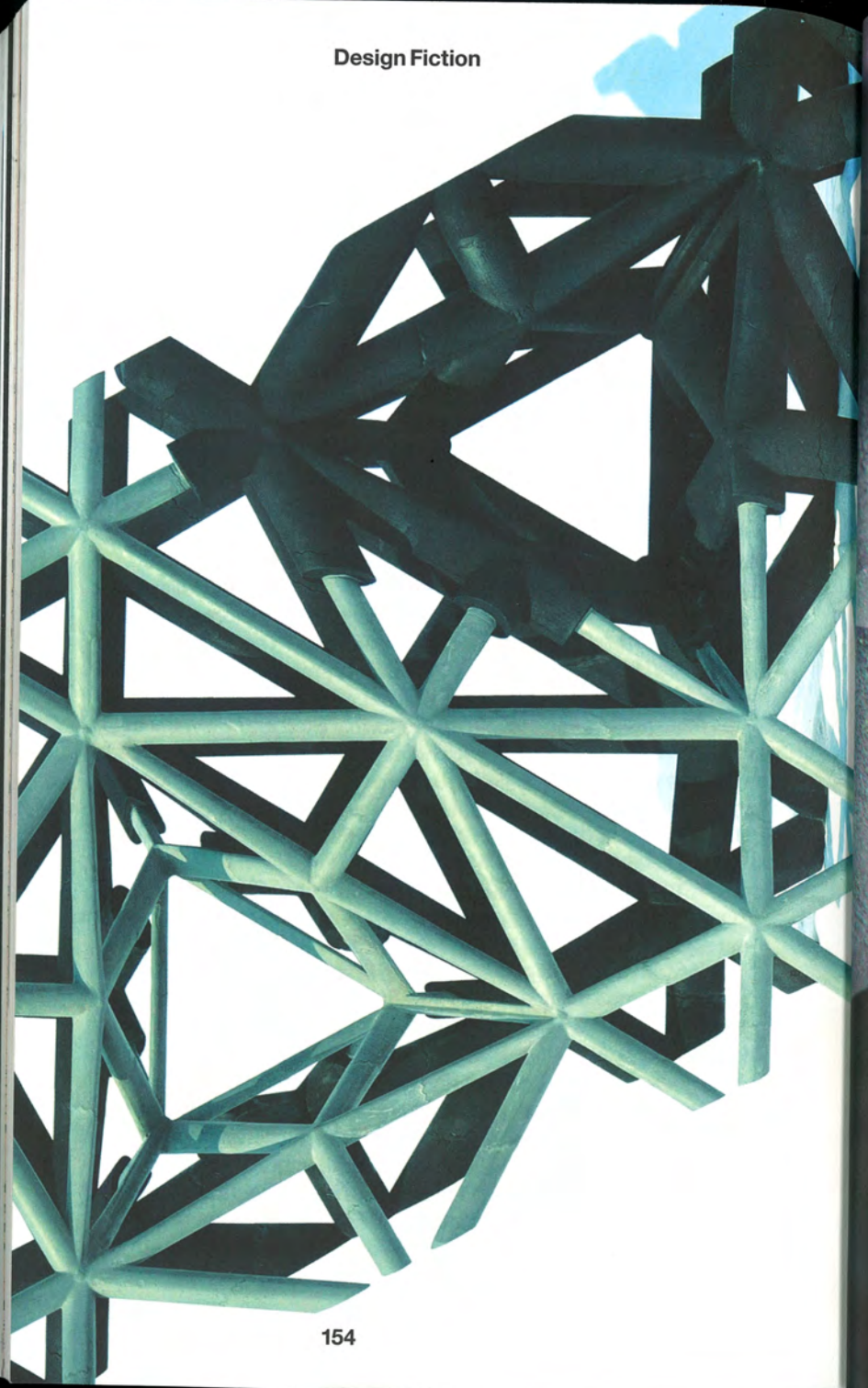
BR: Do the conceptual abstractions that are possible under computationalism widen the gap between a goal-oriented economy that is seeking extreme optimization and a subjective, emotive society? What does democracy mean with regard to this agenda of computationalism?

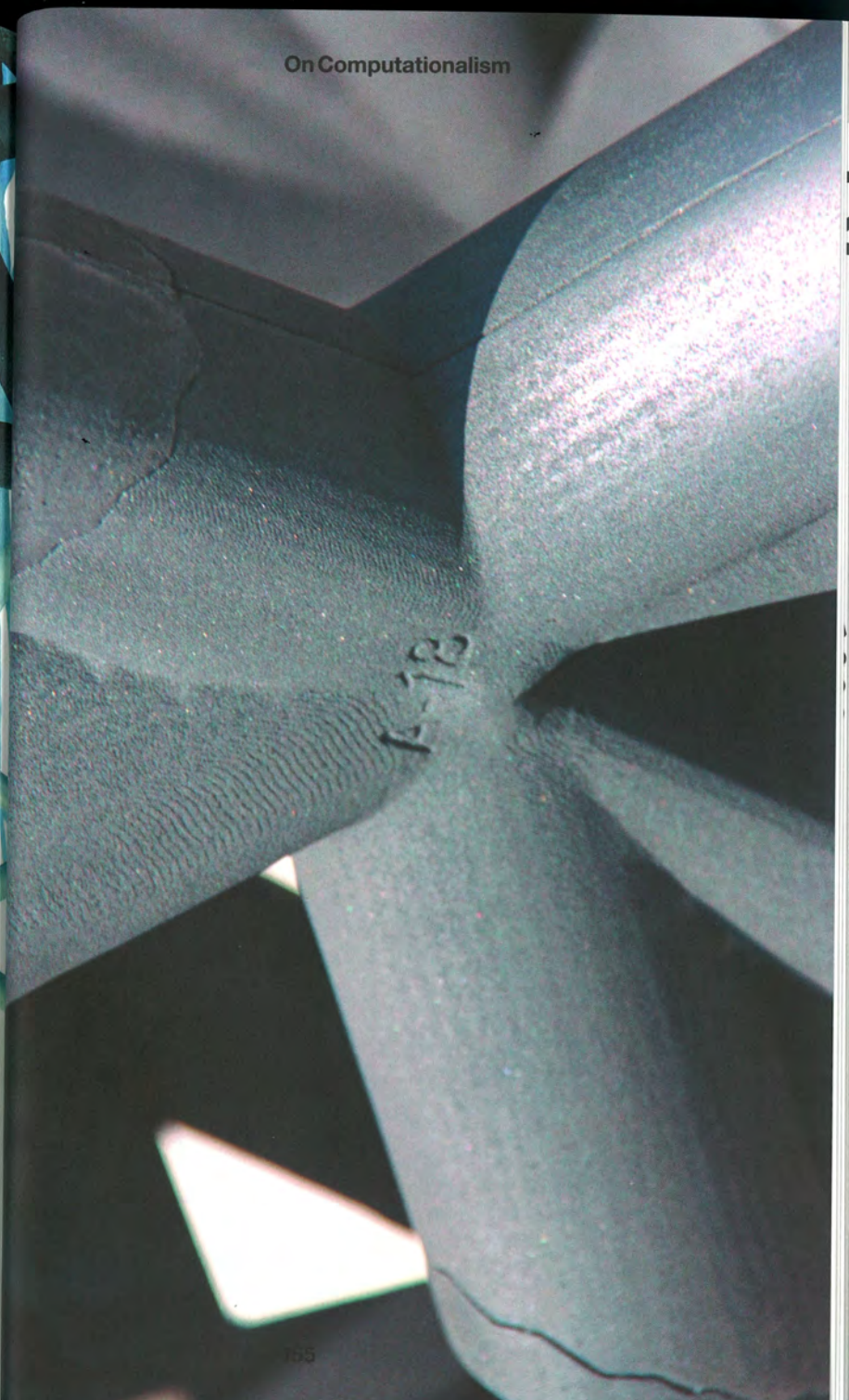
PM: You may know this proposal or tendency coming from political theory now called "lottocracy," which is purely fictional. It describes a scenario where politicians do not represent us anymore, but they instead represent their own interests or those of the corporations who finance their campaigns. Lottocracy suggests that we need to randomly choose the people who are going to be politicians. Personally, I see this proposal as a positive step toward computational politics, but the kind of randomness it implies is not fully satisfying. Within such a system you or I could become the next president of the United States. Would it be a good option? I don't think so. We would need councillors, we would need to please some people more than others – and therefore we would go back to traditional politics. The kind of computational politics I am looking for is more rational. But today's reason can't be embodied by humans, because things are too complex. Simply put, it is not rational to be rational; it is rational to be computational. Rationalism was based on the concept of human reasoning and the human ratio; computationalism is based on the concept of computation and computer intelligence. It derives from cybernetics but only partially, as it needs to escape the super-deterministic view of the world that was in the mind of most cyberneticists. We need randomness. The basis of freedom, in a sense, and in terms of politics on a philosophical level, is

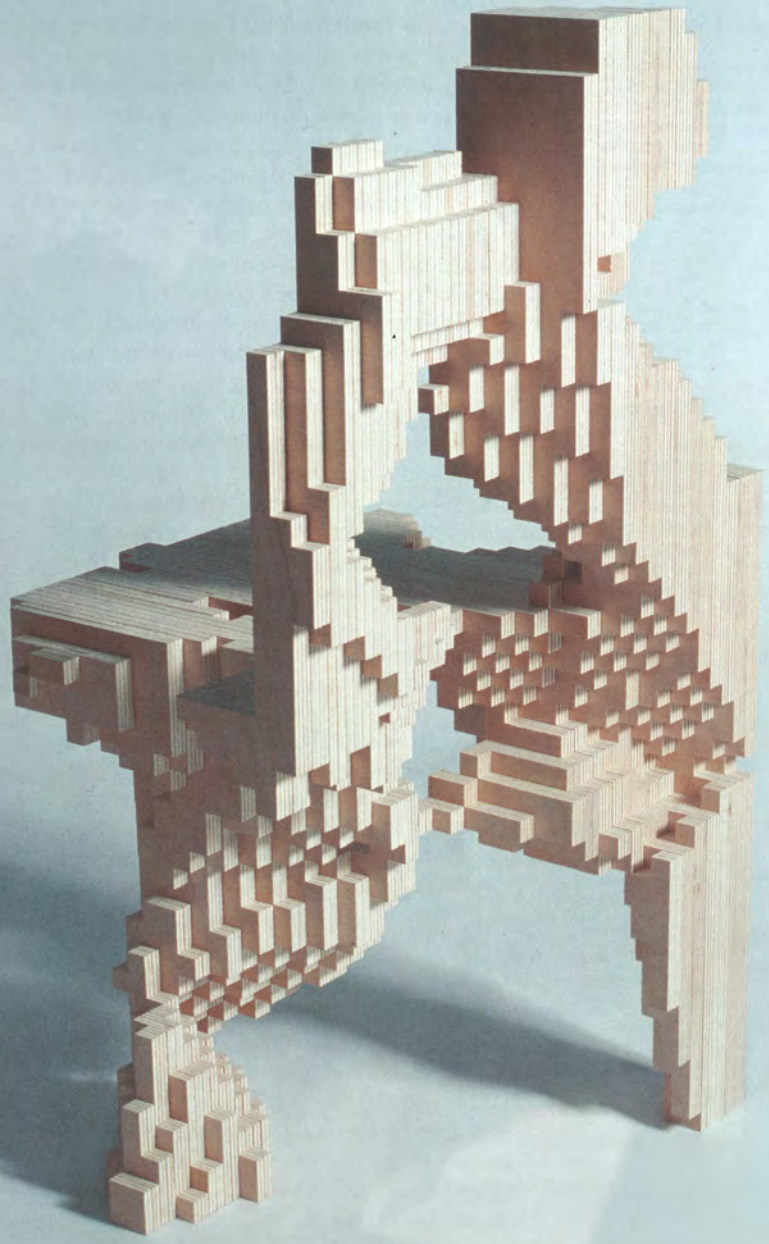
based on this possibility for randomness. In many books about politics, particularly in Rousseau, you find this idea of the possibility of a local indeterminacy, of something incomputable. This is why I like to think that quantum randomness can be used in order to bring into various domains the same kind of randomness that exists in life itself (nothing is more random than our very existence). This would allow us to go deeper than lottocracy in the relationship between society and politics. This is a speculative scenario based on a proposal where we can go a step further, where we can remove the human side of politics and just let computers do the job according to good mathematical rules.

BR: This is an interesting scenario for politics, but can the computational turn have more than just a formal effect on architecture? The danger is that this strategy just reveals processes or algorithms as form. Or is that not a danger; are you happy for this to end up in a formal exercise? Perhaps this is a question generally about architecture's influence on systems, or the goals of systemic change. Could events contained in spaces affect new relations under computationalism?

PM: Because the complexity you will find in architecture will never equal the one that is present in society at large, you might have the feeling that everything ends up in formal exercises. This is not 100 percent the case. Scale is very important in architecture because below a certain scale you cannot introduce real complexity. Complexity here has nothing to do with formal complexity; it has to do with the intricacy of different layers of knowledge, discourses, etc. There is no complexity in small architectural things such as pavilions. Pavilions are experiments but they are not architecture yet. For me, architecture starts with the house. Below that, we are talking about







Pages 154–155:

Philippe Morel, *Studies on Recursive Lattices*, 2012. Prototype of a 3-D space truss in ultra high-perfomance fiber-reinforced concrete (UHPC, Lafarge Ductal). The black parts are 3-D-printed sand molds (scale 1:1).

Left:

Philippe Morel, *Computational Chair Design Using Genetic Algorithms* (with Hatem Hamda and Marc Schoenauer), 2014. Concept: Philippe Morel / EZCT Architecture & Design Research. C++ programming, genetic algorithms, and structural calculation: Hatem Hamda and Marc Schoenauer. Mathematical programming: EZCT Architecture & Design Research.

formal experimentation, not architecture yet. We developed and presented a structure in Orléans at ArchiLab that we believe is a new way of producing superlight three-dimensional lattices in concrete, not really done before at this scale with very tiny sections, based on the use of 3-D-printed sand molds at a scale of 1:1. This gave us some inspiration and some formal principles to produce a very large-scale project, which is 1.2 kilometers long, for a competition in Japan. It is a kind of horizontal skyscraper with different kinds of functions that are organized in a linear way. It uses a constructive principle that can adapt to highly different geometries. It is really trying to readdress the issue of the megastructure, which was more or less invented by the Japanese and was developed at the same time in Italy. The Italians developed it through more evocative imagery while the Japanese almost did it before creating the imagery ...

VM: Was the structure at ArchiLab also a statement for a larger superstructure for thinking?

PM: Yes, it was, and continues to be, an inspiration for larger thinking. It is a further investigation from an earlier chair project we completed, which was very stochastic and difficult to scale up – from a piece of furniture to the scale of the architecture – so we did this structure that is scalable to architecture.

Now we are working on the next step. We are making a synthesis of these things, merging the intrinsic richness of the 3-D lattices we proposed at ArchiLab and the formal richness and unpredictability of the chair project. Now, regarding my use of the computational program Mathematica, my main interest is to remove the layer of the software interface in my investigations. I want to remove all of these unnecessary things

in order to be as close as possible to the CPU and to the mathematical models we are using in "geometrical" design. Speaking about geometry is already too limitative. If I speak about computation it makes sense to know what computation is really about. My overall project is kind of a Marxist project, almost scientific in its approach. For Marx, it didn't make sense to produce a discourse about capitalism without identifying as precisely as possible the law of surplus value. He gave clear mathematical formulas for what surplus value meant. He was the first to do it and it is the reason why even non-Marxist theorists are still using Marxist theory in economics. This part of his work is still valid; it is part of economics and cannot be removed. It has nothing to do with ideology. I am interested in scratching the surface of architecture to understand things in a more rigorous way to reach the "laws" of our time. Using Noam Chomsky's or Peter Eisenman's term from the end of the '60s, I would say that I am interested in grasping the "deep structure" of computation in both architecture and social life.

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